

# OPEN FILE

PETRO-CANADA EXPLORATION INC.  
THUNDERCLOUD COAL PROJECT

1980

NTS 104 J/2 AND 104 J/7

130° 48' 58° 15'

COAL LICENCES:

4550 - 4558

5310 - 5312

SUBMITTED DECEMBER 1980

00243

F. J. G. DE NYS

MINERALS GEOLOGIST

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A. SUMMARY

Petro-Canada is a Crown Corporation, wholly owned by the Government of Canada. The Company was established with the goal of improving the domestic energy scene. While current production is limited to oil and gas, Petro-Canada is committed to a broader spectrum of energy including coal.

In 1978 Petro-Canada acquired Pacific Petroleum Ltd. and assumed that company's 100% share in the Thundercloud Coal Project. During the summers of 1979 and 1980 the Thundercloud Coal Project was the focus of drilling 10 diamond drill holes, geological mapping and hand trenching. In the summer of 1979 the leases covered an area of 3,569.8 hectares. Unsuccessful drilling in the southern part of the property warranted dropping of 5 leases. The total area covered in 1980 is 3,023.48 hectares.

The area is structurally very complex. Tilted block faults appear to be the main structure in the area. Geological mapping and drilling of the area has shown at least eight distinct coal seams. The extent of the coal seam is limited to the area between the Little Tuya River and Mansfield Creek.

The 1980 drilling program shows that a potentially economic coal resource is present. An optimistic and speculative reserve calculation shows 266 million tons coal-in-situ. The coal is estimated to be high volatile C bituminous in rank.

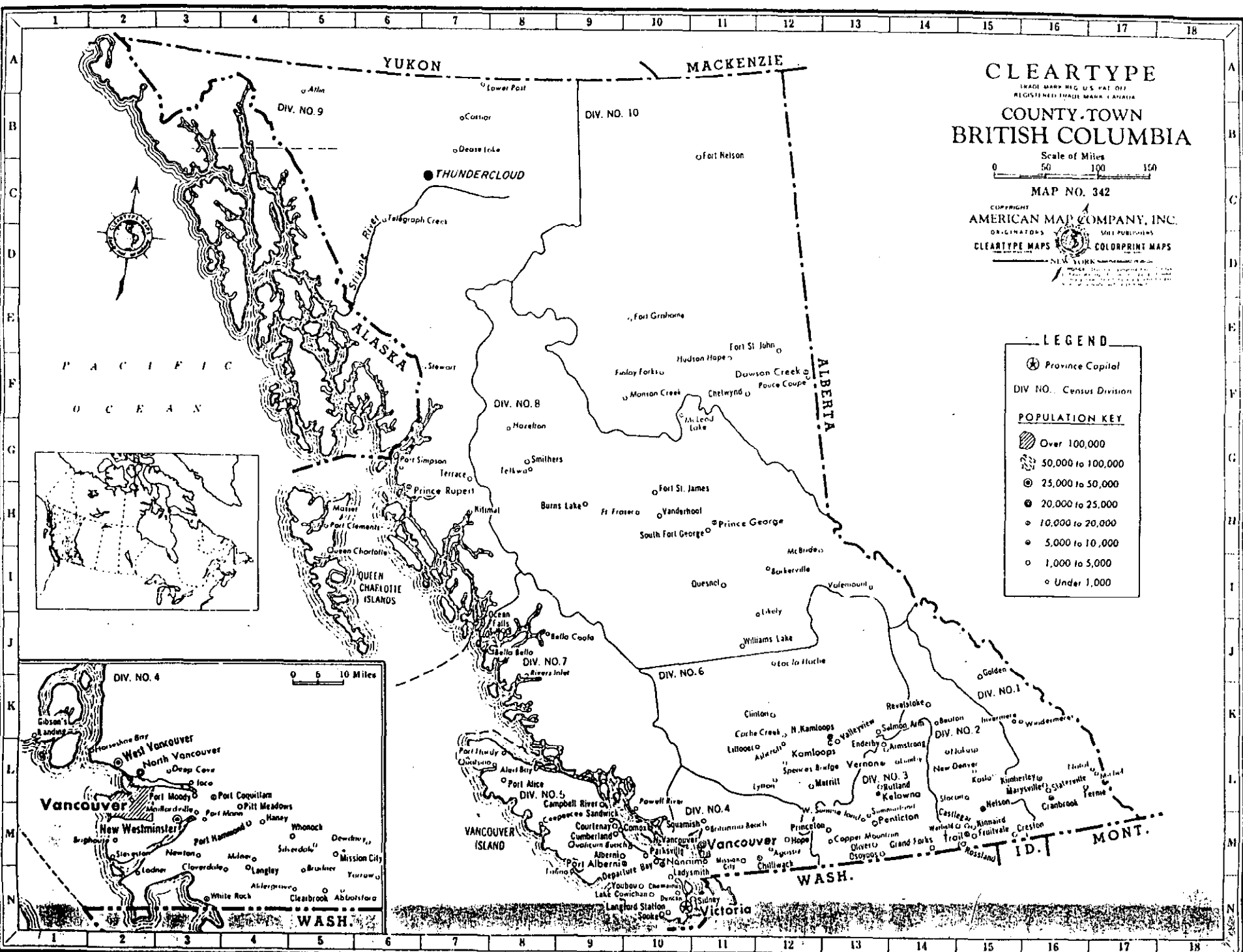
B. INTRODUCTION

1. Location and Means of Access

The Thundercloud property is situated in the Cassiar district, province of British Columbia (Figure 1) at Longitude  $130^{\circ} 45'$  W. and Latitude  $58^{\circ} 15'$  N. on the Stikine-Tanzilla plateau along the Little Tuya River, about 50 km upstream from where the Tuya River empties into the Stikine River and about 50 km southwest from the Town of Dease Lake and at about the same distance north from the village of Telegraph Creek. The area covers portions of the N.T.S. map sheets 104 J/2 and 104 J/7. Airstrips are maintained at both Dease Lake and Telegraph Creek. The area is 260 kilometers north of Stewart. From Dease Lake, B.C. Highway 37 travels north to Cassiar and connects with the Alaska Highway in the Yukon, west of Watson Lake. The only means of access to the Thundercloud property is by helicopter, although the road Dease Lake-Telegraph Creek passes within 10 km of the property at the locality known as Cariboo Meadows from where supplies were airlifted to the property.

2. Land Tenure

Crown coal licences No. 4545 to 4558 inclusive covering 3,569.8 hectares were granted to Petro-Canada Exploration Inc. on January 15, 1979. The obtained data of four diamond drillholes and surface mapping in 1979 warranted dropping of the five southerly Crown coal licences Nos. 4545 to 4549 inclusive. On September 10, 1979, three licences No. 5310, 5311 and 5312 covering 86.6 hectares were added to the property. The licence grouping is shown in Table 1.



BRITISH COLUMBIA NO. 342

Fig. 1

Thundercloud Coal Project

Summary of Coal Licences

Table No. 1

<u>Licence No.</u>	<u>N.T.S. Ref. No.</u>	<u>Block</u>	<u>Units</u>	<u>Hectares</u>	<u>Annual Rental</u>	<u>Anniversary</u>
5310	104-J-7	C	7,8,17,18	272.48	\$1,365	September 10
5311	104-J-7	C	65,66,75,76	272.08	\$1,365	"
5312	104-J-7	C	67,68,77,78	<u>272.08</u>	<u>\$1,365</u>	"
Total --Licences issued September 10, 1979				816.64	\$4,095	
4550	104-J-2	K	83,84,93,94*	125.7	\$ 620	January 15
4551	104-J-2	K	85,86,95,96*	256.84	\$1,285	"
4552	104-J-7	C	5,6,15,16*	243 +	\$1,215	"
4553	104-J-7	C	23,24,33,34*	226.7	\$1,130	"
4554	104-J-7	C	25,26,35,36*	267.7	\$1,535	"
4555	104-J-7	C	27,28,37,38	272.34	\$1,365	"
4556	104-J-7	C	43,44,53,54	272.22	\$1,365	"
4557	104-J-7	C	45,46,55,56	272.22	\$1,365	"
4558	104-J-7	C	47,48,57,58	<u>272.22</u>	<u>\$1,365</u>	"
Total - Licences issued January 15, 1980				2206.84	\$11,045	

\* excludes any portion over adjoining coal licence.

Total  
3023.48 hectares  
x 2.471  
7471.02 acres

3. Topography

The Thundercloud area lies mainly within the Stikine-Tanzilla plateau, a region of subdued topography. The coal licences center on the Little Tuya River and its tributary Mansfield Creek. The rivers and creeks have cut deep gorges in the lower-lying parts of the plateau. On the plateau surface, drainage is very poor and there exists many swampy areas. The average elevation of the property is about 800 m above sea level, with valleys about 150 m lower.

4. Exploration History

The occurrence of coal along the Tuya River was first reported as early as 1887 by G. M. Dawson of the Geological Survey of Canada. Mr. R. D. Featherstonhaugh wrote a report in 1904 for the Atlin-Tuya Coal Prospecting Syndicate, upon certain coal lands situated on the Tuya River. Gabrielse (1962) and Eisbacher (1973) have noted coal within the Tuya River area as thin lignite seams. Reconnaissance of the area was conducted by prospector T. Mould in the summer of 1978, which led to Petro-Canada's acquisition of the initial 14 Crown coal licences. Petro-Canada explored the area in the form of detailed mapping, hand trenching and drilling on the coal licences starting in May 1979. In June and July, 1980 the author and two Petro-Canada temporary staff people carried out some detail mapping north of the Little Tuya River and drilling of six holes on the property.



C. 1980 EXPLORATION PROGRAM

1. Objectives

The objectives of the 1980 exploration program carried out by Petro-Canada were to:

- a) to determine if there was sufficient coal in place.
- b) to delineate the stratigraphy and tectonics of the Thundercloud property.

This report documents the interpretation and assesses the economic potential of the property.

2. Field Program and Ancillary Services

The 1980 Field Program began on June 2, 1980. Accommodation and services were provided in the town of Dease Lake. Table 2 lists the temporary and permanent personnel employed to carry out the field work and subsequent office compilation. A list of all contractors who supplied services for all aspects of the work is shown on Table 3. Helicopter support for all phases of the work was provided by Terr-Air Rotary Ltd. of Lac La Biche, Alberta.

A Hughes 500D was employed for personnel movement and diamond drill move.

TABLE 2

LIST OF PERSONNEL EMPLOYED

Office Staff

J. Y. Wright	Exploration Manager
S. P. Santiago	Chief Geologist
F. J. G. De Nys	Minerals Geologist
D. C. Kinton	Senior Landman
C. Lachance	Clerk
E. E. Topacio	Draftsman
M. A. Yancie	Secretary

Field Staff

Permanent

F. J. G. De Nys	Minerals Geologist
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Temporary

K. Ladouceur	Assistant
M. Back	Assistant

TABLE 3

LIST OF CONTRACTORS AND SERVICES

Aircraft Charter

Terr-Air Rotary Ltd.	Lac La Biche, Alta.
Yukon Airways Ltd.	Dease Lake, B.C.
Watson Lake Flying Services	Watson Lake, Y.T.

Coal Quality Studies

Loring Laboratories	Calgary, Alberta
Roke Oil Enterprises	Calgary, Alberta

Drilling

Diamond 'M' Drilling	Kamloops, B.C.
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Rentals

Rentway	Calgary, Alberta
Spillsbury Tindal Communications	Vancouver, B.C.
Marinav Corporation	Calgary, Alberta

Trucking

Lindsay's	Terrace, B.C.
Canadian Freightways	Terrace, B.C.

Drafting

Kinnear Drafting	Calgary, Alberta
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3. Surveying

The diamond drill locations were surveyed using a Marinav Corporation satellite instrument. Precise UTM coordinates and elevations were obtained with this compact computerized system. Yukon Airways Ltd. provided a Hiller 2E in July for the survey work.

4. Geological Mapping

The 1980 exploration program included geological mapping north of the Little Tuya River. The mapping was done at a scale of 1:10,000 and carried out by Petro-Canada's temporary staff. Only a few outcrops were observed along the creeks.

5. Diamond Drilling

Diamond 'M' Drilling of Kamloops, B.C. provided a "Bowles 25A" drill for the diamond drill coring program. NQ wireline core was extracted using a standard Longyear core barrel. The drilling program started June 6, 1980 and was completed June 30, 1980. A total of six holes were drilled in the Thundercloud area. The Bowles was converted for airborne rig moves. The locations of these drillholes are shown on Figure 2 (in map pocket). A total of 789.44 m were drilled by drilling these six holes.

6. Coal Quality Studies

Coal quality studies were carried out on samples collected from borehole TDD-80-04. The samples were analyzed by Loring Laboratories. A complete outline of the proximate analysis is given on the seam profiles which are included in the map pocket as Figures 3, 4, 5. TDD-80-04 and TDD-80-06 were geophysically logged. The other boreholes could not be logged due to technical problems.

7. Reclamation

The reclamation work on the property was carried out under the supervision of the Forest Ranger, Mr. Leo Duffles of the B.C. Forest Service in Dease Lake, B.C. He made an inspection of all the drill-sites and has commented that reclamation had been completed satisfactorily. The reclamation work was done for Petro-Canada by McCrory Holdings Ltd. (Whitehorse, Yukon).

8. Trenching

No trenches were dug during the 1980 exploration program.

9. Cost Breakdown

Table 4 gives the costs applicable for the 1980 exploration program.

TABLE 4

Camp and catering	\$ 6,792
Communications	1,274
Transportation	59,524
Direct company labour	12,322
Bulk Fuel	5,236
Non-controllable materials	17,808
Contract labour	3,520
Move in, move out	2,684
Site preparation	15,497
Drilling	107,942
Surveying and photogrammetry	4,002
Assaying and testing	750
Travel and automobile expenses	1,545
Geological and mapping studies	118
Geophysical studies	10,500
Administrative costs	<u>322</u>
	<u>\$ 249,515</u>

D. REGIONAL GEOLOGY

The Thundercloud property, which forms part of the Stikine-Tanzilla plateau, lies within the Intermontane belt of the Cordillera. It is a northwest-trending trough flanked respectively on the west and east by the Coast and Omineca Crystalline complexes. Within the belt are remnants of Upper Cretaceous to Early Tertiary sedimentary rocks which lie unconformably on well-deformed Paleozoic and Mesozoic strata. The Pre-Tertiary rocks have undergone multiple deformation and it is difficult to separate early structures from those that were superimposed in later stages. In the Dease Lake - Telegraph Creek map area, the major fault zones are orientated north-south.

The coal-bearing Tertiary rocks on the Tuya and Little Tuya rivers have been correlated with the Upper Cretaceous to Eocene Sustut Group. The Sustut Group was deposited in a non-marine basin formed during the final phases of the Cretaceous-Tertiary orogenic activity which caused the intrusion and subsequent uplift of the Coast Crystalline complex and contemporaneous deformation (Eisbacher 1974 b).

E. STRATIGRAPHY

The geology of the Thundercloud property is illustrated in the geological map (Figure 6, pocket) and three cross-sections (Figures 7-9). The major lithological units present are as follows:

Late Tertiary-Recent volcanics - andesite, basalt

Upper Cretaceous-Paleocene Sustut Group - continental sediments,  
including coal

Late Triassic pyroclastics, andesites, basalts

The supposed Sustut Group sediments occur in a band 2.5 - 3.0 km wide, and somewhat less than 5 km long bounded on the west by a normal fault, on the downthrow side of which are Late Tertiary to Recent basaltic volcanics; on the east by an upthrown block of Late Triassic volcanics; on the north by these same Late Triassic volcanics and on the south by unconsolidated drift where the coal-bearing sediments have been eroded away.

Geographically, the area of Sustut sediments lies between Little Tuya River in the north and Mansfield Creek in the south.

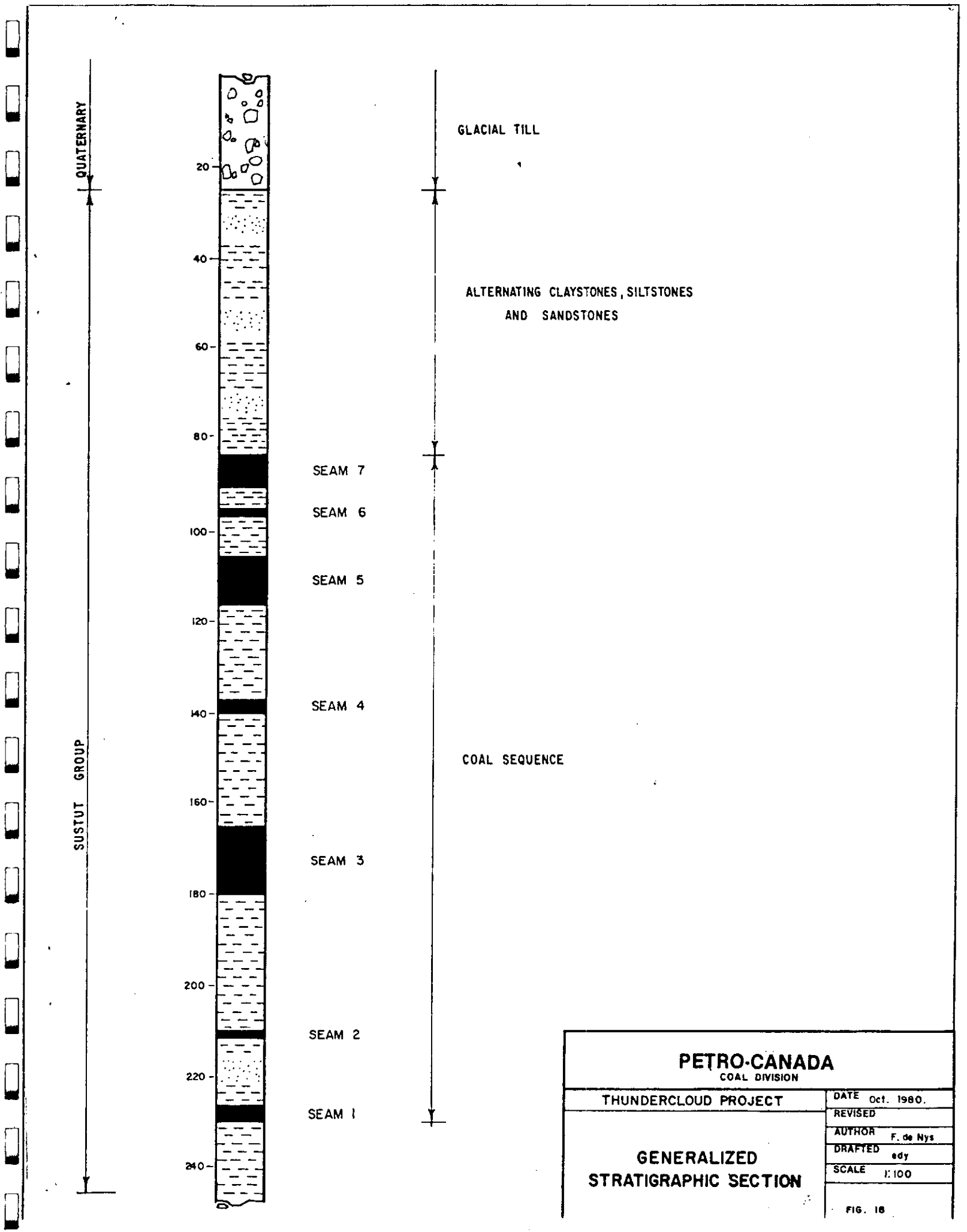
F. COAL SEAM STRATIGRAPHY

A total of seven different coal seams can be recognized in the Sustut Group within the Thundercloud property. The coal seams numbered 1 to 7 are illustrated on the borehole seam profiles (Figures 3, 4, 5) included at the end of this report in the pockets.

Figure 18 represents the generalized stratigraphic section of the Thundercloud area.

The sequence of coal seams intersected in borehole TDD-79-01 has been considered as a normal succession.





<b>PETRO-CANADA</b> COAL DIVISION	
THUNDERCLOUD PROJECT	DATE Oct. 1980.
<b>GENERALIZED STRATIGRAPHIC SECTION</b>	REVISED
	AUTHOR F. de Nys
	DRAFTED edy
	SCALE 1:100
FIG. 18	

Seams 1 and 2 intersected in borehole TDD-79-03 can be correlated with the two lower coal seams in borehole TDD-80-04.

Seam 1 varies from 3.61 m in total true thickness in borehole TDD-80-04 to 5.03 m in TDD-79-03. This seam is characterized by carbonaceous claystone bands.

Seam 2 varies from 1.24 m in total true thickness in borehole TDD-80-04 to 1.55 m in borehole TDD-79-03. Seams 3 to 7 achieve their maximum development in borehole TDD-79-01 and are only partially represented in borehole TDD-80-04 because they are affected by a set of parallel normal faults. The roof, floor and rock bands consist of carbonaceous claystones. Interseam interval varies between 5 and 28 m. Slumping, landsliding and faulting make the relative positions of all these seams indeterminate. Seam correlation over the area is therefore, very difficult and outcrops (1979 trenches) are very unreliable.

#### G. STRUCTURAL GEOLOGY

The area appears to have been extensively block-faulted and the lineaments can be seen on air photos although their surface expression is slight. The major lineaments run roughly N-S with a secondary set running NE-SW. The effects of these are very evident in the drill holes put down in 1979 and 1980, where correlation is extremely difficult. The Sustut strata dip generally between  $20^{\circ}$  and  $30^{\circ}$  to the east, displaced by at least two normal faults apart from the major bounding faults. The throw, in those cases where it was possible to estimate it, is in the region of 120 m. The fault zones are narrow and steep, characterized by zones of intense shearing and slickensides.

## H. PALYNOLOGY

The palynology department of Petro-Canada Research has separated and identified pollen from a sample from borehole TDD-80-04. The palynological preparation contained abundant organic material, mainly from leaf tissue, but including some woody material. A moderately diverse microfloral assemblage was recorded. The assemblage is dominated by bisaccate pollen of coniferous trees such as *Picea* (spruce) and *Pinus* (pine). Some *Taxodiaceae* pollenites is present and spores of *Laevigatosporites haardtii* and *Osmunda* spp. are common. The angiosperm pollen present includes *Triporopollenites mullensis*, *Pterocarya* sp., *Carpinus* sp., *Alnus* sp., *Ericacea*, *Fraxinoipollenites variabilis*, *Ulmus* sp., and *Carya* sp. This is a typical early Tertiary assemblage, not older than middle Paleocene. The coal-bearing rocks can probably be correlated with the Upper Cretaceous-Lower Tertiary Sustut group (GSC, 1974) defined by Esibacher (1974 a).

## I. COAL QUALITY

Eighteen samples from borehole TDD-80-04 were submitted for analysis including moisture content, proximate analysis and calorific value. Ten of these eighteen samples are specific coal samples, the others are samples from the rock material in between. The analyses of the samples were performed by Loring Laboratories in Calgary. The results of the analysis are shown on the seam profiles (Figure 3, 4, 5) included in the map pocket. Table 5 is a compilation of all the the analyses obtained in the course of this project.

TABLE #5

THUNDERCLOUD COAL PROJECT  
SUMMARY OF ANALYTICAL DATA

	SEAM 1		SEAM 2		SEAM 3	SEAM 4			SEAM 5	SEAM 6		SEAM 7	
Source of Sample	80-4	79-3	80-4	TRENCH NO.4	NO	80-4	79-1	79-1	80-4	80-4	79-1	79-1	TRENCH NO.1
Interval (m): from	89.20	150.50	72.96	0.00	SATISFACTORY	45.92	136.30	107.10	29.25	26.81	95.50	83.55	0.00
to	92.92	156.25	74.28	5.55	CORE	48.44	139.49	118.66	40.28	28.76	97.35	90.65	6.75
True Seam Thickness (m)	3.61	5.03	1.24	5.55	RECOVERED	2.37	2.44	10.86	10.41	1.83	1.79	6.33	6.75
Weighted Average Analysis Raw Coal (as-rec'd):													
Moisture %	16.04	9.85	9.43	14.40*		10.78	10.47	14.40*	10.18	11.20	14.40*	14.40*	14.40*
Ash %	18.56	34.12	19.50	24.84		11.95	31.03	19.43	32.90	14.49	37.17	26.35	21.94
Volatiles %	27.19	25.67	29.57	25.65		32.95	28.12	29.19	27.37	33.57	26.71	28.25	31.37
Fixed Carbon %	38.21	30.36	41.70	35.11		44.32	30.37	36.98	29.55	40.74	21.72	31.00	32.39
Sulphur %	0.42	0.91	0.46	0.57		0.35	0.77	0.44	0.32	0.36	0.32	0.34	0.35
Calorific Value (kJ/kg)	19,550	16,590	21,280	17,866		23,052	16,243	19,218	16,464	21,488	12,179	16,437	16,130
Hardgrove Index								(54)				(51)	
Screen Analysis:													
1/4 x 28 Mesh %								86.14				85.53	
28 x 100 Mesh %								10.02				10.85	
-100 Mesh %								3.84				3.62	
Sink-Float Tests:													
Specific Gravity of Flotation								1.45	1.60			1.45	1.60
Recovery: +100 Mesh								63.05	75.88			61.18	68.67
Analysis +100 Mesh													
Moisture (a.d.) %								6.05	5.63			3.64	3.62
Ash %								6.61	9.64			7.04	8.68

\* Equilibrium moisture. Lab neglected to do as-received moisture.

The rank is high volatile C bituminous. Coal is bright and because of its association with carbonaceous claystone, the composite seams are high in ash content.

The coal contains numerous globular nodules of resin up to 1 cm in diameter.

The mineral matter content of coal is composed of clayey materials, pyrite and calcite.

#### J. COAL RESOURCES

The calculation of total coal resources has been made using the cross-section method.

This method involves the measurement of seam lengths on each section within the property area to a limit of 300 metres of cover.

Sectional influence area for any borehole is determined to be equal to the distance between midpoints to the adjacent borehole.

A specific gravity of 1.49 gm/c.c. has been applied.

The reserve calculations include all seams with thickness greater than one metre. The following formula was used to calculate the total coal resources.

Coal in place =  $\frac{\text{Length seam} \times \text{thickness seam} \times \text{sectional influence distance} \times \text{specific gravity}}$

TABLE #6  
RESERVE CALCULATIONS - THUNDERCLOUD AREA

Section	<u>SEAM 1</u>				<u>SEAM 2</u>				<u>SEAM 3</u>				Total Vol.	Total Tonne
	Thk	L	Sec W	X106 Vol.	Thk	L	Sec W	X106 Vol.	Thk	L	W	X106 Vol.		
A-A'	-	-	-	--	-	-	-	--	9.55	1740	400	6.65	6.65	9.91
B-B'	3.61	1460	340	1.79	1.24	1440	340	0.61	10.70	1420	340	5.17	7.57	11.28
C-C'	5.03	770	280	1.08	1.55	770	280	0.33	-	-	-	--	1.41	2.10
Section	<u>SEAM 4</u>				<u>SEAM 5</u>				<u>SEAM 6</u>				Total Vol.	Total Tonne
	Thk	L	W	X106 Vol.	Thk	L	W	X106 Vol.	Thk	L	W	X106 Vol.		
A-A'	2.44	1700	400	1.66	10.86	1570	400	6.82	1.79	1560	400	1.11	9.59	14.29
B-B'	10.70	1420	340	5.17	10.41	1480	340	5.24	1.83	1320	340	0.82	11.23	16.73
C-C'	-	-	-	--	-	-	-	--	-	-	-	--	--	--
Section	<u>SEAM 7</u>												Total Vol.	Total Tonne
	Thk	L	W	X106 Vol.										
A-A'	6.33	1430	400	3.62									3.62	5.39
B-B'	6.63	1350	340	3.04									3.04	4.53
C-C'	-	-	-	--									--	--
TOTAL :												<u>43.11</u>	<u>64.23</u>	

The calculated figures represented in Table 6 fall in the "indicated category".

On this basis the calculated resource is  $64 \times 10^6$  raw tonnes of coal-in-place. Assuming the lateral continuity of the seven distinct coal seams the total resource potential will be in the order of  $266 \times 10^6$  raw tonnes of which  $202 \times 10^6$  tonnes fall in the "inferred", category.

K. CONCLUSION AND RECOMMENDATION

After two summer drilling programs, there still exists insufficient control on the positions, thickness and lateral continuity of the coal seams. Based on these results it is recommended that Petro-Canada Exploration Inc. retain the coal licences 4552, 4554, 4555, 4557, 4558.

Additional exploration should be conducted on the Thundercloud property which will meet the following objectives:

- 1) True coal seam thicknesses along with seam correlations and their areal continuity between Little Tuya River and Mansfield Creek must be better defined.
- 2) More accurate information on the structural geology must be obtained.

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APPENDIX

- A. LITHOLOGICAL LOGS
- B. GEOPHYSICAL LOGS (in the pocket)
- C. LITHOLOGS TDD-80-01 (in the pocket)  
TDD-80-02  
TDD-80-02
- D. GEOPHYSICAL LOGS, LITHOLOGY SUPERIMPOSED (in the pocket)  
TDD-79-01  
TDD-79-03  
TDD-80-04  
TDD-80-06

THUNDERCLOUD COAL PROJECT  
DIAMOND DRILL HOLE SUMMARY

DRILL HOLE NO: TDD-80-01

LOCATION:

- (a) Coal Licence: 4551
- (b) N.T.S.:
- (c) U.T.M.: 6457-143 N/393,865 E
- (d) Mine Grid:
- (e) Elevation: 781.282 M

AZIMUTH AND INCLINATION:

- (a) Collar
- (b) Deviation

CORE SIZE: NQ

FORMATIONS DRILLED:

metres  
to  
to  
to  
to  
to  
to

COAL SEAMS INTERSECTED:

TOTAL DEPTH: Drillers' 116.74 m Geophysical  
CASING: Drillers' 96.11 m Geophysical

DATE DRILLED: JUNE 8, 1980 - JUNE 9, 1980

DRILLED BY: DIAMOND 'M' DRILLING

LOGGED BY: K. LADOUCEUR, M. BACK, F. DE NYS

GEOPHYSICAL LOGS: NONE

ABANDONMENT PROCEDURE: CASING LEFT IN HOLE + RODS.

COMMENTS:

CORE LOG

OLE No. TDD 80-01 SHEET No: 1  
 DATE BEGUN: June 8, 1980 DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: 6457.143 N/395.865 E  
 DATE FINISHED: June 9, 1980 ELEV. COLLAR: 781.282m TOTAL DEPTH: 116.74m COAL LICENSE: 4551  
 AT: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: NQ

R.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	0	96.11	96.11	96.11			Overburden		
	96.11	96.62	0.51	0.37			Unconsolidated to semi-consolidated muds, sands and gravel overburden occasional suspended volcanoclastics and granitic boulders, grades to gravel at base.		
	96.62	97.29	0.67	0.49			Basalt, aphanitic, calcite fractures, minor biotite and pyrite, some magnetite along fractures at base of overburden, possible boulder, dark grey.		
	97.29	98.84	1.55	1.13			Siltstone, light grey, clay matrix and mudstone lenses, iron staining throughout, extreme weathering, sub-rounded, poorly sorted and poorly cemented, granular to pebble size clasts suspended.		
	98.84	99.95	1.45	1.06			Siltstone, light grey and reddish hue, core pulverized, badly weathered iron staining throughout, oxidized mudstone blebs.		
	99.95	100.29	0.34	0.25			Sandstone, grey, fine-grained with medium sandstone lenses, extremely dirty, badly weathered, core pulverized and broken, oxidized iron, carbonaceous mudstone stringers, claystone blebs, grey.		
	100.29	101.10	.80	0.59			Core missing		
	101.10	101.21	0.11	0.08			Siltstone, dull grey, clay matrix, very muddy, poorly cemented, core broken, andesite clasts to 1 cm., amber nodules and biotite, carbonaceous mudstone stringers near base, very poorly sorted, semi-angular.		
	101.21	101.55	0.33	0.24			Claystone, dark grey		
							Siltstone with clay matrix, volcanoclastic particles to 2 mm suspended		

HOLE No. TDD 80-01 SHEET No: 2

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	101.55	102.13	0.58	0.42			Sandstone, coarse-grained, very poorly sorted and semi-angular, mudstone interbeds at 0.43 meters from 101.55, coarser at base.		
	102.13	102.87	0.74	0.54			Volcaniclastic greywacke, light grey and greenish hue, minor calcite fractures throughout, mudstone clasts to 2 cm., large clasts of feldspathic porphyry, granodiorite boulders.		
	102.87	102.94	0.07	0.05			Sandstone, very coarse-grained, very muddy matrix, very poorly sorted, highly angular clasts of plagioclase feldspar.		
	102.94	103.15	0.21	0.15			Siltstone, dark grey, very poorly sorted, large volcanic clasts to 4 mm. suspended throughout.		
	103.15	103.65	0.5	0.37			Volcaniclastic greywacke, light grey and light greenish tinge, very dirty, core broken, volcanic and mud clasts, very unconsolidated, very poorly sorted.		
	103.65	103.85	0.2	0.15			Siltstone, dark grey, virtually uncemented.		
43°	103.85	104.24	0.39	0.29			Siltstone, very fine-grained, grading to claystone, pebbles suspended throughout.		
	104.24	105.71	1.47	1.08			Siltstone, dark grey, friable, poor cementation, extremely dirty, large volcanic pebbles up to 15 mm. of andesite and basalt suspended throughout, amber nodules, minor coaly rootlets, coarsening at base.		
	105.71	105.77	0.06	0.04			Core missing.		

CORE LOG

HOLE No. TDD 80-01 SHEET No: 3

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
43°	105.77	106.11	0.34	0.25			Siltstone, brownish grey, calcite fractures, shearing-possible fault, coarsening downwards to fine sand, angular amphibole clasts speckling near base, carbonaceous mudstone partings, slickensides, sheared throughout, minor coaly rootlets near base,		
	106.11	106.39	0.28	0.20			Volcaniclastic conglomerate with a dirty mud matrix, clasts to 6 mm very poorly sorted, clasts sub-rounded, light grey matrix.		
43°	106.39	106.94	0.55	0.40			Volcaniclastic greywacke, coaly mudstone band of 0.01 meters at base.		
	106.94	106.97	0.03	0.02			claystone, dark grey, coaly		
	106.97	108.46	1.49	1.09			Greywacke, minor shearing, mudstone lenses.		
	108.46	108.89	0.43	0.31			Siltstone, poorly cemented, shearing, core crushed at top of interval, dominance of chlorite in sediment at bottom, light grey with greenish hue.		
	108.89	109.14	0.25	0.18			Core missing		
	109.14	111.31	2.17	1.59			Siltstone, dark grey, core broken and crushed at bottom, very poorly sorted, clasts up to 3 mm, suspended, calcite fracturing and shearing throughout, coarsening towards bottom of interval, coaly rootlets and stringers at bottom.		
	111.31	111.43	0.12	0.08			Sandstone, grey, medium to fine grained, very poorly sorted, rounded grains, grading to siltstone at bottom of interval, minor coaly rootlets, shearing throughout, coarsening again towards base with large suspended pebbles, core broken throughout, grey.		
	111.43	111.53	0.10	0.07			Core missing		

HOLE No. TDD 80-01 SHEET No: 4

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.Rec.	%
	111.53	113.12	1.59	1.16	43		Volcaniclastic greywacke, mudstone blebs, very poorly sorted, clasts sub-rounded, core in tact.		
43°	113.12	114.43	1.32	0.66			Siltstone, brownish grey, muddy matrix, minor coaly rootlets, very minor calcite, core solid but friable at top of interval and shattered at base, sandstone lenses, coarsening at base to sandstone.		
	114.43	115.40	1.24	0.91			Core missing		
42°	115.40	115.67	0.27	0.20			Sandstone, grey, carbonaceous partings and rootlets throughout, very poorly sorted, very muddy matrix, shearing, minor slickensides, core broken.		
	115.67	116.74	1.07	0.78			Volcaniclastic greywacke, light grey, clasts to 7 mm., sub-rounded, very dirty matrix, mudstone blebs near base of unit, biotite specks.		
							E.O.H.		

THUNDERCLOUD COAL PROJECT  
DIAMOND DRILL HOLE SUMMARY

DRILL HOLE NO: TDD-80-02

LOCATION:

- (a) Coal Licence: 5311
- (b) N.T.S.:
- (c) U.T.M.: 6463.921 N/393.060 E
- (d) Mine Grid:
- (e) Elevation: 866.102 m

AZIMUTH AND INCLINATION:

- (a) Collar
- (b) Deviation

CORE SIZE: NQ

FORMATIONS DRILLED:

metres  
to  
to  
to  
to  
to  
to

COAL SEAMS INTERSECTED:

TOTAL DEPTH: Drillers' 143.26 m Geophysical

CASING: Drillers' 42.67 m Geophysical

DATE DRILLED: JUNE 11, 1980 - JUNE 14, 1980

DRILLED BY: DIAMOND 'M' DRILLING

LOGGED BY: K. LADOUCEUR, M. BACK, F. DE NYS

GEOPHYSICAL LOGS: NONE

ABANDONMENT PROCEDURE: CASING LEFT IN HOLE

COMMENTS:

HOLE No. TDD 80-02 SHEET No: 1 of 9DATE BEGUN: June 11, 1980

DEPTH: \_\_\_\_\_

BEARING: \_\_\_\_\_

U.T.M.: 6463.921 N/393.060 EDATE FINISHED: June 14, 1980ELEV. COLLAR: 866.102 mTOTAL DEPTH: 143.26 m.COAL LICENSE: 5311

LAT.: \_\_\_\_\_

HOLE ANGLE: \_\_\_\_\_

LOGGED BY: \_\_\_\_\_

CORE SIZE: N.Q.

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	0	42.67	42.67	42.67		42.67	OVERBURDEN		
	42.67	43.92	1.25	1.16			Andesite, dark grey, aphanitic, calcite fracturing throughout, minor chlorite fractures at base, sampled at 42.7 meters.		
	43.92	44.53	0.61	0.57			Basalt, grey, aphanitic, iron and chlorite staining, core crushed and broken.		
	44.53	44.81	0.28	0.26			Core missing		
						44.81			
	44.81	45.50	0.69	0.64			Basalt, grey, aphanitic, vesicular, calcite fractures and calcite filled vesicles, pyroxene fracture at base.		
						46.63			
	45.50	47.08	1.58	1.46			Basalt, grey, calcite fractures, amigdaloidal, calcite vesicles, chloritic mudstone nodules, core crushed and broken at base of unit.		
	47.08	50.24	3.16	2.92		47.85	Basalt, pinkish red, hematite rich with calcite vesicles, fine silt-		
						48.16	stone nodules, calcite fractured, chlorite fractured infills, pinkish-		
						49.68	red, sampled at 47.95 meters.		
	50.24	50.86	0.62	0.57			Basalt: as at 47.08 but core broken and pulverized-		
	50.86	51.09	0.23	0.21		50.90	Core missing		
	51.09	51.58	0.49	0.45			Basalt, pinkish hue, hematite stained, amigdaloidal, minor calcite and chlorite vesicles, core solid.		



HOLE No. TDD 80-02 SHEET No: 2 of 9
 DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	51.58	53.28	1.70	1.58		52.73	Basalt, light grey, aphanitic, calcite filled vesicles to 15 mm, minor chlorite filled fractures, chloritic siltstone blebs, amigdaloidal, altered, core broken.		
	53.28	53.41	0.13	0.12			Core missing		
	53.41	57.37	3.96	3.67		55.17 56.69	Basalt, minor hematite throughout, aphanitic, calcite fracturing and infilled throughout, chloritic siltstone blebs, core broken between 54.45 and 55.17 meters - 0.45 meters of core missing within this broken zone, amigdaloids and iron staining throughout this broken zone.		
	57.37	59.62	2.25	2.09		58.83	Basalt: as at 51.09 meters but core broken and crushed up to 58.85 m. chloritic siltstone nodules, also.		
	59.62	59.83	0.21	0.19			Core missing		
	59.83	61.84	2.01	1.86		60.35	Basalt, aphanitic, grey, minor vesicles at top of unit, chlorite fractures filled, calcite fractures throughout, minor altering, core broken.		
	61.84	62.00	0.16	0.15		61.87	Core missing		
	62.00	62.92	0.92	0.85			Andesite, as at 42.67 meters but without minor chlorite fractures.		
	62.92	64.34	1.42	1.32			Basalt, light grey, chlorite infill, calcite fractures, minor iron staining, core broken throughout, core crushed and pulverized at top of unit, core altered.		
	64.34	65.41	1.07	0.99		64.62	Core missing		

CORE LOG

HOLE No. TDD 80-02 SHEET No: 3 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	65.41	65.82	0.41	0.38		65.53	Basalt, light grey, aphanitic, calcite fractures throughout, minor chlorite fractures, lower contact along calcite fracture at 33°.		
	65.82	66.94	1.12	1.04			Andesite: as at 42.67 meters, core solid.		
	66.94	67.56	0.62	0.57			Basalt: as at 62.92 meters.		
	67.56	68.79	1.23	1.14		68.85	Andesite: as at 42.67 meters, core fairly solid.		
	68.79	69.45	0.66	0.61			Basalt, vesicular, minor migdaloids throughout lower part of unit, calcite fractures and infill, chlorite along fractures, altered minor chloritic siltstone blebs, core solid.		
	69.45	71.63	2.18	2.02		71.63	Basalt, purple-red hue, hematite rich, minor vesicles and amigdaloids, chloritic siltstone blebs throughout, amphibole nodules, sampled at 69.67 meters, slickenside at 71.15 meters, core broken, core missing of 0.08 meters between 71.05 and 71.13 meters.		
	71.63	73.97	2.34	2.17		72.85	Basalt: as at 69.45 meters with major calcite filled vesicles, migdaloids minor slickensides, chloritic staining throughout.		
	73.97	74.06	0.09	0.08			Core missing		
	74.06	74.62	0.56	0.52			Basalt, aphanitic, vesicular, calcite and amphibole lined vugs, minor chlorite infill.		
	74.62	75.68	1.06	0.98		75.29	Andesite, dark grey, calcite filled vugs and vesicles.		
	75.68	78.65	2.97	2.75		77.42	Andesite: as at 74.62 meters, but vesicles minor and major calcite fracturing throughout.		

HOLE No. TDD 80-02 SHEET No: 4 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
	78.65	79.70	1.05	0.97			Basalt, grey, aphanitic, major calcite fractures throughout, minor chlorite along fractures, core solid.		
	79.70	81.05	1.35	1.25		80.47	Andesite, dark grey, vesicles minor and major calcite fracturing throughout, vesicular zone near base of unit.		
	81.05	82.80	1.75	1.62		81.99	Basalt, blueish grey hue, calcite vesicles, vuggy, migdaloidal, calcite and chlorite fracturing, chloritic sandstone blebs, minor amphibole deposits along fractures, core broken and crushed.		
	82.80	83.97	1.17	1.08		83.82	Core missing		
	83.97	82.25	1.28	1.19			Basalt, light grey, amphibole flecks throughout, chloritic siltstone blebs calcite fractures and infill throughout, extremely minor slickensides, altered.		
	82.25	85.79	0.54	0.50			Basalt, light grey, aphanitic, migdaloidal and vesicular, minor fracturing, minor Vugs, mafic deposits along some fractures.		
	85.79	85.88	0.09	0.08			Basalt, schistose texture at 65°, obsidian, major calcite fracturing, chloritic siltstone at base of unit.		
	85.88	86.79	0.91	0.84		86.87	Basalt: as at 82.25 meters with chloritic siltstone blebs throughout, minor calcite fracturing, slickensides at base of unit.		
	86.79	86.91	0.12	0.11			Core missing		
	86.91	89.47	2.56	2.37			Basalt, migdaloidal, mafic lining of migdaloids, chlorite staining throughout, core crushed and pulverized between 87.17 and 87.78 meters, calcite fractures and deposits in vugs. Mafic siltstone infill of 0.1 meters at 88.75 meters, 88.97 meters and 89.17 meters.		

CORE LOG

HOLE No. TDD 80-02 SHEET No: 5 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	89.47	89.56	0.09	0.08			Mudstone fragment, upper contact B.C.A. of 90°, chilled lower contact B.C.A. of 25°, slickensides.		
	89.56	90.07	0.51	0.47			Basalt: as at 86.91 meters		
	90.07	90.53	0.46	0.43		90.53	Core missing.		
	90.53	90.81	0.28	0.26			Mudstone fragment: as at 90.71 meters		
	90.81	91.18	0.37	0.34			Basalt: as at 86.91 meters		
	91.18	91.20	0.02	0.02			Claystone, black, slickensides		
	91.20	91.82	0.62	0.57			Basalt: as at 86.91 meters.		
	91.82	91.97	0.15	0.14			Claystone: as at 91.18 meters.		
	91.97	92.19	0.22	0.20			Basalt: as at 86.91 meters with slickensides, core broken and bottom contact chilled at 90°.		
	92.19	92.33	0.14	0.13			Siltstone black, slickensides, occasional large basalt fragment suspended.		
68°	92.33	92.47	0.14	0.13			Greywacke, coarse grained, clasts sub-rounded, mudstone blebs suspended, fining towards base.		
	92.47	92.66	0.19	0.17		92.66	Core missing.		
68°	92.66	93.76	1.10	1.02			Claystone, coaly rootlets, slickensides, cross-bedding, friable, sand lens of 0.03 meters at 92.82 meters and at 93.11 meters.		
68°	93.76	93.97	0.21	0.19			Interbedded medium grained sandstone, siltstone and claystone, rounded grains, calcite fracturing, very muddy matrix.		

CORE LOG

HOLE No. TDD 80-02 SHEET No: 6 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

U.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	93.97	95.25	1.28	1.18			Siltstone, light grey, coaly rootlets, friable, slickensides.		
	95.25	95.70	0.45	0.42			Claystone, dark grey, cross-bedding, friable, coaly rootlets, minor slickensides, core broken, core crushed at 95.60 meters.		
	95.70	96.01	0.31	0.29		96.01	Core missing.		
68°	96.01	98.26	2.25	2.09			Volcaniclastic greywacke, dull grey, medium sand mud matrix, fining towards base, very poorly cemented, dirty.		
	98.26	98.87	0.61	0.57			Volcaniclastic greywacke, light grey, mud matrix, coarse grained, clasts rounded to sub-rounded, calcite fractures, coaly rootlets throughout, carbonaceous stringers.		
68°	98.87	99.45	0.58	0.54		99.06	Greywacke, very badly sorted, very muddy matrix, pebble clasts up to 3 mm., a band of 0.01 meters of obsidian at top of unit.		
	99.45	99.52	0.07	0.07			Greywacke, dark grey, medium sand, very uncemented.		
	99.52	99.58	0.06	0.06			Greywacke: as at 98.87 meters.		
	99.58	100.55	0.97	0.90			Siltstone, coarsening to fine sand towards bottom of unit, cross-bedding, minor coaly rootlets throughout.		
	100.55	101.03	0.48	0.45			Claystone, coaly rootlets, major slickensides throughout, ground core of 0.08 meters at base of unit.		
	101.03	101.98	0.95	0.88			Siltstone, fine cross-bedded, friable, mud matrix, poorly cemented, slickensides throughout.		
	101.98	102.04	0.06	0.06			Core missing.		

CORE LOG

HOLE No. TDD 80-02 SHEET No: 7 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	102.04	103.58	1.54	1.43		102.11	Interbedded siltstone and coarse sandstone, cross-bedded, poorly cemented, friable, coaly rootlets, slickensides, core broken.		
	103.58	103.63	0.05	0.05		103.63	Core missing		
	103.63	105.10	1.47	1.36		104.85	Claystone, virtually uncemented, slickensides throughout, bedding indistinct.		
	105.10	107.40	2.30	2.13			Core missing.		
	107.40	107.58	0.18	0.17			Greywacke, mud matrix, very poorly cemented, core crushed and broken.		
	107.58	107.99	0.41	0.38		107.90	Volcaniclastic greywacke, coarse sand, mud matrix, clasts semi-angular, very poorly cemented.		
68°	107.99	109.92	1.93	1.79		108.81	Greywacke, well-cemented, core solid, coarse sand, coarsening downwards to pebble conglomerate, numerous coaly stringers and rootlets at base of unit.		
68°	109.92	110.23	0.31	0.29			Mudstone breccia.		
68°	110.23	110.79	0.56	0.48			Greywacke, coarse sand, mud matrix, core solid.		
	110.79	111.91	1.12	1.04		111.86	Claystone coarsening to siltstone, interbedded medium sand throughout, mud matrix, cross-bedding, friable, carbonaceous stringers.		
	111.91	113.57	1.66	1.54			Volcaniclastic greywacke, light grey, coarse sand, poorly cemented, minor cross-bedding, coaly rootlets and carbonaceous stringers, clasts suspended to 2 mm.		

CORE LOG

HOLE No. TDD 80-02 SHEET No: 8 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m:Rec.	%
68°	113.57	114.02	0.45	0.42		113.99	Siltstone fining downwards to claystone, dull grey, slickensides, B.C.A. of 60° at lower contact, flame structures at contact, slickensides, core pulverized at 114.00 meters, core loss of 0.08 meters from 113.94 meters to 114.02 meters.		
	114.02	114.89	0.87	0.81			Volcaniclastic greywacke, light grey, coarse sand, mud matrix, pebbles sub-rounded, core solid.		
68°	114.89	115.33	0.44	0.40			Volcaniclastic greywacke with mudstone fragments and fragments of petrified wood, light grey, medium to coarse grained, clasts angular, volcanic fragments to 5 cm. suspended throughout, B.C.A. of 72° at lower contact.		
68°	115.33	115.65	0.32	0.30			Siltstone, mud matrix, extreme cross-bedding, slickensides.		
	115.65	115.81	0.16	0.15			Siltstone: as at 115.33 meters but carbonaceous and dull dark grey.		
	115.81	115.88	0.07	0.06			Siltstone, as at 115.33 meters.		
	115.88	116.76	0.88	0.82			Cobble conglomerate, very poorly sorted coarse sand matrix, clasts to 4 cm. clasts sub-rounded, volcanic and chert clasts, occasional boulder size clasts, calcite fractures, poorly cemented, indeterminate bedding, core broken throughout, grinding present throughout unit.		
	116.76	117.04	0.28	0.26		117.04	Core missing.		
	117.04	117.10	0.06	0.06			Core missing-caving.		
	117.10	121.60	4.5	4.17		118.57 121.31	Cobble conglomerate: as at 115.88 meters.		

CORE LOG

HOLE No. TDD 80-02 SHEET No: 9 of 9

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m:Rec.	%
68°	121.60	125.15	3.55	3.29		124.05	Siltstone, dull grey, poorly cemented mud matrix, slickensides, friable, lenses of coarse sand, coaly rootlets and stringers, throughout, coarsening to fine sand at base of unit, core broken throughout.		
68°	at bottom of interval								
	125.15	132.20	7.15	6.63		126.19 129.29 132.28	Volcaniclastic cobble conglomerate, highly angular clasts, friable, boulders to 0.15 meters, calcite fracturing, at 125.35 meters is a calcite band of 2.5 cm. (true thickness) with a B.C.A. of 30° 0.6 meters of grinding within unit, sampled at 128.5 meters.		
	132.30	133.31	1.01	0.94			Pebble conglomerate, hematite rich sand matrix, calcite fracturing core broken.		
68°	133.31	136.31	3.00	2.78		135.33	Volcaniclastic pebble conglomerate, mud matrix, poorly cemented, friable, slickensides, calcite fracturing, clasts angular to sub-angular, core solid.		
	136.31	143.26	6.95	6.44		138.38 139.29 142.34 143.26	Volcaniclastic cobble conglomerate, sandy matrix, poorly sorted, clasts to 3 cm., sub-angular, calcite fractures throughout, sampled at 140 meters, core solid		
							E. O. H.		



THUNDERCLOUD COAL PROJECT  
DIAMOND DRILL HOLE SUMMARY

DRILL HOLE NO: TDD-80-03

LOCATION:

- (a) Coal Licence: 5310
- (b) N.T.S.:
- (c) U.T.M.: 6458.193 N/392.183 E
- (d) Mine Grid:
- (e) Elevation: 857.562 m

AZIMUTH AND INCLINATION:

- (a) Collar
- (b) Deviation

CORE SIZE: NQ

FORMATIONS DRILLED:

metres  
to  
to  
to  
to  
to  
to

COAL SEAMS INTERSECTED:

TOTAL DEPTH:	Drillers'	74.68 m	Geophysical
CASING:	Drillers'	42.67 m	Geophysical

DATE DRILLED: JUNE 14, 1980 - JUNE 17, 1980

DRILLED BY: DIAMOND 'M' DRILLING

LOGGED BY: K. LADOUCEUR, M. BACK, F. DE NYS

GEOPHYSICAL LOGS: NONE

ABANDONMENT PROCEDURE: CASING LEFT IN HOLE

COMMENTS:

HOLE No. TDD 80-03 SHEET No: 1 of 1  
 DATE BEGUN: June 14, 1980 DEPTH: 74.68 BEARING: \_\_\_\_\_ U.T.M.: 6458 193 N/392 183 E.  
 DATE FINISHED: June 17, 1980 ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: 74.68 COAL LICENSE: 5310  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: N.Q.

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
	0.00	42.67	42.67				Overburden		
	42.67	117.35	74.68				Gabbro, light green		
							- chlorite rich		
							- iron staining		
							- major calcite fracturing throughout		
							- olivine rich throughout		
							- minor magnetite throughout		
							- major constituents of gabbro are plagioclase		
							feldspar and pyroxene		
							E.O.H.		

THUNDERCLOUD COAL PROJECT  
DIAMOND DRILL HOLE SUMMARY

DRILL HOLE NO: TDD-80-04

LOCATION:

(a) Coal Licence: 4554  
(b) N.T.S.:  
(c) U.T.M.: 6460.641 N/393,374 E  
(d) Mine Grid:  
(e) Elevation: 839.351 m

AZIMUTH AND INCLINATION:

(a) Collar  
(b) Deviation

CORE SIZE: NQ

FORMATIONS DRILLED:

metres  
to  
to  
to  
to  
to  
to

COAL SEAMS INTERSECTED: 1, 2, 3, 4, 5, 6, 7, 8.

TOTAL DEPTH: Drillers' 189.59 m Geophysical

CASING: Drillers' 9.38 m Geophysical

DATE DRILLED: JUNE 18, 1980 - JUNE 21, 1980

DRILLED BY: DIAMOND 'M' DRILLING

LOGGED BY: K. LADOUCEUR, M. BACK, F. DE NYS

GEOPHYSICAL LOGS: DENS, GRN.

ABANDONMENT PROCEDURE: CASING LEFT IN HOLE

COMMENTS:

HOLE No. TDD 80-04 SHEET No: 1 of 35  
 DATE BEGUN: June 18, 1980 DEPTH: 189.59 m. BEARING: \_\_\_\_\_ U.T.M.: 6460, 641N/393, 374E  
 DATE FINISHED: June 21, 1980 ELEV. COLLAR: 839,351 m TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: 4554  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: N.Q.

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 1		
						2.14			
	9.14	9.38	0.24	0.22			Claystone, light grey.		
	9.38	9.51	0.13	0.12			Siltstone, light grey, very thin coal stringers.		
	9.51	9.78	0.17	0.15			Siltstone, light grey.		
	9.78	11.51	1.73	1.59			Siltstone, grey, plant remains, coarsening towards base.		
						11.28			
	11.51	11.90	0.39	0.36			Siltstone, grey.		
							Box 2		
	11.90	13.04	1.14	1.04			Siltstone, grey, carbonaceous plant fragments.		
	13.04	13.33	0.29	0.27			Sandstone, grey, fine-grained, plant fragments, gradational top contact.		
70°	13.33	13.40	0.07	0.07			Sandstone, grey, fine-grained.		
						14.33			
	13.40	14.68	1.28	1.20			Siltstone, grey, carbonaceous plant fragments.		
							Box 3		
	14.68	17.53	2.85	2.67			Siltstone, grey, carbonaceous plant fragments, slickensides and coaly stringers.		

HOLE No. TDD 80-04 SHEET No: 2 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 4		
						17.37			
	17.53	18.14	0.61	0.57			Siltstone, grey, carbonaceous plant fragments.		
	18.14	18.88	0.74	0.69			Siltstone, grey, slickensides, carbonaceous plant fragments, clayey matrix.		
	18.88	19.63	0.75	0.70			Siltstone, grey, carbonaceous plant fragments.		
	19.63	20.20	0.57	0.54			Siltstone, grey carbonaceous plant fragments.		
	20.20	20.35	0.15	0.14			Claystone, grey, carbonaceous plant fragments, slickensides.		
							Box 5		
	20.35	20.56	0.21	0.20			Claystone, grey, thin coal stringers.		
						20.46			
	20.56	20.99	0.43	0.40			Claystone, grey, thin coal stringers, plant remains.		
	20.99	21.27	0.28	0.26			Claystone, dark grey, carbonaceous		
						21.18			
	21.27	21.61	0.34	0.32			Claystone, dark grey, thin coal stringers.		
	21.61	21.78	0.17	0.16			Siltstone, grey, plant remains.		
						21.64			

HOLE No. TDD 80-04 SHEET No: 3 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	21.78	22.04	0.26	0.24			Claystone, dark grey, carbonaceous, thin coal stringers, slickensides amber nodules.		
						21.95			
	22.04	22.11	0.07	0.07			Claystone, dark grey, thin coal stringers.		
	22.11	22.15	0.04	0.04			Coal, bright-banded, thin claystone partings.		
	22.15	22.18	0.03	0.03			Claystone, dark grey, carbonaceous		
	22.18	22.23	0.05	0.05			Coal, bright-banded.		
	22.23	22.27	0.04	0.04			Claystone, dark grey, carbonaceous		
	22.27	22.64	0.37	0.34		↑	Coal, bright-banded, occasionally dull, amber nodules, few claystone partings.		
	22.64	22.71	0.07	0.07		↑	Claystone, dark grey, carbonaceous, coal stringers.		
					5569				
							Box 6		
						22.56			
	22.71	22.76	0.05	0.05		↓	Coal, bright-banded.		
	22.76	23.31	0.55	0.52		↑	Claystone, dark grey, carbonaceous, numerous bright coal stringers, fusain partings.		
					5670	↓			
	23.31	23.44	0.13	0.12		↑	Claystone, dark grey, carbonaceous, few thin coal stringers, slickensides.		
	23.44	23.47	0.03	0.03		↑	Claystone, dark grey, numerous amber nodules.		

HOLE No. TDD 80-04 SHEET No: 4 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	23.47	23.50	0.03	0.03	5671		Coal, bright-banded.		
	23.50	23.56	0.06	0.06		↓ 23.47 ↑	Coal, bright-banded, dull partings, amber nodules.		
	23.56	23.89	0.33	0.31			Claystone, dark grey, carbonaceous, occasionally coal stringer, amber nodules, plant remains, slickensides.		
						23.77			
	23.89	23.95	0.06	0.06			Claystone, dark grey, carbonaceous, very thin -coal stringers, amber nodules.		
	23.95	24.16	0.21	0.20			Coal, bright, claystone partings, amber nodules.		
	24.16	24.19	0.03	0.03			Claystone, dark grey, carbonaceous, thin coal stringers, amber nodules.		
	24.19	24.26	0.07	0.07	5672		Coal, bright-banded, slickensides.		
	24.26	24.28	0.02	0.02			Claystone, dark grey, carbonaceous.		
	24.28	24.57	0.29	0.27			Core missing		
	24.57	24.62	0.05	0.05			Coal, bright-banded.		
	24.62	24.71	0.09	0.09			Claystone, dark grey, carbonaceous, numerous thin coal stringers.		
	24.71	24.98	0.27	0.25			Claystone, grey, sandy phases.		

HOLE No. TDD 80-04 SHEET No: 5 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 7		
	24.98	25.79	0.81	0.76			Claystone, grey.		
	25.79	25.82	0.03	0.03	5672		Coal, bright.		
	25.82	26.05	0.23	0.22			Claystone, dark grey, carbonaceous, coal stringers.		
	26.05	26.24	0.19	0.18			Claystone, grey.		
	26.24	26.40	0.16	0.15			Claystone, dark grey, carbonaceous, slickensides, thin coal stringers.		
	26.40	26.42	0.02	0.02			Coal bright.		
						26.52			
	26.42	26.81	0.39	0.37	✓		Claystone, dark grey, plant remains, slickensides, thin coal stringers.		
	26.81	27.09	0.28	0.26	↑		Coal bright		
	27.09	27.15	0.06	0.06	5673		Coal bright.		
	27.15	27.26	0.11	0.10			Coal, bright-banded, claystone partings.		
	27.26	27.78	0.52	0.49			Coal bright		



HOLE No. TDD 80-04 SHEET No: 6 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 8		
	27.78	27.82	0.04	0.04			Claystone, brownish		
					5673				
	27.82	28.08	0.26	0.24			Coal, bright, dull bands		
	28.08	28.11	0.03	0.03			Claystone.		
	28.11	28.32	0.21	0.19			Core missing.		
	28.32	28.46	0.14	0.13			Coal, bright-banded, claystone parting.		
						28.50			
	28.46	28.58	0.12	0.11			Coal bright.		
	28.58	28.70	0.12	0.11			Coal, bright, claystone partings.		
	28.70	28.73	0.03	0.03			Claystone, brown.		
	28.73	28.76	0.03	0.03	5674		Coal bright.		
	28.76	28.88	0.12	0.11			Core missing.		
	28.88	29.25	0.37	0.35			Siltstone, brownish slickensides, few coal stringers.		
	29.25	29.44	0.19	0.18			Coal bright.		
	29.44	29.57	0.13	0.12	5675		Coal bright.		
						29.57			

HOLE No. TDD 80-04 SHEET No: 7 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	29.57	30.06	0.49	0.46	↓		Coal bright, claystone partings.		
	30.06	30.79	0.73	0.69	↑		Core missing.		
						30.78			
	30.79	31.20	0.41	0.39	5676		Claystone, dark grey, thin coal stringers.		
	31.20	31.50	0.30	0.28	↓		Coal, bright, amber nodules.		
					↑		Box 9		
	31.50	32.22	0.72	0.68			Coal, bright, amber nodules.		
	32.22	32.30	0.08	0.08			Coal, bright, amber nodules.		
					5677	32.31			
	32.30	32.74	0.44	0.41			Core missing		
	32.74	33.08	0.34	0.32			Coal, bright, amber nodules, few claystone partings.		
	33.08	33.20	0.12	0.11			Coal, bright-banded, numerous claystone partings.		
	33.20	33.36	0.16	0.15			Claystone, dark grey, few thin coal stringers.		
					5677				
	33.36	33.48	0.12	0.11			Core missing.		
	33.48	33.61	0.13	0.12			Coal, bright-banded.		
	33.61	34.00	0.39	0.37			Coal, bright.		

HOLE No. TDD 80-04 SHEET No: 8 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	34.00	34.10	0.10	0.10	5677		Core missing.		
	34.10	34.14	0.04	0.04			Claystone, dark grey.		
	34.14	34.20	0.06	0.06			Coal, bright.		
						33.83			
	34.20	34.30	0.10	0.10			Claystone, dark grey, few thin coal stringers.		
	34.30	34.39	0.09	0.09			Core missing.		
	34.39	35.03	0.64	0.60			Coal, bright, with dull bands.		
							Box 10		
	35.03	35.14	0.11	0.10		*	Coal, bright, dull-banded, slickensides.		
	35.14	35.72	0.58	0.55			Claystone, dark grey, thin coal stringers, slickensides, carbonaceous.		
	35.72	35.79	0.07	0.07	5678		Core missing.		
	35.79	35.90	0.11	0.10			Claystone, dark grey, thin coal stringers.		
						35.97			
	35.90	36.46	0.56	0.53			Coal, interbedded and carbonaceous claystone.		

HOLE No. TDD 80-04 SHEET No: 9 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	36.46	36.64	0.18	0.17	5678		Claystone, dark grey		
	36.64	37.00	0.36	0.33		36.88	Coal, dull, bright bands.		
	37.00	37.15	0.15	0.14			Claystone.		
	37.15	37.38	0.23	0.22			Claystone.		
	37.38	37.80	0.42	0.39			Claystone, dark grey, slickensides, calcite fracturing		
	37.80	37.97	0.17	0.16			Coal, bright-banded, numerous claystone partings.		
							Box 11		
	37.97	37.99	0.02	0.02			Claystone, dark grey, carbonaceous.		
	37.99	38.04	0.05	0.05			Coal, bright-banded, claystone partings.		
	38.04	38.25	0.21	0.20			Claystone, dark grey, carbonaceous, coal stringers, plant remains.		
	38.25	38.43	0.18	0.17			Coal, bright, amber nodules		
	38.43	38.60	0.17	0.16			Claystone, dark grey, carbonaceous, coal stringers.		
						38.71			
					5679				
	38.60	38.75	0.15	0.14			Claystone, dark grey, carbonaceous, bright coal partings.		

HOLE No. TDD 80-04 SHEET No: 10 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	38.75	38.85	0.10	0.09			Coal, dull-banded, bright partings.		
	38.85	39.09	0.24	0.23			Coal, bright, dull-bands, siderite specks.		
	39.09	39.17	0.08	0.08			Claystone, dark grey, carbonaceous, bright partings		
	39.17	39.24	0.07	0.07	5679		Coal, bright.		
	39.24	39.58	0.34	0.32			Claystone, dark grey, bright partings, slickensides.		
	39.58	39.83	0.25	0.23			Coal, bright.		
	39.83	40.24	0.41	0.39			Coal, bright with calcite filling.		
	40.24	40.28	0.04	0.04			Coal, dull banded with claystone partings.		
	40.28	40.36	0.08	0.08			Claystone, dark grey, with bright coal partings.		
							Box 12		
	40.36	40.98	0.62	0.58			Claystone, dark grey, carbonaceous, numerous bright coal stringers.		
	40.98	41.31	0.33	0.31	5680		Claystone, dark grey, bright coal stringers.		
	41.31	41.73	0.42	0.39		41.45	Coal, bright-banded, claystone laminations.		
							Box 13		
	41.73	41.88	0.15	0.14			Claystone, dark grey, carbonaceous, slickensides, coal partings.		

HOLE No. TDD 80-04 SHEET No: 11 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	41.88	42.12	0.24	0.23	5680		Core missing.		
	42.12	42.17	0.05	0.05			Coal, bright-banded, claystone laminations		
	42.17	42.23	0.05	0.05			Coal, bright-banded		
	42.23	42.68	0.45	0.42	↙		Claystone, dark grey.		
	42.68	43.08	0.40	0.38	5681		Coal, bright-banded, claystone laminations.		
	43.08	43.18	0.10	0.40			Claystone, dark grey, carbonaceous, numerous bright coal stringers.		
	43.18	43.25	0.07	0.07	↙		Coal, bright-banded, amber nodules.		
	43.25	43.48	0.23	0.22			Claystone, grey, bright coal partings.		
	43.48	43.74	0.26	0.25	5682		Claystone, dark grey, numerous sandstone laminations.		
	43.74	43.84	0.10	0.10			Coal, bright-banded, claystone laminations.		
	43.84	44.16	0.32	0.30			Claystone, dark grey, bright coal partings.		
						43.28			
	44.16	44.68	0.54	0.51	↙		Claystone, dark grey, carbonaceous, numerous coal stringers.		
	44.68	45.56	0.88	0.83	5683		Core missing.		

HOLE No. TDD 80-04 SHEET No: 12 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 14		
	45.56	45.92	0.36	0.34			Claystone, with bright coal stringers.		
	45.92	46.03	0.11	0.10			Coal bright		
	46.03	46.20	0.17	0.16			Coal, bright.		
	46.20	46.86	0.66	0.62		46.33	Coal, bright, amber nodules.		
	46.86	47.09	0.23	0.22			Coal, bright, amber nodules.		
	47.09	47.16	0.07	0.07			Coal, bright-banded, sandstone and coal laminations		
	47.16	47.23	0.07	0.07	5683		Coal bright.		
	47.23	47.25	0.02	0.02			Claystone, dark grey, bright partings.		
	47.25	47.31	0.06	0.06			Coal, bright-banded, amber nodules.		
	47.31	47.36	0.05	0.05			Claystone, dark grey, bright coal stringers.		
	47.36	47.43	0.07	0.07			Coal, bright-banded, claystone laminations.		
	47.43	47.57	0.14	0.13			Coal, bright-banded claystone laminations.		
							Box 15		
	47.57	47.83	0.26	0.24			Coal, bright-banded, claystone laminations.		
	47.83	47.90	0.07	0.07			Claystone, dark grey, bright coal stringers.		

HOLE No. TDD 80-04 SHEET No: 13 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY		
	From	To	Thick.	True				m.Rec.	%	
	47.90	47.98	0.08	0.08	5683 ↓ ↑		Coal, bright-banded, amber nodules.			
	47.98	48.08	0.10	0.09			Coal, bright-banded, amber nodules.			
	48.08	48.20	0.12	0.11			Core missing.			
	48.20	48.31	0.11	0.10			Coal, bright-banded, claystone lamination, amber nodules.			
	48.31	48.32	0.01	0.01			Claystone, dark grey.			
	48.32	48.39	0.07	0.07			Coal, bright-banded, claystone lamination.			
	48.39	48.44	0.05	0.05			Coal, bright-banded.			
	48.44	48.77	0.33	0.31			Claystone, dark grey, carbonaceous, bright coal partings.			
	48.77	48.81	0.04	0.04			Claystone, dark grey.			
	48.81	49.16	0.35	0.33			Claystone, dark grey, carbonaceous, bright coal stringers.			
	49.16	49.22	0.06	0.06			Coal, bright.			
	49.22	49.47	0.25	0.23		5684	Claystone, dark grey.			
	49.47	49.50	0.03	0.03				Claystone, dark grey, carbonaceous, bright coal partings.		
	49.50	49.58	0.08	0.08				Coal, bright.		
	49.58	49.80	0.22	0.21			Claystone, dark grey, numerous bright coal stringers.			
	49.80	49.84	0.04	0.04			Coal, bright-banded.			



HOLE No. TDD 80-04 SHEET No: 14 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	49.84	50.17	0.33	0.31			Claystone, dark grey, carbonaceous, numerous bright coal bands.		
	50.17	50.23	0.06	0.06			Coal, bright.		
	50.23	50.29	0.06	0.06			Claystone, dark grey, carbonaceous, numerous bright coal bands.		
	50.29	50.38	0.09	0.09			Coal, bright-banded.		
	50.38	50.50	0.12	0.11	5684		Claystone, dark grey, few coal stringers.		
							Box 16		
	50.50	50.71	0.21	0.20			Claystone, dark grey, numerous bright partings.		
	50.71	50.80	0.09	0.09			Coal, bright-banded.		
	50.80	50.86	0.06	0.06			Claystone, dark grey, numerous bright coal stringers.		
	50.86	50.92	0.06	0.06			Coal, bright-banded.		
	50.92	51.04	0.12	0.11			Claystone, dark grey, coal stringers.		
	51.04	51.07	0.03	0.03			Coal, bright-banded.		
	51.07	51.23	0.16	0.15			Claystone, dark grey, few bright coal stringers.		
	51.23	52.48	0.25	0.23	5684	52.73	Claystone, dark grey, carbonaceous, occasionally bright coal stringers.		

HOLE No. TDD 80-04 SHEET No: 15 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	52.48	52.64	0.16	0.15	5684		Claystone, dark grey, carbonaceous, occasionally bright coal stringers.		
	52.64	52.87	0.23	0.22			Siltstone, brownish-grey.		
	52.87	53.31	0.44	0.41			Claystone, dark grey, carbonaceous, bright coal partings. Box 17		
	53.31	53.96	0.65	0.61			Siltstone, light grey.		
	53.96	54.06	0.10	0.09			Claystone, drak grey, carbonaceous, occasionally bright coal stringers.		
	54.06	54.33	0.27	0.25			Siltstone, light grey.		
	54.33	54.81	0.48	0.45			Claystone, dark grey, occasionally coal stringers.		
	54.81	55.64	0.83	0.78		56.08	Siltstone, same as above.		
	55.64	56.23	0.59	0.55	✓		Claystone, dark grey, carbonaceous, few bright coal stringers.		
	56.23	58.03	1.80	1.69			Core missing. Box 18		
	58.03	59.67	1.64	1.54			Claystone, dark grey, carbonaceous, numerous bright coal stringers, some amber nodules.		

HOLE No. TDD 80-04 SHEET No: 16 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	59.67	60.01	0.34	0.32			Sandstone, light grey, very coarse-grained at bottom, poorly sorted.		
	60.01	60.84	0.83	0.78			Claystone, grey.		
							Box 19		
78°	60.84	62.19	1.35	1.32			Siltstone, light grey.		
	62.19	62.63	0.44	0.43			Conglomerate, volcaniclastic pebbles, mud matrix, pebbles sub-rounded.		
70°	62.63	62.84	0.21	0.20			Siltstone, light grey, carbonaceous stringers.		
							Box 20		
						62.48			
	62.84	63.04	0.20	0.19			Siltstone, light grey, carbonaceous stringers and partings, mud matrix.		
	63.04	64.64	1.60	1.50			Siltstone, with fine sandy phases throughout.		
63°	64.64	65.59	0.95	0.91			Sandstone, light grey, fine-grained, minor plant fragments, well sorted.		
							Box 21		
80°	65.59	65.69	0.10	0.10			Sandstone, same as above.		

HOLE No. TDD 80-04 SHEET No: 17 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	65.69	65.89	0.20	0.19			Siltstone, light grey.		
	65.89	66.13	0.24	0.23			Sandstone, same as above.		
						65.84			
70°	66.13	66.21	0.08	0.08			Sandstone, grey, fine-grained.		
	66.21	66.86	0.65	0.61			Siltstone, grey.		
	66.86	66.95	0.09	0.09			Sandstone, light grey, medium-grained, carbonaceous partings.		
	66.95	68.42	1.47	1.38			Siltstone, grey		
							Box 22		
68°	68.42	68.56	0.14	0.13			Sandstone, very light grey, carbonaceous.		
	68.56	68.66	0.10	0.10			Claystone, grey, carbonaceous.		
	68.66	69.21	0.55	0.52			Sandstone, grey, fine-grained, plant fragments and coaly stringers.		
						69.19			
71°	69.21	70.58	1.37	1.29			Siltstone, grey, coaly plant fragments.		
	70.58	71.29	0.71	0.67			Sandstone, grey, fine-grained, carbonaceous plant fragments.		



HOLE No. TDD 80-04 SHEET No: 19 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	72.96	73.05	0.09	0.09	5667	↑	Coal, dull.		
	73.05	73.22	0.17	0.16			Coal 25% vitrain.		
	73.22	73.32	0.10	0.10			Coal, dull, bright banded.		
	73.22	73.56	0.34	0.32			Coal, dull, bright bands.		
	73.56	73.76	0.20	0.19			Coal, amber nodules, 60% vitrain.		
	73.76	73.93	0.17	0.16	5667	↓	Coal, dull.		
							Box 24		
	73.93	74.28	0.35	0.33	74.68	√	Coal, dull-banded, amber nodules.		
	74.28	74.45	0.17	0.16			Claystone, carbonaceous, coal partings.		
	74.45	74.64	0.19	0.18			Siltstone, grey, coaly stringers.		
	74.64	74.87	0.23	0.22			Claystone, grey, carbonaceous, coaly stringers.		
	74.87	74.90	0.03	0.03			Claystone, same as above.		
70°	74.90	75.24	0.34	0.32			Sandstone, light grey, calcite fractures throughout.		
	75.24	75.61	0.37	0.35			Sandstone, same as above.		

HOLE No. TDD 80-04 SHEET No: 20 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	75.61	76.00	0.39	0.37			Claystone, dark grey, carbonaceous, coaly partings.		
76 <sup>0</sup>	76.00	76.34	0.34	0.32			Sandstone, grey, fine-grained.		
	76.34	76.69	0.35	0.33			Siltstone, grey, sandy phases, plant fragments and rootlets.		
							Box 25		
	76.69	77.75	1.06	1.00			Claystone, grey, carbonaceous, bright coal stringers.		
	77.75	79.25	1.50	1.41		77.72	Sandstone, grey, sandy phases, plant remains.		
							Box 26		
	79.25	80.69	1.44	1.35			Sandstone, greyish white, fine-grained, silty laminae pseudo, parallel laminated, plant remains.		
	80.69	82.11	1.42	1.33			Sandstone, same as above.		
							Box 27		
	82.11	83.89	1.78	1.67			Sandstone, greyish-white, medium-grained, silty laminae		
						84.13			
	83.89	84.81	0.92	0.86			Sandstone, greyish-white, coarse-grained, cross-bedded.		
	84.81	84.98	0.17	0.16			Siltstone, grey, sandy, plant remains, top contact very sharp.		

HOLE No. TDD 80-04 SHEET No: 21 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 28		
	84.98	85.34	0.36	0.34			Siltstone, grey, sandy phases.		
	85.34	85.84	0.50	0.47			Sandstone, greyish-white, fine-grained, slump structures, silty laminae plant remains.		
	85.84	86.00	0.16	0.15			Siltstone, grey, sandy laminae, plant remains.		
	86.00	86.27	0.27	0.25			Sandstone, greyish-white, very fine-grained, silty laminae.		
	86.27	87.23	0.96	0.90			Siltstone, grey, numerous sandstone lenses, plant remains.		
						82.17			
	87.23	88.01	0.78	0.73			Sandstone, greyish-white, very fine-grained, top contact gradual.		
							Box 29		
	88.01	88.65	0.64	0.60			Sandstone, greyish-white, very fine-grained to fine-grained, silty laminae		
	88.65	89.05	0.40	0.38			Siltstone, grey, coal partings.		
	89.05	89.20	0.15	0.14			Claystone, dark grey, carbonaceous, bright coal stringers.		



HOLE No. TDD 80-04 SHEET No: 22 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	89.20	89.30	0.10	0.10			Core missing.		
	89.30	89.69	0.39	0.37	↑ 5668		Coal, bright.		
	89.69	89.86	0.17	0.16			Claystone, dark grey, carbonaceous, bright partings.		
	89.86	90.05	0.19	0.18			Coal, bright, amber nodule, dull-banded.		
	90.05	90.50	0.45	0.42			Coal, bright, amber nodules.		
	90.50	90.70	0.20	0.19		90.22	Coal, bright-banded.		
							Box 30		
	90.70	91.08	0.38	0.35			Coal, bright amber nodules		
	91.08	91.53	0.45	0.42			Claystone, dark grey, numerous bright coal stringers, amber nodules.		
	91.53	92.11	0.58	0.55			Core missing.		
	92.11	92.17	0.06	0.06			Coal, bright, amber nodules.		
	92.17	92.38	0.21	0.20		Coal, bright.			
	92.38	92.68	0.30	0.28		Claystone, dark grey, carbonaceous, numerous coal stringers			

HOLE No. TDD 80-04 SHEET No: 23 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
						92.66			
	92.68	92.92	0.24	0.23	↓		Coal, bright, amber nodules		
							Box 31		
	92.92	93.35	0.43	0.40			Claystone, dark grey.		
	93.35	93.94	0.59	0.55			Greywacke.		
	93.94	94.10	0.16	0.15			Sandstone, greyish-white, very fine-grained, silty laminae		
	94.10	94.92	0.82	0.77			Siltstone, grey, coarsening downwards.		
	94.92	95.35	0.43	0.40			Sandstone, greyish-white, medium-grained.		
						95.71			
	95.35	95.57	0.22	0.20			Sandstone, greyish-white, medium grained.		
							Box 32		
	95.57	96.26	0.69	0.64			Sandstone, white, coarse-grained, grain size up to 3 mm. parallel lamination.		
	96.26	97.85	1.59	1.49			Conglomerate, angular clasts		
	97.85	98.17	0.32	0.30			Siltstone, grey, sandy phases, top and bottom contact sharp.		

HOLE No. TDD 80-04 SHEET No: 24 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	98.17	98.47	0.30	0.28			Sandstone, white, very coarse-grained, slickensides at top, sharp top contact.		
							Box 33		
	98.47	98.58	0.11	0.10		98.76	Sandstone, white, coarse to very coarse grained.		
	98.58	98.78	0.20	0.19			Sandstone, grey, very fine-grained, pseudo-lamination.		
	98.78	99.15	0.37	0.35			Conglomerate, volcanoclastic, sub-angular.		
	99.15	99.30	0.15	0.14			Conglomerate, same as above.		
	99.30	99.49	0.19	0.18			Core missing.		
	99.49	101.26	1.77	1.66			Siltstone, grey, major coaly rootlets and stringers.		
	101.26	101.49	0.23	0.22			Sandstone, light grey, medium-grained, coaly rootlets and stringers, clasts sub-rounded.		
							Box 34		
	101.49	101.88	0.39	0.37		102.11	Sandstone, same as above.		
	101.88	102.76	0.88	0.83			Sandstone, light grey, medium-grained, clasts sub-rounded, coaly rootlets and stringers.		

HOLE No. TDD 80-04 SHEET No: 25 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	102.76	103.26	0.50	0.47			Conglomerate, pebble, volcanoclastic and chert pebbles, carbonaceous partings, poorly sorted.		
	103.26	104.40	1.14	1.07			Sandstone, light grey, coarse-grained, poorly sorted, minor pebbly phases.		
							Box 35		
	104.40	105.00	0.60	0.56			Same as above.		
						105.16			
	105.00	105.35	0.35	0.33			Core missing.		
	105.35	105.41	0.06	0.06			Siltstone, light grey, calcite fractures, minor carbonaceous plant fragments.		
	105.41	105.86	0.45	0.42			Siltstone, same as above.		
	105.86	106.27	0.41	0.39			Sandstone, grey, fine-grained.		
	106.27	107.30	1.03	0.97			Siltstone, grey, coaly partings and carbonaceous rootlets, calcite fractures.		
	107.30	107.66	0.36	0.34			Sandstone, dull grey, coarse-grained, slickensides.		
							Box 36		
	107.66	108.10	0.44	0.41			Same as above.		
						108.59			

HOLE No. TDD 80-04 SHEET No: 26 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	108.10	108.54	0.44	0.41			Siltstone, grey, clayey matrix		
	108.54	109.01	0.47	0.44			Sandstone, grey, coarse-grained, poorly sorted, clasts sub-rounded.		
	109.01	109.75	0.74	0.70			Claystone, light grey, carbonaceous plant fragments throughout.		
							Box 37		
	109.75	111.24	1.49	1.40			Sandstone, grey, coarse-grained, siltstone interbedded, carbonaceous plant fragments.		
						111.86			
	111.24	112.80	1.56	1.47			Sandstone, grey, volcanoclastic, coaly rootlets, major calcite fracturing carbonaceous partings.		
							Box 38		
	112.80	114.02	1.22	1.15			Sandstone, same as above.		
	114.02	114.29	0.27	0.25			Sandstone, same as above.		
						114.91			
	114.29	114.92	0.63	0.59			Siltstone, dark grey, carbonaceous, numerous coaly stringers and partings.		

HOLE No. TDD 80-04 SHEET No: 27 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	114.92	115.40	0.48	0.45			Same as above.		
	115.40	115.63	0.23	0.22			Sandstone, light grey, fine-grained, well sorted, major plant fragments and coaly rootlets, calcite fracturing.  Box 39		
	115.63	116.37	0.74	0.70			Sandstone, light grey, well sorted fine-grained, major plant fragments.		
	116.37	117.35	0.98	0.92			Sandstone, light grey, fine-grained, poorly sorted.		
	117.35	117.52	0.17	0.16			Siltstone, grey, fine laminae.		
						117.96			
	117.52	118.47	0.95	0.89			Sandstone, light grey, coaly partings.  Box 40		
	118.47	121.24	2.77	2.60			Sandstone, same as above.  Box 41		
						121.01			
	121.24	121.99	0.75	0.70			Sandstone, same as above.		

HOLE No. TDD 80-04 SHEET No: 28 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	121.99	122.19	0.20	0.19			Sandstone, light grey, medium-grained, carbonaceous fragments throughout.		
	122.19	122.33	0.14	0.13			Claystone, dark grey, coaly bands throughout (thin)		
	122.33	122.61	0.28	0.26			Sandstone, light grey, medium-grained.		
	122.61	123.00	0.39	0.37			Conglomerate, pebble, volcanoclastic.		
	123.00	123.18	0.18	0.17			Core missing.		
	123.18	123.38	0.20	0.19			Claystone, grey, carbonaceous.		
65°	123.38	123.51	0.13	0.12			Siltstone, grey.		
	123.51	124.19	0.68	0.63		124.05	Siltstone, grey.		
							Box 42		
	124.19	124.72	0.53	0.49			Claystone, grey, carbonaceous plant fragments calcite fracturing.		
						124.97			
	124.72	126.20	1.48	1.39			Siltstone, dark grey, carbonaceous, calcite fracturing, slickensides, coaly fragments throughout.		
	126.20	126.83	0.63	0.59			Sandstone, grey, fine-grained, plant fragments.		

HOLE No. TDD 80-04 SHEET No: 29 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 43		
	126.83	128.96	0.13	0.12		128.02	Sandstone, grey, fine-grained, carbonaceous fragments, calcite fractures.		
							Box 44		
	128.96	129.10	0.14	0.13			Sandstone, grey, fine-grained.		
	129.10	129.71	0.61	0.57			Sandstone, grey, very coarse grained, poorly sorted, gradational top contact, carbonaceous fragments, calcite fractures, coarsening towards base.		
74°	129.71	130.50	0.79	0.74		130.76	Sandstone, grey, fine-grained, poorly sorted, volcanoclastic, carbonaceous partings.		
	130.50	130.94	0.44	0.41			Core missing.		
	130.94	131.11	0.17	0.16			Coal, dull.		
	131.11	132.12	1.01	0.95		132.89	Siltstone, grey, carbonaceous plant fragments.		
							Box 45		
	132.12	134.96	2.84	2.67			Siltstone, dark grey, carbonaceous, sandy phases, up to 1 cm. bright coaly partings.		



HOLE No. TDD 80-04 SHEET No: 30 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 46		
	134.96	136.16	1.20	1.13			Siltstone, dull grey, carbonaceous stringers, plant fragments, slickensides.		
						137.16			
	136.16	137.80	0.64	0.40			Siltstone, same as above.		
							Box 47		
	137.80	140.40	2.60	2.44			Siltstone, same as above.		
	140.40	140.68	0.28	0.26			Conglomerate, volcanoclastic, light grey, minor carbonaceous stringers.		
							Box 48		
	140.68	141.42	0.74	0.70			Conglomerate, same as above.		
	141.42	142.14	0.77	0.72			Conglomerate, same as above.		
						142.50			
	142.19	143.52	1.33	1.24			Conglomerate, same as above.		
							Box 49		
	143.52	145.33	1.81	1.70			Conglomerate, same as above.		
						146.00			
	145.33	145.50	0.17	0.16			Conglomerate, same as above.		

HOLE No. TDD 80-04 SHEET No: 31 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
73°	145.50	146.50	1.00	0.94			Sandstone, light grey, clayey matrix, carbonaceous fragments throughout, volcanic clasts up to 4 mm. interbedded fine sandstone lenses.		
							Box 50		
	146.50	148.70	2.20	2.07			Sandstone, light grey, medium-grained, contains volcanic boulder conglomerate.		
						149.05			
	148.70	149.32	0.62	0.58			Sandstone, dull grey, fine-grained, calcite fracturing.		
							Box 51		
	149.32	150.28	0.96	0.90			Sandstone, grey, fine-grained.		
	150.28	152.15	1.87	1.76			Siltstone, grey, minor carbonaceous partings.		
							Box 52		
75°	152.15	153.61	1.46	1.37			Siltstone, dark grey.		
						154.53			
	153.61	154.73	1.12	1.05			Siltstone, dark grey, minor calcite fracturing.		
	154.73	155.85	1.12	1.05			Core missing.		

HOLE No. TDD 80-04 SHEET No: 32 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 53		
67°	155.85	157.90	2.05	1.92			Siltstone, grey, carbonaceous plant fragments throughout.		
						157.58			
	157.90	158.60	0.70	0.66			Siltstone, grey, same as above.		
							Box 54		
	158.60	160.34	1.74	1.64			Siltstone, light grey, calcite fractures, fine sandstone lenses up to 2 cm. thick		
	160.34	160.84	0.50	0.47			Sandstone, bluish-grey, carbonaceous, amber nodules, thin coal bands.		
						160.63			
	160.84	161.27	0.43	0.40			Siltstone, bluish-grey, calcite fragments, major slickensides.		
							Box 55		
	161.27	161.66	0.39	0.37			Sandstone, light green, clay matrix, poorly sorted.		
	161.66	162.00	0.34	0.32			Siltstone, bluish grey, carbonaceous fragments throughout, clay matrix.		
	162.00	163.86	1.86	1.75			Greywacke, grey with greenish clasts, volcanoclastic, poorly sorted, clay matrix, minor carbonaceous fragments.		
						163.68			

HOLE No. TDD 80-04 SHEET No: 33 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.Rec.	%
	163.86	164.13	0.27	0.25			Conglomerate, pebbly, light green clay matrix, very poorly sorted, clasts, dominantly feldspathic.		
							Box 56		
	164.13	166.87	2.74	2.57			Conglomerate, reddish-brown, poorly sorted, clasts up to 2 cm, sub-rounded.		
						166.73			
	166.87	167.07	0.20	0.19			Conglomerate, same as above.		
							Box 57		
	167.07	169.74	0.67	0.63			Conglomerate, same as above.		
						169.71			
	169.74	159.99	0.25	0.23			Conglomerate, same as above.		
							Box 58		
	169.99	170.39	0.40	0.38			Conglomerate, same as above		
	170.39	172.12	1.73	1.63			Conglomerate, same as above		
						172.21			
	172.12	172.86	0.74	0.70			Conglomerate, same as above.		
							Box 59		
	172.86	173.99	1.13	1.06			Conglomerate, same as above.		
	173.99	174.35	0.36	0.33			Bazalt, dark grey, light green phenocrysts.		

CORE LOG

HOLE No. TDD 80-04 SHEET No: 34 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
	174.35	175.60	1.25	1.17			Basalt, dark grey, olivine rich, greenish casts.		
						175.26			
	175.26	175.37	0.11	0.10			Basalt, same as above.		
							Box 60		
	175.37	175.43	0.06	0.06			Basalt, same as above.		
	175.43	175.92	0.49	0.46			Fault breccia.		
	175.92	176.13	0.21	0.20			Basalt, grey-green, olivine rich, aphanitic.		
	176.13	176.65	0.52	0.49			Basalt, same as above.		
	176.65	176.88	0.23	0.22			Andesite, bluish-grey, calcite fracturing.		
	176.88	176.91	0.03	0.03			Fault breccia.		
	176.91	178.36	1.45	1.36			Basalt, green, olivine rich, calcite fracturing, slickensides.		
							Box 61		
	178.36	178.40	0.04	0.04			Basalt, same as above.		
						178.31			
	178.40	181.22	2.82	2.65			Basalt, same as above.		
	181.22	181.56	0.34	0.32			Basalt, same as above.		

HOLE No. TDD 80-04 SHEET No: 35 of 35

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
							Box 62		
	181.56	181.97	0.41	0.38			Porphyry, olivine.		
	181.97	182.58	0.61	0.57			Fault breccia, clasts of olivine rich andesite, quartz rich matrix, clasts highly angular.		
	182.58	184.02	1.44	1.35			Fault breccia, same as above.		
							Box 63		
	184.02	184.75	2.73	2.56			Andesite, dark grey, olivine rich, aphanitic.		
						184.71			
	184.75	186.85	2.10	1.97			Andesite, same as above.		
							Box 64		
	186.85	187.83	0.98	0.92			Fault breccia, same as above.		
						187.76			
	187.83	189.59	1.76	1.65			Andesite, same as above.		
							Box 65		
	189.59	189.79	0.20	0.19			Andesite, same as above.		
						189.59			
							E. O. H.		

THUNDERCLOUD COAL PROJECT  
DIAMOND DRILL HOLE SUMMARY

DRILL HOLE NO: TDD-80-05

LOCATION:

- (a) Coal Licence: 4554
- (b) N.T.S.:
- (c) U.T.M.: 6461.398 N/392,976 E
- (d) Mine Grid:
- (e) Elevation: 856.362 m

AZIMUTH AND INCLINATION:

- (a) Collar
- (b) Deviation

CORE SIZE: NQ

FORMATIONS DRILLED:

metres  
to  
to  
to  
to  
to  
to

COAL SEAMS INTERSECTED:

TOTAL DEPTH:	Drillers'	141.12 m	Geophysical
CASING:	Drillers'	61.57 m	Geophysical

DATE DRILLED: JUNE 22, 1980 - JUNE 24, 1980

DRILLED BY: DIAMOND 'M' DRILLING

LOGGED BY: K. LADOUCEUR, M. BACK, F. DE NYS

GEOPHYSICAL LOGS: NONE (HOLE CAVING)

ABANDONMENT PROCEDURE: CASING LEFT IN HOLE

COMMENTS:

HOLE No. TDD 80-05 SHEET No: 1 of 15  
 DATE BEGUN: June 22, 1980 DEPTH: \_\_\_\_\_  
 DATE FINISHED: June 24, 1980 ELEV. COLLAR: 856.362  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_

BEARING: \_\_\_\_\_ U.T.M. 6461,398 N/ 392, 976 E  
 TOTAL DEPTH: 141.12 m COAL LICENSE: 4554  
 LOGGED BY: \_\_\_\_\_ CORE SIZE: NQ

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m Rec	%
	0	61.57	61.57	61.57			OVERBURDEN - CASING		
	61.57	73.46	11.89	11.89			OVERBURDEN - fine sandstone, dark grey, compacted, pebble and gravel phases throughout.		
						65.23			
						68.88			
						70.41			
						71.63			
	73.46	73.78	0.32	0.29			Siltstone, light grey, clay matrix, core solid but friable		
						73.46			
	73.78	74.48	0.70	0.62			Sandstone, light grey, fine-grained, clay matrix, carbonaceous phases core solid but friable.		
	74.48	75.13	0.65	0.58			Core missing		
							Box 4		
	75.13	75.40	0.27	0.24			Sandstone: light grey, fine-grained		
	75.40	75.80	0.40	0.36			Sandstone: light grey, fine-grained, pebbles up to 1 cm in diameter suspended throughout, coarsening at base.		
	75.80	76.20	0.40	0.36			Sandstone, light grey, medium to coarse-grained, core broken, clasts sub-rounded, poorly sorted, pebbles to 1 cm in diameter suspended throughout, carbonaceous phases and minor plant fragments.		



HOLE No. TDD 80-05 SHEET No: 2 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	76.20	76.27	0.07	0.06			Siltstone, dull grey, consolidated but core broken		
	76.27	78.03	1.76	1.57			Core missing		
						78.03			
	78.03	78.46	0.43	0.38			Siltstone, dark grey, carbonaceous, coaly rootlets and plant fragments throughout, core friable, clay matrix, occasional band of dull coal up to 1 cm., coaly stringers, minor slickensides		
	78.46	78.51	0.05	0.04			Coal, dull, friable, amber nodules, 10% vitreous core broken		
	78.51	78.69	0.18	0.16			Siltstone, light grey, very poorly sorted, clay matrix, pebbles up to 2 mm. suspended, core solid but friable, carbonaceous phases, coaly fragments, minor calcite fractures.		
	78.69	79.42	0.73	0.65			Volcaniclastic greywacke, grey, very poorly sorted, siltstone to pebble size clasts, clay matrix, carbonaceous fragments, clay blebs, core solid.		
	79.42	80.02	0.60	0.53			Core missing.		
							Box 5		
	80.02	80.47	0.45	0.18			Volcaniclastic greywacke: as at 78.69 meters but coarsening towards base, clasts up to 2 cm suspended.		
						80.47			
	80.47	80.57	0.10	0.04			Core missing		

HOLE No. TDD 80-05 SHEET No: 3 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
63 <sup>o</sup>	80.57	80.67	0.10	0.04			Volcaniclastic greywacke: grey, poorly sorted, clay matrix.		
	80.67	80.81	0.14	0.05			Siltstone, dark grey, carbonaceous, bright coaly partings throughout, core crushed and broken.		
	80.81	80.93	0.12	0.04			Siltstone, grey, clay matrix, very poorly sorted.		
	80.93	81.23	0.30	0.12		✓	Core missing.		
						81.23			
	81.23	81.38	0.15	0.06			Siltstone, as at 80.81 meters, minor slickensides		
	81.38	82.11	0.73	0.29			Siltstone, grey as at 80.81 meters, coarsening to medium sandstone at base, carbonaceous fragments, core solid but friable.		
	82.11	82.40	0.29	0.25			Sandstone, grey, medium-grained, core solid but soft and friable, bedding indistinct, carbonaceous partings and major coaly fragments throughout, clay matrix, minor slickensides.		
	82.40	82.83	0.43	0.38			Sandstone, light grey, coarse-grained, poorly sorted, well cemented, carbonaceous fragments and partings throughout, core solid, coarsening to a very poorly sorted pebble conglomerate with a clay matrix at base.		
	82.83	82.95	2.12	1.89			Core missing		
							Box 6		
	82.95	83.60	0.65	0.56		✕	Pebble conglomerate, light grey, very poorly sorted, clay matrix, clasts sub-angular, core solid but soft and friable, core crushed at 83.25 meters, carbonaceous fragments and rootlets throughout,		

HOLE No. TDD 80-05 SHEET No: 4 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				AMT.	%
							major carbonaceous stringers, bedding indistinct.		
	83.60	83.82	0.22	0.20			Pebble conglomerate, as at 82.95 meters but core broken at base of interval.		
						83.82			
	83.82	84.20	0.38	0.34			Pebble conglomerate, as at 82.95 meters but core broken at base of interval.		
	84.20	84.82	0.62	0.55			Pebble conglomerate, as at 82.95 meters but core broken from 84.40 to 84.60 meters.		
	84.82	85.53	0.71	0.63			Pebble conglomerate, as at 82.95 meters, very clayey matrix		
							Box 7		
	85.53	85.69	0.16	0.14			Core missing		
	85.69	86.87	1.18	1.05			Pebble conglomerate, as at 82.95 meters, core broken at base of interval, core hard and well-cemented, sorting improved.		
						86.87			
	86.87	86.95	0.08	0.07			Siltstone, dull grey, plant fragments, clay matrix, core solid but friable, sandy phases, coaly fragments, pebble clasts suspended throughout, clay blebs, bedding indistinct, coarsening towards base.		
	86.95	87.45	0.50	0.45			Siltstone, dull grey, as at 86.87 meters but no coaly fragments.		
	87.45	87.69	0.24	0.21			Greywacke		

PETRO - CANADA

CORE LOG

HOLE No. TDD 80-05 SHEET No: 5 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	87.69	88.45	0.76	0.68			Sandstone, light green, very-fine grained, biotite, minor iron straining, minor slickensides, clay matrix, core soft and friable major biotite and amphibole clasts, coarse sandstone phases, chlorite infill.		
							Box 8		
	88.45	88.69	0.24	0.09			Volcaniclastic greywacke, light green, very poorly sorted, volcanic clastic pebbles up to 2 mm. suspended throughout, core solid but very soft and friable, clayey and sandy phases, pebbles sub-angular minor slickensides		
	88.69	89.05	0.36	0.32			Claystone, bluish grey, very soft.		
	89.05	89.15	0.10	0.09			Greywacke, as at 88.45 meters.		
	89.15	89.87	0.72	0.64			Greywacke, as at 88.45 meters, light green, biotite, minor slickensides, iron staining, core solid.		
	89.87	90.50	0.63	0.56			Greywacke as at 89.05 meters but fining to become a very poorly sorted siltstone, light green, clay matrix, bedding indistinct, core soft and friable, clay phases, slickensides, biotite, iron staining.		
						90.07			
68°	90.50	90.88	0.38	0.35			Siltstone, as at 89.87 meters, sandy phases		

HOLE No. TDD 80-05 SHEET No: 6 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	90.88	91.19	0.31	0.29			Greywacke, volcaniclastic, as at 88.45 meters, bluish green, core broken at base of interval.		
	91.19	91.24	0.05	0.05			Core missing		
	91.24	91.69	0.45	0.42			Volcaniclastic greywacke, as at 88.45 meters, bluish green pebbly phases, core hard and solid.		
	91.69	91.86	0.17	0.16			Siltstone, as at 89.87 meters, core broken at base.		
	91.86	92.56	0.70	0.65			Volcaniclastic greywacke, as at 88.45 meters, bluish green, pebbly phases throughout.		
	92.56	93.27	0.71	0.66			Siltstone, as at 89.87 meters, clay matrix, pebbly phases, pebbles to 3 mm suspended throughout, light green.		
						93.27			
	93.27	93.89	0.62	0.57			Coarse siltstone, as at 89.87 meters, core solid, bluish green		
							Box 10		
	93.89	94.56	0.67	0.62			Sandstone, green, fine-grained, clay matrix, clay blebs, poorly sorted, coarse phases, core soft and friable, iron staining, biotite throughout, bedding indistinct, well cemented, core broken at top of interval		

HOLE No. TDD 80-05 SHEET No: 7 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	94.56	95.21	0.65	0.60			Sandstone, green, fine-grained, as at 93.89 meters but with occasional pebble clasts suspended throughout, core hard and solid minor slickensides, clayey phases, fining towards base, well-cemented major biotite throughout, bluish, very poorly sorted.		
	95.21	95.90	0.69	0.64			Sandstone, green, fine-grained, as at 93.89 meters but core hard and solid, green, bluish tinge, major biotite and amphibole, well cemented.		
	95.90	96.37	0.47	0.44			Sandstone, green, fine-grained, as at 93.89 meters with major biotite throughout, bright green claystone blebs, bluish.		
	96.37	96.49	0.12	0.11			Sandstone, green, fine-grained, as at 93.89 meters.		
						96.62			
							Box 11		
	96.49	97.11	0.62	0.57			Volcaniclastic greywacke, greenish blue, poorly sorted, biotite and amphibole rich, green clay blebs, core hard, clasts to 2 mm suspended throughout, well-cemented, core crushed and broken at base and at top of interval.		
	97.11	97.83	0.72	0.68			Volcaniclastic greywacke; as at 96.49 meters, core solid, pebbly and sandy phases throughout.		
	97.83	98.53	0.70	0.65			Volcaniclastic greywacke: as at 96.49 meters with pebbles to 8 mm suspended throughout, core hard and solid.		

HOLE No. TDD 80-05 SHEET No: 8 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	98.53	99.25	0.72	0.67			Volcaniclastic greywacke; as at 96.49 meters, core hard and solid		
	99.25	99.48	0.23	0.21			Core missing		
							Box 12		
	99.48	100.13	0.65	0.60			Volcaniclastic greywacke; as at 96.49 meters.		
						99.67			
	100.13	100.82	0.69	0.64			Volcaniclastic greywacke, as at 96.49 meters, minor calcite fracture at 100.48 meters at 17 degrees, core broken at base of interval.		
	100.82	104.38	3.56	3.30			Volcaniclastic greywacke: as at 96.49 meters, core solid		
							Box 13		
						102.72			
64°	104.38	105.08	0.70	0.63			Volcaniclastic greywacke; as at 96.49 meters		
							Box 14		
	105.08	105.25	0.17	0.15			Siltstone, grey, minor slickensides, core solid but friable		
	105.25	105.77	0.52	0.47			Volcaniclastic greywacke; as at 96.49 meters, clay matrix, friable, very poorly sorted.		

HOLE No. TDD 80-05 SHEET No: 9 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

ICA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER
	From	To	Thick.	True				m. Rec.
						105.77		
3°	105.77	106.89	1.12	1.01			Siltstone, light green, clay matrix, core solid but soft and friable bedding indistinct.	
	106.89	107.08	0.19	0.17			Siltstone, dull grey, slickensides, minor carbonaceous fragments core solid but soft and friable	
	107.08	107.27	0.19	0.17			Siltstone, light bluish grey, clay matrix, core solid but soft and friable, bedding indistinct.	
	107.27	108.00	0.73	0.66			Siltstone; as at 107.08 meters but coarsening to fine sandstone at base	
	108.00	108.07	0.07	0.06			Core missing Box 15	
	108.07	108.35	0.28	0.25			Siltstone; as at 107.27 meters	
	108.35	109.12	0.77	0.69			Sandstone, coarse-grained, very poorly sorted, clay matrix, hard, volcanoclastic, core solid, major biotite and amphibole clasts, sub-rounded clasts.	
						108.81		
5°	109.12	109.40	0.28	0.25			Claystone, dull grey with a dark greenish hue, minor carbonaceous stringers, core solid but friable.	





HOLE No. TDD 80-05 SHEET No: 11 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

BCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
						111.86			
	111.96	112.44	0.48	0.43			Siltstone: green as at 111.31 meters but fine, slickensided, very friable, very clayey matrix, chlorite blebs		
65°	112.44	112.84	0.40	0.36			Greywacke, greyish blue, very poorly sorted, very soft and friable clay phases, clasts to 3 mm, clasts sub-angular, biotite and amphibole core solid.		
	112.84	113.73	0.89	0.80			Siltstone, dark green, very fine-grained, slickensides, core solid but soft and friable, minor calcite fractures, minor carbonaceous phases.		
	113.73	114.04	0.31	0.28			Siltstone, very fine-grained as at 112.84 meters but carbonaceous, dark grey, coaly stringers, rootlets and partings		
							Box 17		
	114.04	114.55	0.51	0.46			Siltstone: dark grey, very fine-grained, carbonaceous, as at 113.73 meters, sandy phases, coaly partings, dark grey, bedding indistinct, core broken at base of interval.		
	114.55	114.66	0.11	0.10			Volcaniclastic pebble conglomerate, very poorly sorted, clasts sub-angular, clasts to 3 mm, light green tinge.		
	114.66	115.27	0.61	0.55			Volcaniclastic pebble conglomerate: as at 114.65 meters but core crushed at base of interval.		
						114.91			

OLE No. TDD 80-05 SHEET No: 12 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 AT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.Rec.	%
65°	115.27	116.69	1.42	1.28			Sandstone, light grey medium-grained and minor pebbly intervals, minor carbonaceous fragments.		
							Box 18		
	116.69	116.97	0.28	0.25			Sandstone, light grey, medium-grained, as at 115.27 meters		
	116.97	117.97	0.99	0.89			Volcaniclastic greywacke, light grey, dark greenish tinge, pebbly and sandy phases interbedded throughout, clay matrix, core solid but friable, clasts sub-rounded, clasts to 3 mm, slickensides, at 117.80 there is a slickenside with a BCA of 42 degrees		
						117.96			
	117.96	118.10	0.14	0.13			Volcaniclastic pebble conglomerate, dull green, clay matrix, minor clay blebs, very poorly sorted, clasts to 4 mm, sub-rounded, occ. boulder size clast		
	118.10	118.76	0.66	0.54			Volcaniclastic pebble conglomerate; as at 117.96 meters but core crushed and broken.		
							Box 19		
	118.76	124.54	5.78	5.20			Volcaniclastic pebble conglomerate: as at 117.96 meters, core solid		
						121.01			
							Box 20		
						124.05			

OLE No. TDD 80-05 SHEET No: 13 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 AT: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	-Thick.-	- True -				m. Rec.	%
62°	124.54	125.52	0.98	0.87			Sandstone, green, medium-grained, clay matrix, well-cemented, core hard and solid, bedding indistinct.		
							Box 21		
	125.52	126.24	0.72	0.64			Sandstone: green, medium-grained, as at 124.54 meters, slickensides at 126.90 meters with a BCA of 50° chlorite deposit at 126.85 meters, minor chlorite deposits along fractures throughout.		
	126.95	127.10	0.15	0.13			Sandstone, medium-grained as at 124.54 meters, chlorite fracturing and minor slickensides throughout.		
						127.10			
	127.10	129.11	2.01	1.77			Sandstone: green, medium-grained as at 124.54 meters, at 127.28 is a slickenside with a BCA of 54° major calcite fracturing from 128.88 to 129.03 meters, minor slickensides throughout very clayey matrix.		
							Box 22		
	129.11	129.43	0.32	0.28			Sandstone: green, medium-grained as at 124.54 meters but no minor slickensides.		
	129.43	130.15	0.72	0.64			Core missing		
						130.15			
	130.15	130.47	0.32	0.28			Sandstone: green, medium-grained, as at 124.54 meters, minor slickensides.		
	130.47	131.19	0.72	0.64			Sandstone: green medium-grained as at 124.54 meters, chlorite fracturing and infill throughout, pebbly intervals, coarsening towards base.		

OLE No. TDD 80-05 SHEET No: 14 of 15

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 AT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	131.19	136.95	5.76	5.09			Volcaniclastic pebble conglomerate, green clasts to 5 mm, clasts sub-angular, clay matrix, poorly sorted, core hard and solid, ash band of .06 meters from 132.77 to 132.83 meters with a BCA of 73° on the lower contact		
						133.20			
						136.25			
							Box 23		
							Box 24		
	136.95	137.55	0.60	0.53			Sandstone, grey with greenish hue, fine-grained, very clayey matrix core solid but soft, chloritic infill, slickensides throughout		
	137.55	137.71	0.16	0.14			Sandstone; green, fine-grained as at 136.95 meters but coarsening to medium sandstone towards base.		
	137.71	138.28	0.57	0.50			Volcaniclastic coarse sandstone, chlorite infill, minor slickensides poorly sorted, clay matrix, clasts sub-rounded, biotite, core hard		
	138.28	138.44	0.16	0.14			Sandstone, green, fine-grained, very clayey matrix, chlorite infill minor slickensides, core soft but solid.		
	138.44	139.22	0.78	0.69			Sandstone, green, fine-grained, as at 138.28 meters but with major chlorite infill, major slickensides throughout, chlorite deposits, core soft but solid, biotite, claystone blebs, clasts up to 1 mm coarsening to a medium sandstone at base		
							Box 25		
	139.22	139.29	0.07	0.06			Core missing		
						139.29			



THUNDERCLOUD COAL PROJECT  
DIAMOND DRILL HOLE SUMMARY

DRILL HOLE NO: TDD-80-06

LOCATION:

- (a) Coal Licence: 4552
- (b) N.T.S.:
- (c) U.T.M.: 6457.862/393,490 E
- (d) Mine Grid:
- (e) Elevation: 731.781 m

AZIMUTH AND INCLINATION:

- (a) Collar
- (b) Deviation

CORE SIZE: NQ

FORMATIONS DRILLED:

metres  
to  
to  
to  
to  
to  
to

COAL SEAMS INTERSECTED:

TOTAL DEPTH:	Drillers'	124.05 m	Geophysical
CASING:	Drillers'	4.17 m	Geophysical

DATE DRILLED: JUNE 25, 1980 - JUNE 27, 1980

DRILLED BY: DIAMOND 'M' DRILLING

LOGGED BY: K. LADOUCEUR, M. BACK, F. DE NYS

GEOPHYSICAL LOGS: GRN

ABANDONMENT PROCEDURE: CASING LEFT IN HOLE

COMMENTS:

HOLE No. TDD 80-06 SHEET No: 1 of 23

DATE BEGUN: June 25, 1980 DEPTH: 124.05 m BEARING: \_\_\_\_\_ U.T.M.: 6,457,862/393,490 E

DATE FINISHED: June 27, 1980 ELEV. COLLAR: 731.781 m TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: 4552

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: NO

30A	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERED	
	From	To	Thick.	True				m	fec.
							Box 1		
						3.66			
	3.66	4.17	.51	.48			Overburden		
	4.17	4.88	.71	.67			Core missing		
	4.88	5.18	0.30	.28			Siltstone, grey		
						5.18			
	5.18	6.55	1.37	1.30			Siltstone, grey		
						6.71			
	6.55	6.79	0.24	0.23			Siltstone, grey		
							Box 2		
	6.79	7.50	0.71	0.67			Siltstone, grey, slickensides at base of interval		
	7.50	7.96	0.46	0.43			Siltstone, dull grey, minor carbonaceous fragments		
						8.23			
	7.96	8.06	0.10	0.09			Siltstone, dull grey, carbonaceous partings		
	8.06	8.80	0.74	0.70			Siltstone, dull grey, coaly stringers		
	8.80	9.48	0.68	0.64			Siltstone dull grey, slickensides throughout		



HOLE No. TDD 80-06 SHEET No: 2 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

IC	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				in. fec.	%
							Box 3		
	9.48	9.78	0.30	0.28			Sandstone, grey, fine grained carbonaceous stringers and plant fragments		
	9.78	10.11	0.33	0.31			Siltstone, grey, carbonaceous fragments, slickensides		
	10.11	10.20	0.09	0.08			Sandstone, grey, fine grained		
	10.20	10.42	0.42	0.40			Siltstone, grey		
						11.28			
	10.84	10.86	0.02	0.02			Siltstone, grey, coaly rootlets, slickensides		
	10.86	11.06	0.20	0.19			Siltstone, grey coaly rootlets, minor slickensides		
	11.06	11.57	0.51	0.48			Siltstone, grey, minor calcite and plant fragments		
	11.57	12.31	0.74	0.70			Siltstone, grey, sandy phases, major calcite fractures, slickensides carbonaceous fragments		
							Box 4		
	12.31	12.60	0.29	0.27			Sandstone, grey, fine grained, carbonaceous fragments		
	12.60	12.79	0.19	0.18			Siltstone, grey, carbonaceous stringers, slickensides		
	12.79	13.03	0.24	0.23			Siltstone, grey, carbonaceous stringers, slickensides		

HOLE No. TDD 80-06 SHEET No: 3 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

DEPTH	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.fec.	%
13.03	13.47	0.44	0.42			Siltstone, grey, minor carbonaceous stringers, slickensides			
13.47	13.75	0.28	0.26			Sandstone, grey, fine grained, coaly plant fragments bedding indistinct			
13.75	13.84	0.09	0.09			Siltstone, grey			
					14.33				
13.84	14.07	0.23	0.22			Siltstone, grey			
14.07	14.43	0.36	0.34			Sandstone, grey, fine-grained			
14.43	15.15	0.72	0.68			Sandstone, grey, fine-grained, minor slickensides			
						Box 5			
15.15	15.42	0.27	0.26			Sandstone, grey, fine-grained			
15.42	15.83	0.41	0.39			Siltstone, grey, carbonaceous plant fragments, slickensides,			
						calcite fracturing			
15.83	15.88	0.05	0.05			Siltstone, light grey, calcite fracturing			
15.88	16.07	0.19	0.18			Siltstone, grey			
16.07	16.60	0.53	0.50			Siltstone, light grey, slickensides, calcite fracturing			

HOLE No. TDD 80-06 SHEET No: 4 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

SCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	16.60	16.83	0.23	0.22			Sandstone, grey, fine-grained clay matrix, coaly stringers and frag.		
						17.37			
	16.83	17.00	0.17	0.17			Sandstone, grey, fine-grained		
	17.00	17.22	0.22	0.21			Siltstone, grey, minor calcite fractures, carbonaceous plant fragments		
	17.22	17.43	0.21	0.20			Siltstone, grey, minor calcite fractures, carbonaceous plant fragments		
	17.43	17.55	0.12	0.12			Sandstone, grey, coarse grained, very poorly sorted, minor calcite fractures.		
	17.55	17.75	0.20	0.20			Siltstone, grey, major carbonaceous plant fragments		
	17.75	17.96	0.21	0.20			Sandstone, light grey, medium grained, poorly sorted, clay matrix carbonaceous plant fragments.		
							Box 6		
	17.96	18.50	0.54	0.51			Sandstone, grey, fine-grained, clay matrix, coarsening towards base.		

HOLE No. TDD 80-06 SHEET No: 5 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

LOG	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	18.50	18.66	0.16	0.15			Cobble conglomerate, light grey, very poorly sorted, coarse sand matrix		
							volcanic and siltstone clasts. clasts sub-angular		
	18.66	18.90	0.24	0.23			Cobble conglomerate, light grey, same as above		
	18.90	19.64	0.74	0.70			Core loss		
	19.64	19.97	0.33	0.31			Sandstone, grey, coarse-grained, siltstone interbedded, clay matrix, poorly sorted		
	19.97	20.11	0.14	0.13			Siltstone, grey, coaly fragments		
	20.11	20.54	0.48	0.45			Siltstone, grey, major slickensides		
						20.42			
	20.59	20.75	0.16	0.15			Siltstone, grey, slickensides throughout		
	20.75	21.43	0.68	0.64			Siltstone, grey, minor coaly and carbonaceous partings, slickensides throughout.		
							Box 7		
	21.43	21.56	0.13	0.12			Siltstone, same as above		
	21.56	22.00	0.44	0.42			Sandstone, grey, fine-grained, bedding indistinct.		

HOLE No. TDD 80-06 SHEET No: 6 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

SCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	22.00	22.13	0.13	0.12			Siltstone, grey, minor coaly and carbonaceous fragments		
	22.13	22.82	0.69	0.65			Sandstone, grey, fine-grained, clay matrix, clasts up to 2 mm in diameter		
	22.82	22.87	0.05	0.05			Siltstone, grey, minor coaly and carbonaceous fragments		
	22.87	23.47	0.60	0.57			Siltstone, grey coaly fragments throughout		
						23.47			
							Box 8		
	23.47	24.18	0.71	0.67			Siltstone, grey, coaly fragments, carbonaceous bands up to 2 cm, slickensides, sands lesser towards base.		
	24.18	24.83	0.65	0.61			Siltstone, same as above		
	24.83	25.13	0.30	0.28			Siltstone, same as above		
	25.13	25.23	0.10	0.09			Sandstone, light grey, gradational top contact		
	25.23	25.43	0.20	0.19			Siltstone, same as above		
	25.43	25.48	0.05	0.05			Sandstone, grey coarse-grained		

HOLE No. TDD 80-06 SHEET No: 7 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

HOLE NO.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				in. Rec.	%
	25.48	25.93	0.45	0.43			Sandstone, grey, coarse-grained, cross-bedded, very clayey matrix		
							poorly sorted; clasts up to 2 cm. in diameter		
	25.93	26.13	0.20	0.19			Siltstone, grey		
	26.13	26.31	0.18	0.17			Siltstone, same as above		
	26.31	26.39	0.08	0.08			Sandstone, light grey, coarse-grained		
						26.52			
	26.39	26.44	0.05	0.05			Sandstone, light grey, coarse-grained		
	26.44	26.58	0.14	0.14			Siltstone, grey, clay phase, slickensides		
	26.58	26.77	0.19	0.19			Volcaniclastic graywacke, dull grey, very poorly sorted, clay matrix		
							clasts up to 1 cm in diameter, clasts well-rounded.		
							Box 9		
	26.77	27.47	0.70	0.66			Volcaniclastic greywacke, same as above		
	27.47	27.75	0.28	0.26			Volcaniclastic greywacke, same as above		







HOLE No. TDD 80-06 SHEET No: 10 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

ICN	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
	33.59	33.95	0.36	0.34			Sandstone, grey, coarse-grained, pebbly intervals, very poorly sorted		
	33.95	34.39	0.44	0.42			Siltstone, grey, carbonaceous fragments throughout, clay matrix, carbonaceous stringers, clay matrix		
	34.39	34.60	0.21	0.20			Sandstone, light grey, coarse-grained, volcanoclastic, pebbles up to 3 mm in diameter		
	34.60	34.65	0.05	0.05			Siltstone, grey		
	34.65	34.84	0.19	0.19			Sandstone, light grey, coarse-grained		
	34.84	35.26	0.42	0.40			Siltstone, grey		
	35.26	35.38	0.12	0.12			Greywacke, dull grey, volcanoclastic		
	35.38	35.53	0.15	0.15					
						35.66			
	35.53	37.31	1.78	1.68			Greywacke, dull grey, volcanoclastic		
	37.31	37.46	0.15	0.15			Siltstone, grey coaly bands up to 1 cm, slickensides		
	37.46	38.13	0.67	0.63			Siltstone, grey, coaly partings and stringers, minor slickensides, minor calcite fracturing		

HOLE No. TDD 80-06 SHEET No: 11 of 23  
 DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

IC#	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
							Box 13		
	38.13	38.34	0.21	0.20			Siltstone, grey, coaly partings and stringers, minor slickensides		
	38.34	38.42	0.08	0.08			Claystone, dark grey, carbonaceous, bright coaly bands, slickensides throughout		
	38.42	38.49	0.07	0.07			Coal dull, 10% vitreous, calcite fractures		
						38.71			
	38.49	38.68	0.29	0.27			Claystone, very carbonaceous, coaly bands and partings, amber nodules		
	38.68	38.86	0.18	0.18			siltstone, dark grey, carbonaceous, coaly bands and partings throughout amber nodules, slickensides, fusain partings		
	38.86	39.04	0.18	0.18			Claystone, grey, coaly stringers and partings, slickensides, minor carbonaceous stringers and partings, plant rootlets and partings		
	39.04	40.38	1.34	1.27			Siltstone, dark grey, coal bands and partings up to 5 mm		

HOLE No. TDD 80-06 SHEET No: 12 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

ICA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m. Rec.	%
							Box 14		
	40.38	41.07	0.69	0.65			Siltstone, dark grey, very carbonaceous, numerous coaly bands and partings		
						41.76			
	41.07	41.61	0.54	0.51			Claystone, dark grey, bright coaly partings and stringers, carbonaceous slickensides, carbonaceous plant fragments throughout		
	41.61	42.85	1.24	1.17			Siltstone, grey carbonaceous plant fragments, amber nodules.		
	42.85	43.10	0.25	0.24			Sandstone, grey, coarse-grained, very clayey matrix, volcaniclastic material, calcite fractures		
	43.10	44.03	0.93	0.88			Core loss		
	44.03	44.09	0.06	0.05			Siltstone, grey, carbonaceous, coaly plant fragments		
							Box 15		
	44.09	46.82	2.73	2.58		44.81	Siltstone, grey, dull, greenish ring, carbonaceous stringers and partings calcite fractures, slickensides		

HOLE No. TDD 80-06 SHEET No: 13 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

DCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m	Rec.
							Box 16		
	46.82	47.85	1.03	0.97			Greywacke, dull green, volcanoclastic, clasts up to 2 mm in diameter		
						47.85			
	47.85	48.49	0.64	0.61			Core loss		
	48.49	49.39	0.90	0.85			Greywacke, dull green, volcanoclastic, sandy and pebbly phases		
	49.39	50.33	0.94	0.89			Siltstone, dull green slickensides and calcite fractures		
							Box 17		
	50.33	51.19	0.86	0.81			Siltstone, dull green minor carbonaceous fragments		
						50.90			
	51.19	51.27	0.08	0.08			Siltstone, dull green minor carbonaceous fragments		
	51.27	51.55	0.28	0.26			Sandstone, green medium-grained, very poorly sorted, clay matrix		
	51.55	51.68	0.13	0.13			Siltstone, dull green minor carbonaceous fragments		
	51.68	51.83	0.15	0.15			Sandstone, greenish-grey, coarse-grained, coarsening towards base.		

HOLE No. TDD 80-06 SHEET No: 14 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

DEPTH	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY	
	From	To	Thick.	True				m.fec.	%
51.83	52.28	0.45	0.43			Siltstone, grey, carbonaceous plant fragments and partings throughout			
52.28	52.40	0.12	0.12			Sandstone, grey, fine-grained			
52.40	53.02	0.62	0.59			Siltstone, grey, carbonaceous plant fragments and partings			
						Box 18			
53.02	54.16	1.14	1.08			Sandstone, grey, carbonaceous plant fragments and partings			
					53.95				
54.16	54.53	0.37	0.35			Sandstone, grey, fine-grained			
54.53	54.99	0.46	0.43			Siltstone, grey, carbonaceous fragments, calcite fracturing			
54.99	55.71	0.72	0.68			Sandstone, bluish-grey, fine-grained, very poorly sorted			
55.71	57.13	1.42	1.32			Siltstone, grey, minor carbonaceous fragments, sandy phases, calcite fracturing			
					57.00				

HOLE No. TDD 80-06 SHEET No: 15 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

3CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
	57.13	57.40	0.27	0.26			Siltstone, grey, same as above		
	57.40	58.23	0.83	0.78			Sandstone, grey, fine-grained, carbonaceous phases, calcite fracturing slickensides		
							Box 20		
	58.23	58.43	0.20	0.19			Sandstone, grey, fine-grained		
	58.43	60.12	1.69	1.60			Greywacke, dull grey, volcanoclastic, very poorly sorted, calcite fractures clasts up to 3 cm in diameter		
						60.05			
	60.12	60.71	0.59	0.56			Siltstone, dull green, calcite fractures, slickensides		
	60.71	61.11	0.40	0.38			Sandstone, dull green, fine-grained, calcite fractures, silty phases poorly sorted		
						63.09			
	62.98	63.95	0.97	0.92			Sandstone, dull green, fine-grained, clay matrix		

HOLE No. TDD 80-06 SHEET No: 16 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

HOLE	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m	fec.
							Box 22		
	63.95	66.10	2.15	2.03			Sandstone, dull green, fine-grained, clay matrix		
						66.14			
	66.10	66.78	0.68	0.64			Sandstone, green, medium-grained, poorly sorted, pebbly and silty phases up to 6 cm		
							Box 23		
	66.78	67.25	0.47	0.44			Sandstone, green, medium-grained, coarse sandy phases throughout, slickensides, gradational bottom contact		
	67.25	67.53	0.28	0.26			Claystone, dark grey, carbonaceous, carbonaceous plant fragments and partings		
	67.53	69.21	1.68	1.59			Greywacke, grey, volcanoclastic, poorly sorted, clayey phases throughout		
						69.19			
	69.21	69.66	0.45	0.43			Greywacke, grey, volcanoclastic, poorly sorted, clayey phases throughout		

HOLE No. TDD 80-06 SHEET No: 17 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

3CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m	Rec.
							Box 24		
70°	69.66	71.90	2.24	2.12			Greywacke, same as above		
	71.90	72.26	0.36	0.34			Siltstone, green, carbonaceous plant fragments, slickensides		
						72.24			
	72.26	72.56	0.30	0.28			Siltstone, green, clayey phase.		
							Box 25		
	72.56	72.62	0.06	0.06			Siltstone, green, clayey phase.		
	72.62	73.27	0.65	0.61			Claystone, dark grey, coaly bands and partings, calcite fracturing, slickensides		
	73.27	75.30	2.03	1.92			Greywacke, grey, volcanoclastic, very poorly sorted, carbonaceous stringers and fragments.		
						75.29			
	75.30	75.36	0.06	0.06			Greywacke, grey, same as above		
							Box 26		
	75.36	78.25	2.89	2.73			Greywacke, grey, volcanoclastic, same as above		



HOLE No. TDD 80-06 SHEET No: 18 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

3CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	fec.
							Box 27		
	78.25	78.38	0.13	0.13			Greywacke, same as above		
						78.33			
	78.38	81.10	2.72	2.57			Greywacke, same as above		
							Box 28		
	81.10	81.32	0.22	0.21			Greywacke, same as above		
						81.38			
							Box 29		
	81.32	84.35	3.03	2.86			Greywacke, same as above		
						84.43			
	84.35	86.63	2.28	2.16			Greywacke, same as above		
							Box 30		
	86.63	87.38	0.75	0.71			Greywacke, same as above		
						87.48			
	87.38	89.32	1.94	1.83			Greywacke, same as above		
							Box 31		
	89.32	90.44	1.12	1.06			Greywacke, same as above		
						90.53			

HOLE No. TDD 80-06 SHEET No: 19 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

LOCAL	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
	90.44	90.90	0.46	0.43			Greywacke, same as above		
	90.90	91.45	0.55	0.52			Feldspar porphory, greyish blue andesitic groundmass weathered top contact		
	91.45	92.08	0.63	0.60			Greywacke, greyish, calcite fracture, sub-angular		
							Box 32		
	92.08	92.34	0.26	0.25			Greywacke, same as above		
	92.34	93.30	0.96	0.91			Andesite, greyish-blue, minor calcite fractures		
	93.30	93.48	0.18	0.17			Greywacke, same as above		
						93.57			
	93.48	94.66	1.18	1.12			Greywacke, same as above		
	94.66	94.72	0.06	0.06			Feldspar porphory		
							Box 33		
	94.72	95.71	0.99	0.94			Feldspar porphory		
	95.71	96.14	0.43	0.41			Greywacke, green, volcanoclastic, calcite fracturing and chlorite		
	96.14	96.41	0.27	0.26			Greywacke, same as above		
						96.66			
	96.41	96.77	0.36	0.34			Greywacke, same as above, slickensides		

HOLE No. TDD 80-06 SHEET No: 20 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

3CA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m	fec.
	96.72	97.45	0.68	0.64			Greywacke, volcaniclastic, same as above		
							Box 34		
	97.45	99.43	1.98	1.87			Greywacke, bluish-grey, volcaniclastic, pebbles and cobbles suspended throughout		
						99.67			
	99.43	100.08	0.65	0.61			Greywacke, same as above		
	100.08	100.79	0.71	0.67			Greywacke, same as above		
	100.74	102.49	1.70	1.60			Sandstone, bluish grey, very fine-grained, minor slickensides throughout		
						102.72			
76°	102.49	102.74	0.25	0.24			Sandstone, same as above		
							Box 36		
	102.74	105.51	2.77	2.62			Sandstone same as above		
						105.77			

HOLE No. TDD 80-06 SHEET No: 21 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_

DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_

LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

DCA	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m	Rec.
							Box 37		
	105.51	106.08	0.57	0.54			Sandstone, grey, fine-grained		
	106.08	106.81	0.73	0.69			Greywacke, grey volcanoclastic		
	106.81	107.32	0.51	0.48			Core loss		
	107.32	107.45	0.13	0.12			Claystone, grey, slickensides		
	107.45	108.69	1.24	1.17			Claystone, same as above		
							Box 38		
	108.69	108.81	0.12	0.11			Claystone, same as above		
						108.81			
	108.81	111.16	2.35	2.22			Greywacke, green, volcanoclastic, very poorly sorted, angular clasts		
							Box 39		
	111.16	112.07	0.91	0.86			Greywacke, dull grey, same as above		
	112.07	113.00	0.93	0.88			Claystone, dark grey, calcite fractures, slickensides		
	113.00	114.01	1.01	0.95			Greywacke, same as above		

HOLE No. TDD 80-06 SHEET No: 22 of 23

DATE BEGUN: \_\_\_\_\_ DEPTH: \_\_\_\_\_ BEARING: \_\_\_\_\_ U.T.M.: \_\_\_\_\_  
 DATE FINISHED: \_\_\_\_\_ ELEV. COLLAR: \_\_\_\_\_ TOTAL DEPTH: \_\_\_\_\_ COAL LICENSE: \_\_\_\_\_  
 LAT.: \_\_\_\_\_ HOLE ANGLE: \_\_\_\_\_ LOGGED BY: \_\_\_\_\_ CORE SIZE: \_\_\_\_\_

B.C.A.	UNIT		UNIT THICKNESS		SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER	
	From	To	Thick.	True				m.	Rec.
							Box 40		
	114.01	114.23	0.22	0.21			Greywacke, same as above		
						114.30			
	114.23	116.00	1.77	1.67			Greywacke, same as above		
	116.00	116.65	0.65	0.61			Claystone, dull green		
	116.65	116.75	0.10	0.10			Greywacke, same as above		
							Box 41		
	116.75	117.00	0.25	0.24			Greywacke, green, volcanoclastic		
						117.04			
	117.00	119.57	2.57	2.43			Greywacke, grey volcanoclastic		
							Box 42		
	119.57	122.40	2.83	2.68			Greywacke, grey, volcanoclastic		
							Box 43		
	122.40	122.53	0.13	0.13			Greywacke, grey, volcanoclastic		
	122.53	122.88	0.35	0.32			Claystone, dull green, pebbles suspended		
						122.83			



# ROKE

## SIDEWALL DENSITOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA  
 ELECTRIC ENTERPRISES LTD. (OPERATING DEPT.)

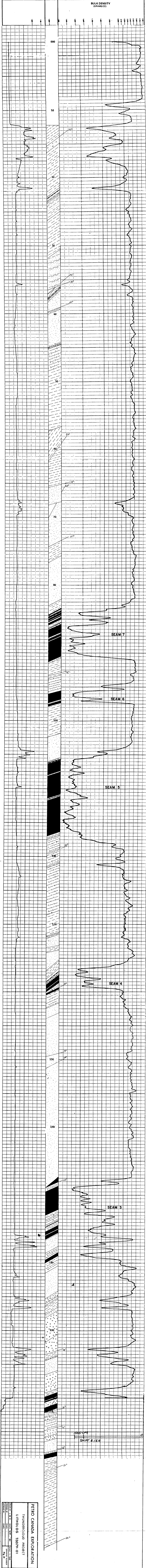
FILE NO. \_\_\_\_\_  
 COMPANY. \_\_\_\_\_  
 WELL. TDD 79 - 01  
 LOCATION. THUNDERCLOUD PROJECT  
 AGE. \_\_\_\_\_  
 W. \_\_\_\_\_  
 FIELD. TIVA SEVERE  
 PROVINCE. BRITISH COLUMBIA  
 COUNTY. \_\_\_\_\_  
 TOWN OR DISTRICT. \_\_\_\_\_  
 LOCALITY. \_\_\_\_\_  
 PROJECT. \_\_\_\_\_  
 OPERATOR. \_\_\_\_\_  
 GEN. MGR. \_\_\_\_\_  
 K.E. \_\_\_\_\_  
 OPER. MGR. \_\_\_\_\_  
 LOG. MGR. \_\_\_\_\_  
 LOG. CHECKED BY. \_\_\_\_\_  
 LOG. CHECKED DATE. \_\_\_\_\_  
 LOG. CHECKED TIME. \_\_\_\_\_  
 LOG. CHECKED BY. \_\_\_\_\_

**243**

Run No. 23  
 Date 2002.11  
 Log No. 0  
 Log Date 2002.11  
 Log Time 2002.4  
 Log Depth 224.6  
 Log Depth Unit METERS  
 Log Depth Unit FEET  
 Log Depth Unit METERS  
 Log Depth Unit FEET

GENERAL	GAMMA RAY	SIDEWALL DENSITOG
RUN NO. 1	T.C. 3	T.C. 3
DEPTHS FROM TO 0 202	SENS SETTINGS 4	SENS SETTINGS 1000
SPEED N/MIN 4	ZERO DIV. L OR R	ZERO DIV. L OR R 2.15
API PER LOG DIV.	API G.R. UNITS PER LOG DIV.	API G.R. UNITS PER LOG DIV. 62.5

REMARKS: DENS TOOL # 128  
 CAL TOOL # 758



PETRO CANADA EXPLORATION  
 THUNDERCLOUD PROJECT  
 LITHOLOG 1DD79-01  
 DRAWING NUMBER  
 DRAWN BY: J.W.K. DATE: 10/27/00 SCALE: 1:100  
 APPROVED BY: [Signature] DATE: [Date]



# ROKE

SIDEMALL DENSLOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

COMPANY: POLYVIC PETROLEUMS LTD. (PETRO DEPT)

WELL: TDB - 79 - 03

LOCATION: THUNDERCLOUD PROJECT

FIELD: TIVA AYLES

PROVINCE: BRITISH COLUMBIA

TOF OF CASING: 144

TOF OF CASING: ABOVE FROM DRAIN

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

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TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

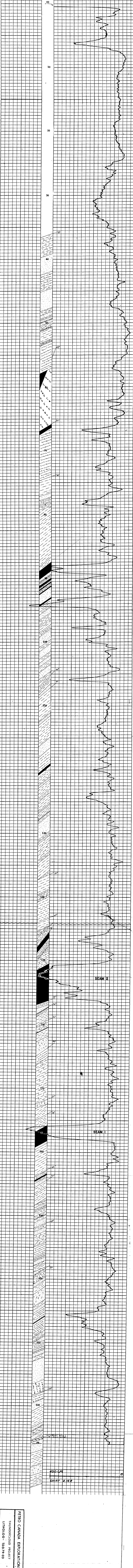
TOF OF CASING: 0 L. METRIC

TOF OF CASING: 0 L. METRIC

243

RUN NO	GENERAL		SPEED M/MIN	T.C. SEC	GAMMA RAY		API G.R. UNITS PER LOG DIV.	SIDEMALL DENSLOG		CPS DIV	
	FROM	TO			BENS SETTINGS	ZERO DIV. L OR R		T.C. SEC	BENS SETTINGS		ZERO DIV. L OR R
1	0	226	4					3	500	2.15 R	27.5

REMARKS: DENS TOOL # 128  
NOTE: POSITION OF RODS IN THE DRILL HOLE MUST BE TAKEN INTO CONSIDERATION WHEN USING THE DENSITY SCALE



RECORDED BY: JMK. DATE: SEPT. 80. SCALE: 1:100.  
DRAWING NUMBER: 1000  
APPROVED BY: [Signature]



# ROKE

OIL ENTERPRISES LTD. CALGARY ALBERTA

GAMMA RAY NEUTRON LOG

75- Thunderhead 10 (211) \* (1)

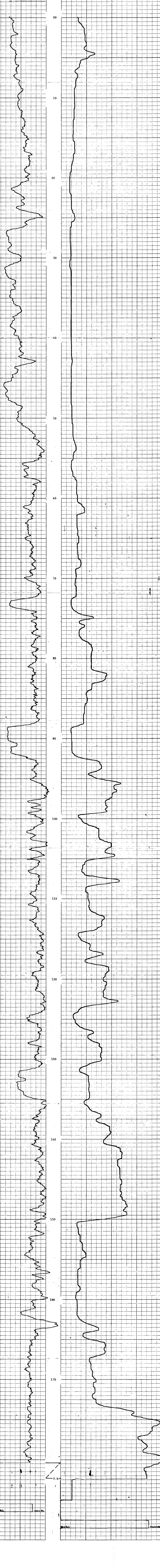
**243**

FILE NO.	COMPANY	PETRO-CANADA LTD. CANINE-31-B-211-1
LOG SEC	WELL	T. B. D. - 80-04
DATE	LOCATION	THUNDERHEAD 10 (211) * (1)
WELL NO.	FIELD	THUNDERHEAD
PROVINCE	ALBERTA	
NEUTRON	LOG TYPE	ONE
DETECTOR MODEL NO.	TOOL MODEL NO.	007
DIAMETER		3.175 CM
TYPE		SCINTILLATION
LENGTH		10.16 CM
DISTANCE TO N. SOURCE		2 M
GENERAL		
HOIST TRUCK NO.		FU2
INSTRUMENT TRUCK NO.		FU2
TOOL SERIAL NO.		R-CRN 125A007

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	007	LOG TYPE	NEUTRON/NEUTRON
DETECTOR MODEL NO.		TOOL MODEL NO.	007
TYPE	SCINTILLATION	DIAMETER	3.175 CM
LENGTH	10.16 CM	DETECTOR MODEL NO.	
DISTANCE TO N. SOURCE	2 M	TYPE	PROPORTIONAL
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	FU2	SERIAL NO.	187
INSTRUMENT TRUCK NO.	FU2	SPACING	43.18 CM
TOOL SERIAL NO.	R-CRN 125A007	TYPE	AmBe
		STRENGTH	3 CURIES

GENERAL		GAMMA RAY		NEUTRON	
RUN NO.	ONE	T.C. SEC.	3	T.C. SEC.	3
DEPTH	0	SENS. SETTINGS	500	SENS. SETTINGS	1000
SPEED	182.5 M	ZERO DIV. L OR R	0	ZERO DIV. L OR R	0L
API	116	API G. R. UNITS PER LOG DIV.	16	API N. UNITS PER LOG DIV.	60

REMARKS LOGGED THROUGH DRILL RODS CASING FELL TO 21 M





# ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

## SIDEWALL DENSITOG

FILE NO. \_\_\_\_\_  
 COMPANY: PETRO-CANADA LTD. (MINING DEPARTMENT)  
 WELL: T.D.D. -80-04  
 FIELD: THUNDERCLOUD PROJECT  
 LOCATION: TIVA RIVER

243

PROVINCE: BRITISH COLUMBIA  
 PROJECT: GEORGE LEVET  
 WELL DEPTH MEASURED FROM: GEORGE LEVET  
 OTHER SERVICES: GRI

Run No. \_\_\_\_\_  
 Date: 21 JUNE 1980  
 Exit Reading: 185 M  
 Floor Log: 0  
 Depth Read: 185.2  
 Depth Dialer: 188

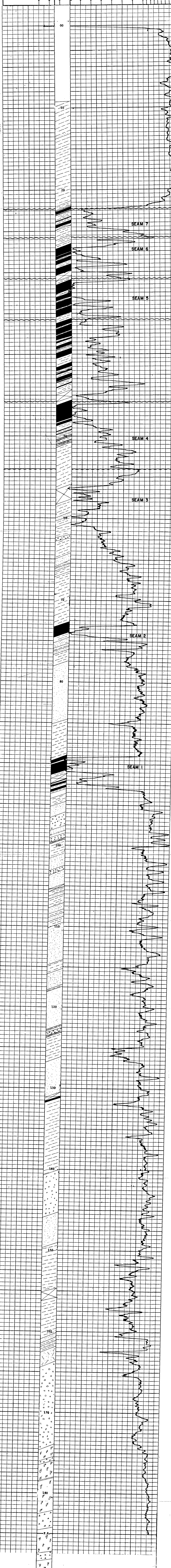
Casing Diameter: 9.1 M  
 Fluid Type: GEL/WATER  
 Liquid Level: 0  
 Min. Depth: NI

Operating Time: 2 HOURS  
 Trench No: 712

Recorded By: RANYS  
 Witnessed By: DE NYS

GENERAL			GAMMA RAY			SIDEWALL DENSITOG				
RUN NO.	DEPTHS FROM TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPM/DIV
ONE	0 185	8					2	5000	2.52R	149.25

REMARKS: LOGGED THROUGH NO DRILL BODS  
 CASING FELL TO 21 M  
 DENS LOG RECORDED 0.5 METER LOW  
 DENS TOOL #553AS



PETRO CANADA EXPLORATION  
 THUNDERCLOUD PROJECT  
 LITHOLOG - 1D880-04

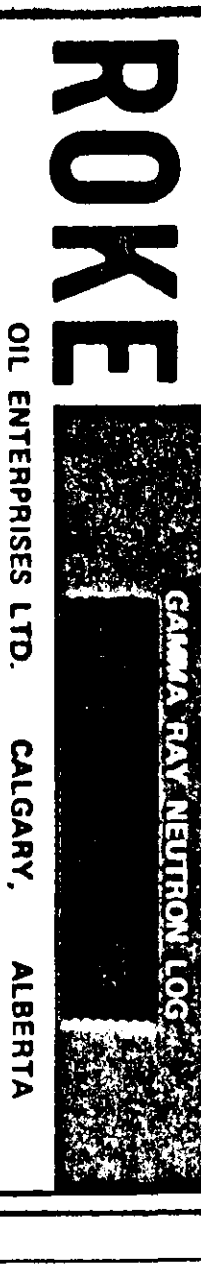
FORMED BY: J.W.K. DATE: 1980  
 DRAWN BY: I.M.T. DATE: 1980  
 LITHOLOG BY: I.M.T. DATE: 1980

SCALE: 1:100  
 DRAWN TO: 100%  
 FIG. 8



T.V. Thundercloud - Ro (2x10) \*10

GAMMA RAY NEUTRON LOG



OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. COMPANY PETRO-CANADA LTD. (MINING DEPT.)  
 WELL T.D.D. - 80-06  
 LOCATION THUNDERCLOUD PROJECT  
 FIELD TIVA RIVER  
 PROVINCE BRITISH COLUMBIA  
 LOG MEASURED FROM GROUND LEVEL  
 LOG DEPTH MEASURED FROM GROUND LEVEL  
 DATE 27 JUNE 1980  
 RUN NO. ONE  
 FINAL READING 112 M  
 FOOTAGE LOGGED 112  
 DEPTH REACHED 112.4  
 CANYON DRILLER  
 CANYON ROPE  
 CANYON DRILLER  
 FLUID TYPE GEL/WATER  
 LIQUID LEVEL 1.0  
 MIN. DAM M.O.  
 OPERATING TIME 1.5 HOURS  
 TRUCK NO. F12

243

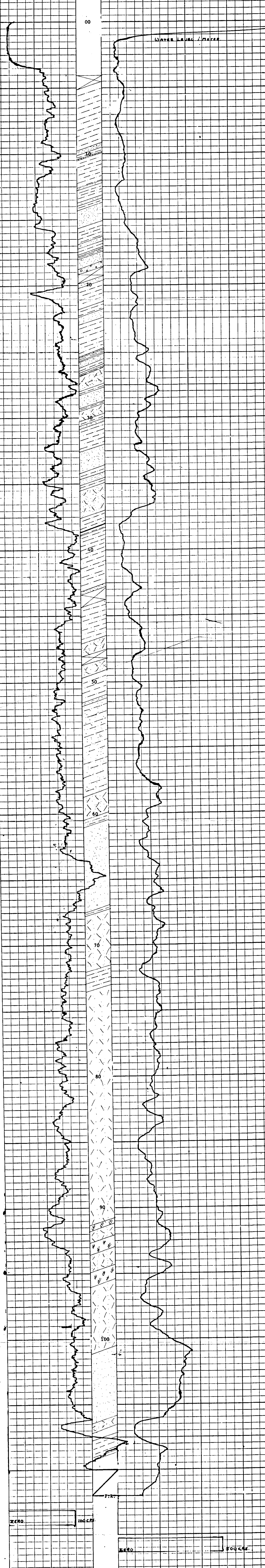
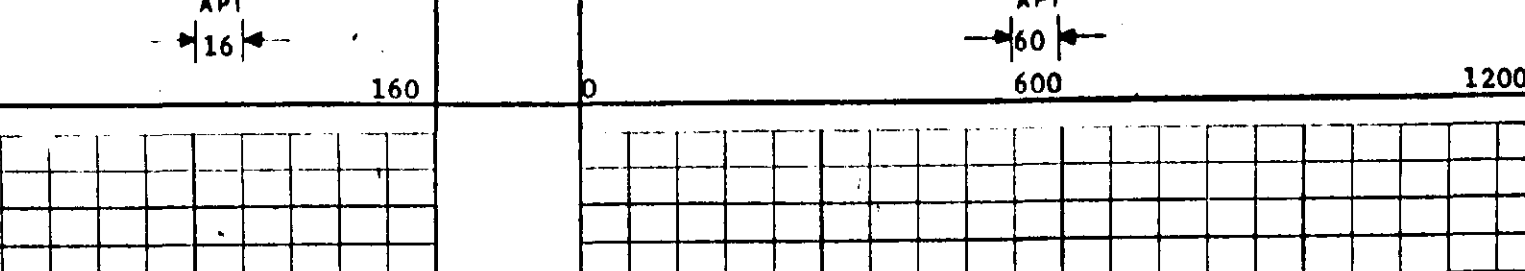
PROVINCE BRITISH COLUMBIA  
 LOG MEASURED FROM GROUND LEVEL  
 LOG DEPTH MEASURED FROM GROUND LEVEL  
 DATE 27 JUNE 1980  
 RUN NO. ONE  
 FINAL READING 112 M  
 FOOTAGE LOGGED 112  
 DEPTH REACHED 112.4  
 CANYON DRILLER  
 CANYON ROPE  
 CANYON DRILLER  
 FLUID TYPE GEL/WATER  
 LIQUID LEVEL 1.0  
 MIN. DAM M.O.  
 OPERATING TIME 1.5 HOURS  
 TRUCK NO. F12

PROVINCE BRITISH COLUMBIA  
 LOG MEASURED FROM GROUND LEVEL  
 LOG DEPTH MEASURED FROM GROUND LEVEL  
 DATE 27 JUNE 1980  
 RUN NO. ONE  
 FINAL READING 112 M  
 FOOTAGE LOGGED 112  
 DEPTH REACHED 112.4  
 CANYON DRILLER  
 CANYON ROPE  
 CANYON DRILLER  
 FLUID TYPE GEL/WATER  
 LIQUID LEVEL 1.0  
 MIN. DAM M.O.  
 OPERATING TIME 1.5 HOURS  
 TRUCK NO. F12

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	007	TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3.175 CM	DIAMETER	3.175 CM
DETECTOR MODEL NO.	SCINTILLATION	DETECTOR MODEL NO.	PROPORTIONAL
TYPE	10.16 CM	TYPE	15.24 CM
LENGTH	2 M	LENGTH	MHC-NSS W
DISTANCE TO N SOURCE		SOURCE MODEL NO.	187
HOIST TRUCK NO.	131	SERIAL NO.	43.18 CM
INSTRUMENT TRUCK NO.	F12	SPACING	AmBe
TOOL SERIAL NO.	R-GRN 125A007	TYPE	3 CURTIS
		STRENGTH	

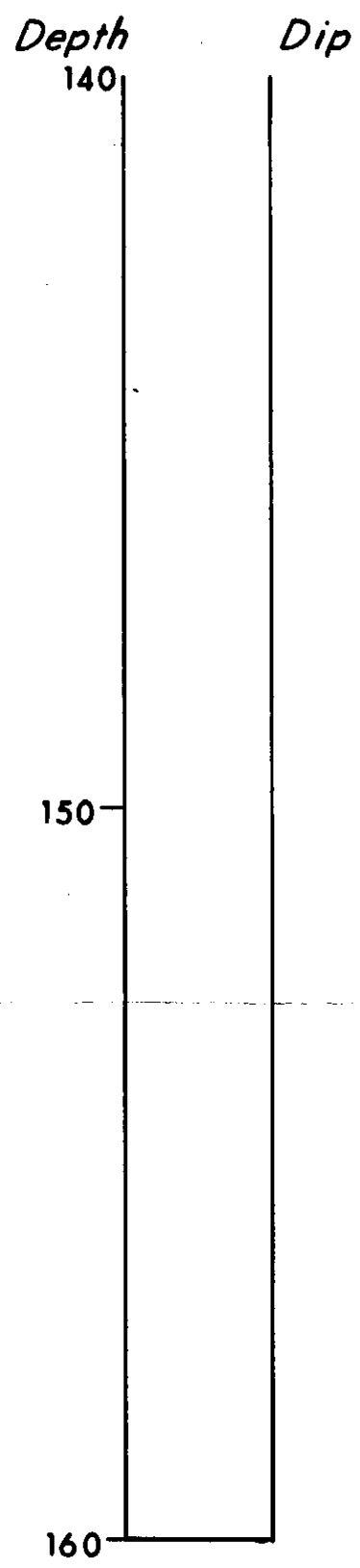
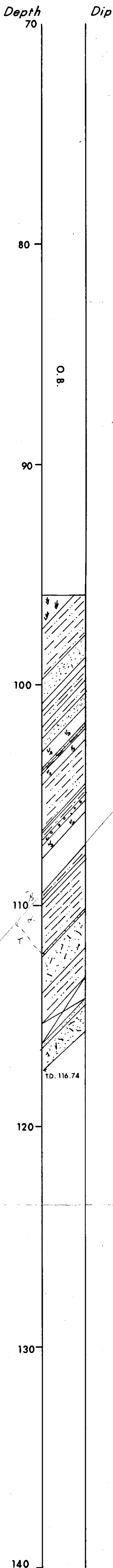
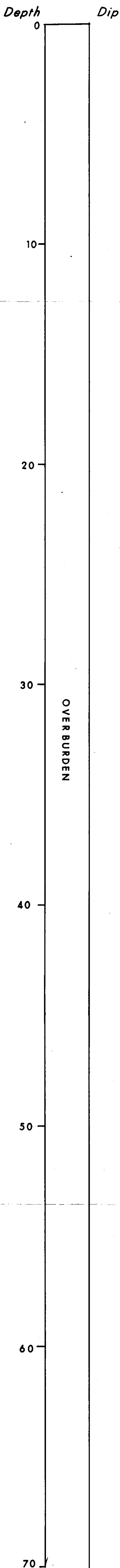
GENERAL		GAMMA RAY			NEUTRON		
RUN NO.	ONE	DEPTHS	SPEED	T.C.	SENS	ZERO	API N UNITS
		FROM	M/MIN	SEC	SETTINGS	DIV. L OR R	PER LOG DIV.
		0	112	4	500	0	15 API
				3			3
							500
							0
							60 API

REMARKS LOGGED THROUGH DRILL RODS



PETRO CANADA EXPLORATION  
 THUNDERCLOUD PROJECT  
 LITHOLOG - TDD80-06

DATE: SEPT. 80  
 SCALE: 1:100  
 DRAWING NUMBER: 1000  
 APPROVED BY: [Signature]  
 FIG. 17



243

TY-Thundercloud 80(3\*)A (\*)

PETRO CANADA EXPLORATION COAL DIVISION		
THUNDERCLOUD PROJECT LITHOLOG- T.D.D.80-01		
DRAWN BY: J.W.K.	DATE: SEPT., '80	SCALE: 1:100
PREPARED BY: F.D.	DATE:	Figure 11
APPROVED BY:	DATE:	

Ma

243

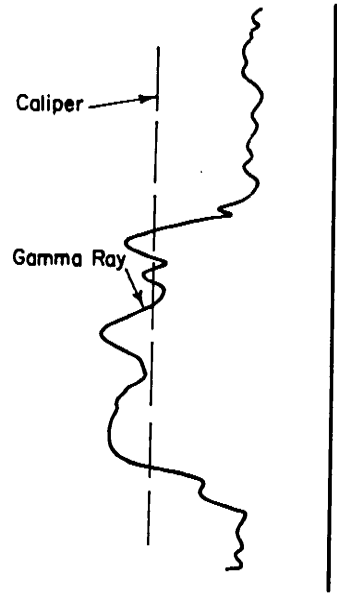
LEGEND FOR LITHOLOGS

Figure 10

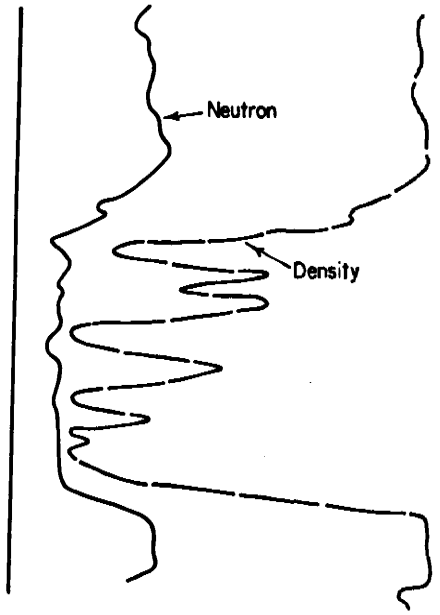
T4-Thundercloud 80(3)A (1)\*

**LEGEND:**


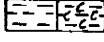



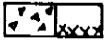



GEOPHYSICAL



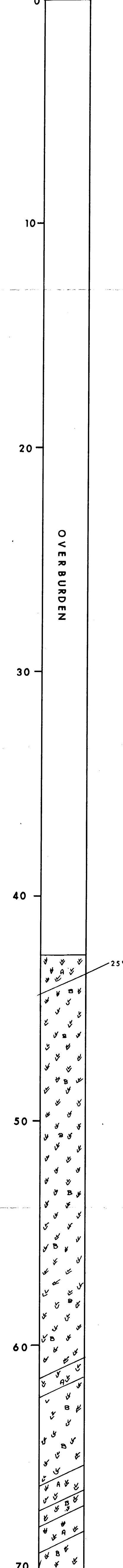
L  
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G  
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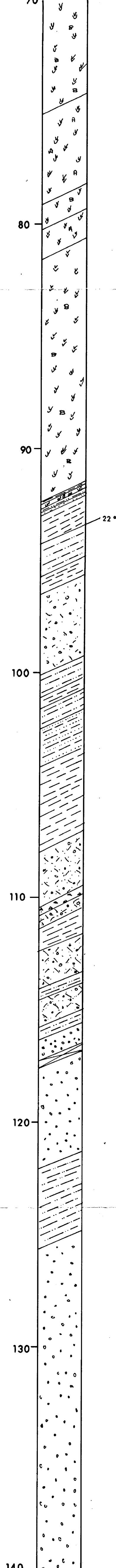
LITHOLOGY (if shown)

-  Coal
-  Mudstone, carbonaceous mudstone
-  Siltstone, carbonaceous siltstone
-  Sandstone
-  Conglomerate
-  Breccia, includes, flow breccia and fault breccia
-  Volcanics, intrusives
-  Graphite, metamorphosed mudstone or coal
-  Greywackes

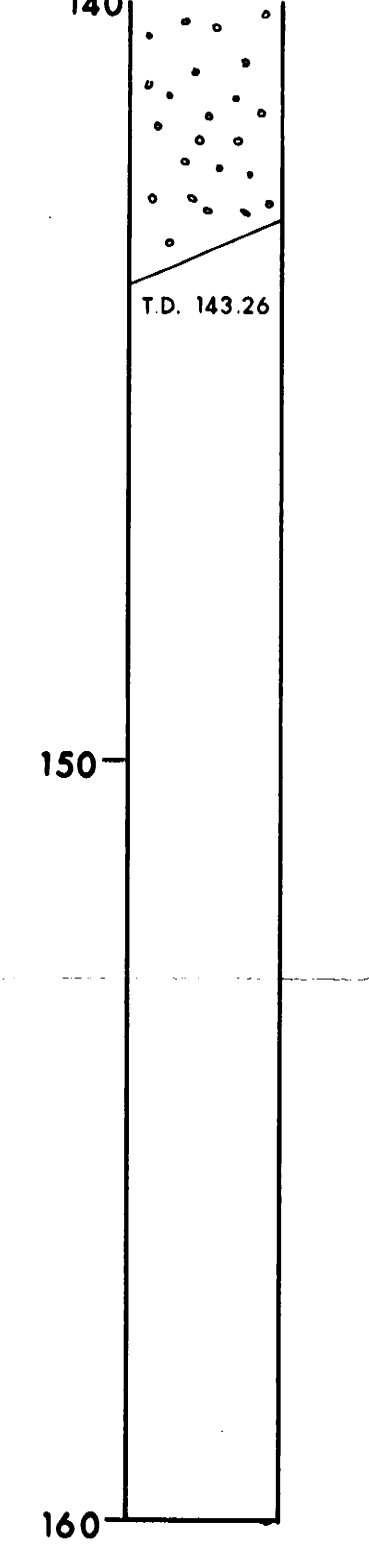
Depth Dip



Depth Dip



Depth Dip



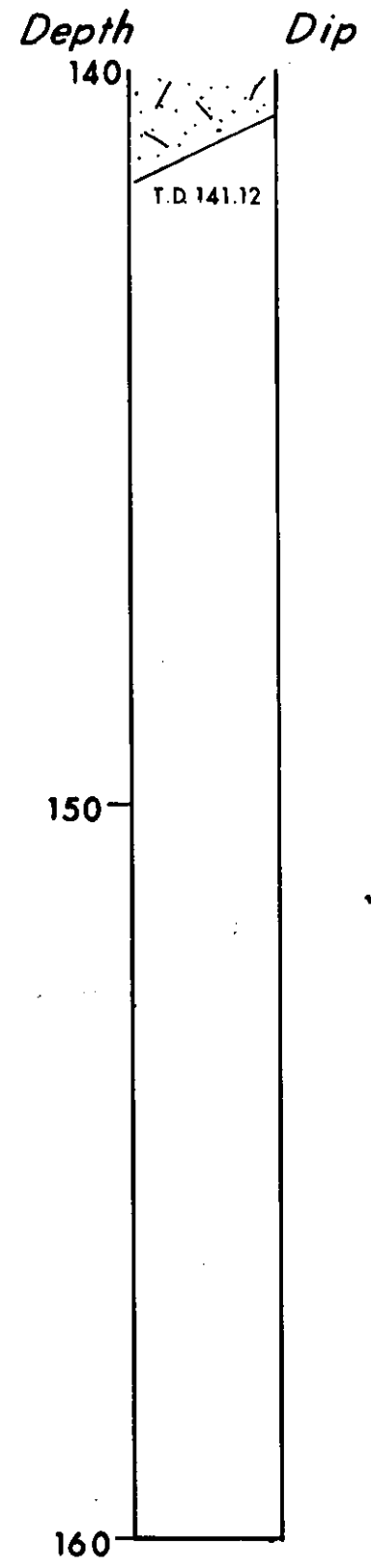
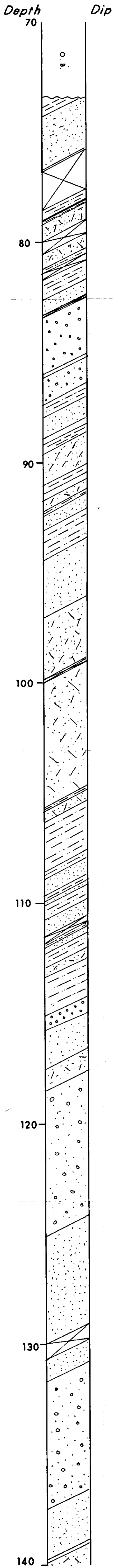
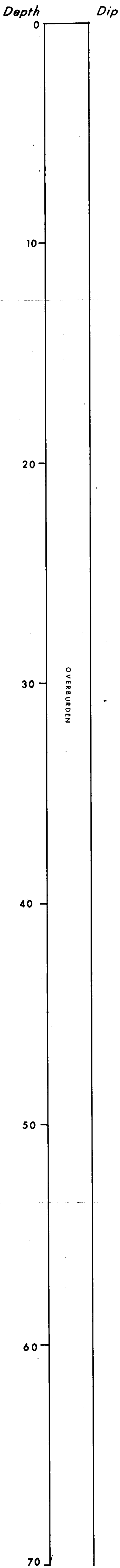
243

T.Y. Thundercloud 80 (3\*)A \* (1)

PETRO CANADA EXPLORATION  
COAL DIVISION

THUNDERCLOUD PROJECT  
LITHOLOG T.D.D.-80-02

DRAWN BY: J.W.K.	DATE: SEPT., '80	SCALE: 1:100
PREPARED BY: F.D.	DATE:	
APPROVED BY:	DATE:	Figure 12



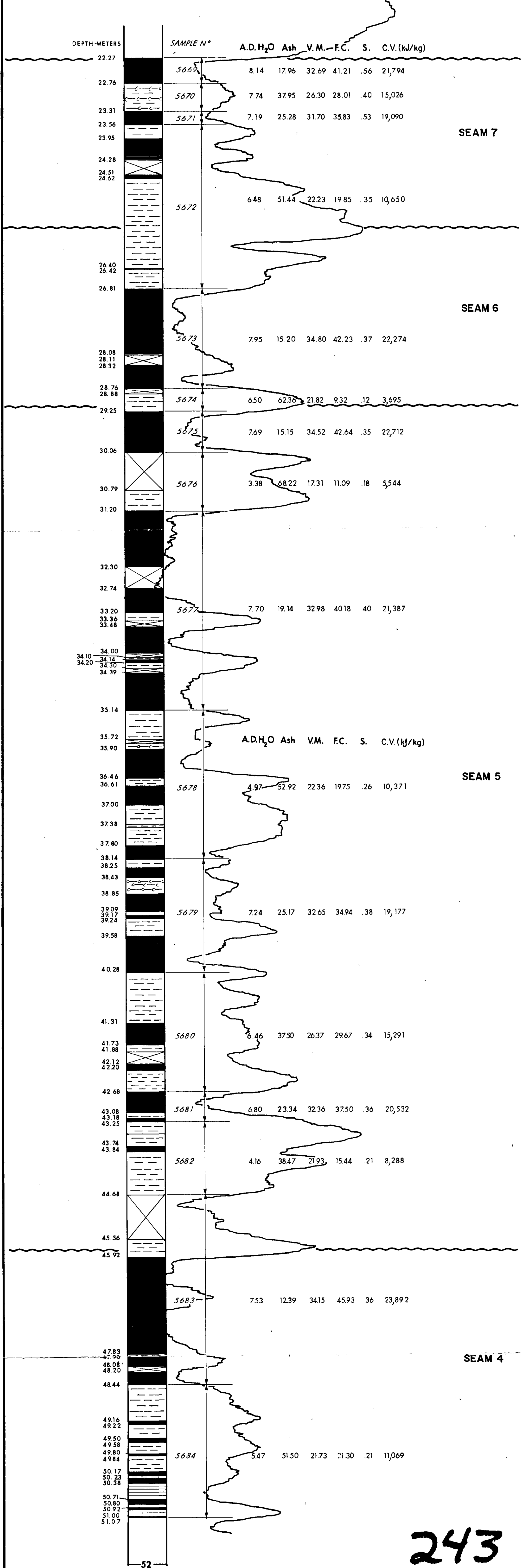
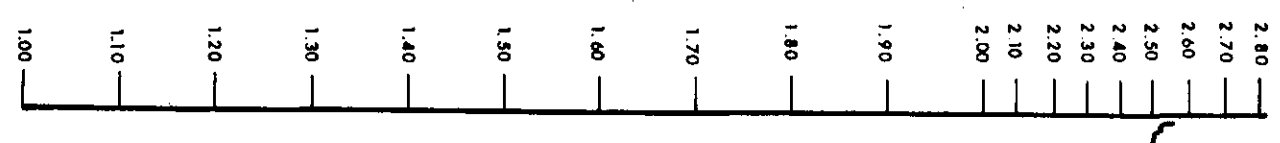
243

TY Thundercloud 80(3\*)A \*(1)

PETRO CANADA EXPLORATION COAL DIVISION		
THUNDERCLOUD PROJECT LITHOLOG T.D.D.-80-05		
DRAWN BY: J.W.K.	DATE: SEPT., '80	SCALE: 1:100
PREPARED BY: F.D.	DATE:	
APPROVED BY:	DATE:	Figure 13

MS

### BULK DENSITY (GRAMS/C.C.)

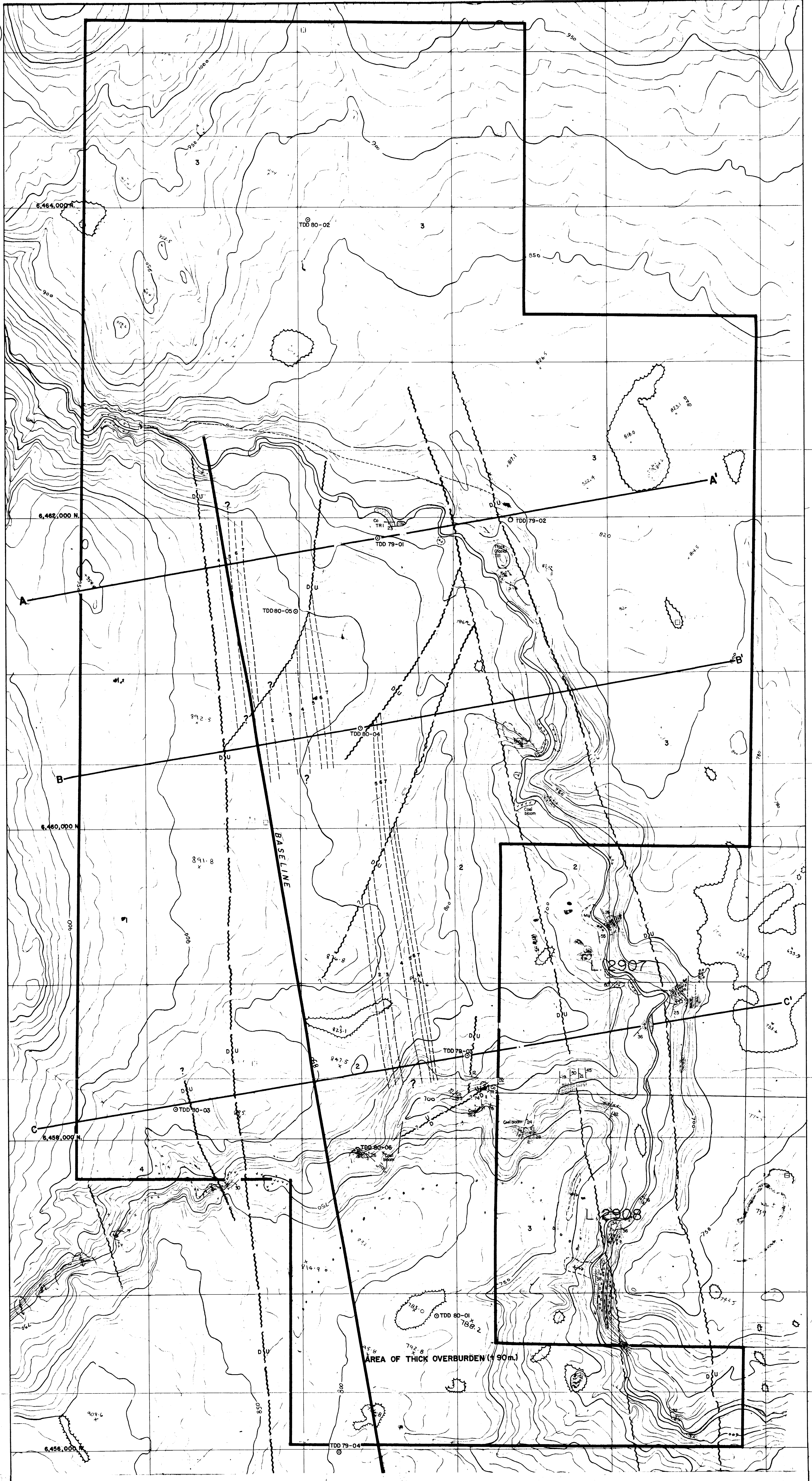


# 243

T4-Thundercloud 80(2\*)A (1)

<b>PETRO CANADA EXPLORATION</b> COAL DIVISION		
<b>THUNDERCLOUD PROJECT</b>		
SEAM PROFILE - SEAM 4,5,6,7		
T.D. D. - 80-04		
DRAWN BY: J.W.K.	DATE: SEPT. '80	SCALE: 1:40
PREPARED BY: F.D.	DATE:	FIGURE 5
APPROVED BY:	DATE:	





- MAPPING UNITS**
- 1 Andesites and basalts (1. Late Tertiary)\*
  - 2 Coal-bearing strata, sandstone, siltstone, conglomerates, (2. Salsburg Group ?)\*
  - 3 Pyroclastic sediments, porphyritic andesites and basalts (3. Late - Triassic)\*
  - 4 Gabbro (4. Late Triassic and Early Jurassic)\*

\*1, 2, 3, 4 Adapted from GSC Regional Geological Map 104 J Deane Lake H. Gabrielse and Souther, 1962; GSC, 1974.\*

- LEGEND**
- LITHOLOGY**
- gabbro intrusives
  - volcanics - unbedded basalt, andesite, felsic porphyry and minor felsic volcanics may in part be both younger & older than intrusives & sediments.
- SEDIMENTS**
- sandstone
  - siltstone
  - mudstone
  - conglomerate - unbedded - includes both epiclastic and volcanoclastic conglomerates

Note: order of sed type in legend, does not indicate stratigraphic sequence.

- STRUCTURE**
- bedding
  - normal faults
  - dike +/- or sills
  - assumed outcrop of coal seam
  - assumed geological boundary
  - location of diamond drill collar
  - assumed thick overburden boundary
- TR 1979 Trenches  
1,2,3,4,5,6,7 seam numbers
- landslide



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TV- Thundercloud 81(2)A \*(1)

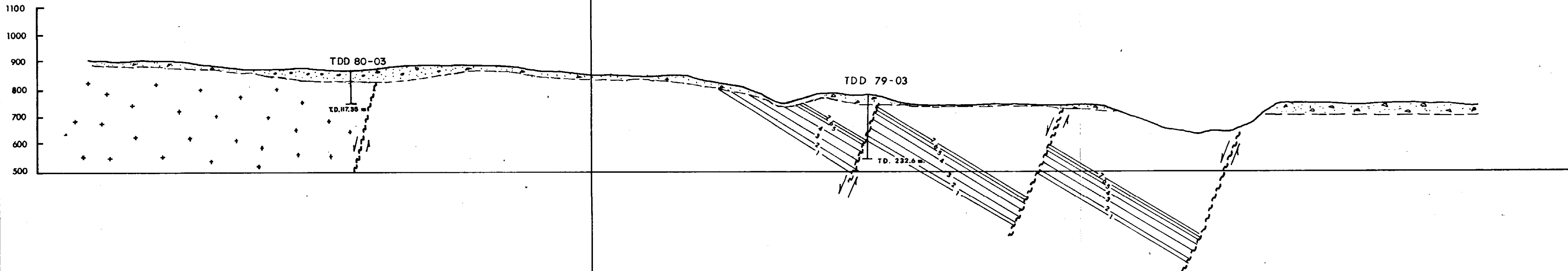
**Petro-Canada**  
COAL DIVISION

**THUNDERCLOUD PROJECT**

**GEOLOGY**

Date	Nov 1980
Author	F. de Nys
Graphic	eds
Scale	1:10000
	Figure 6

M7

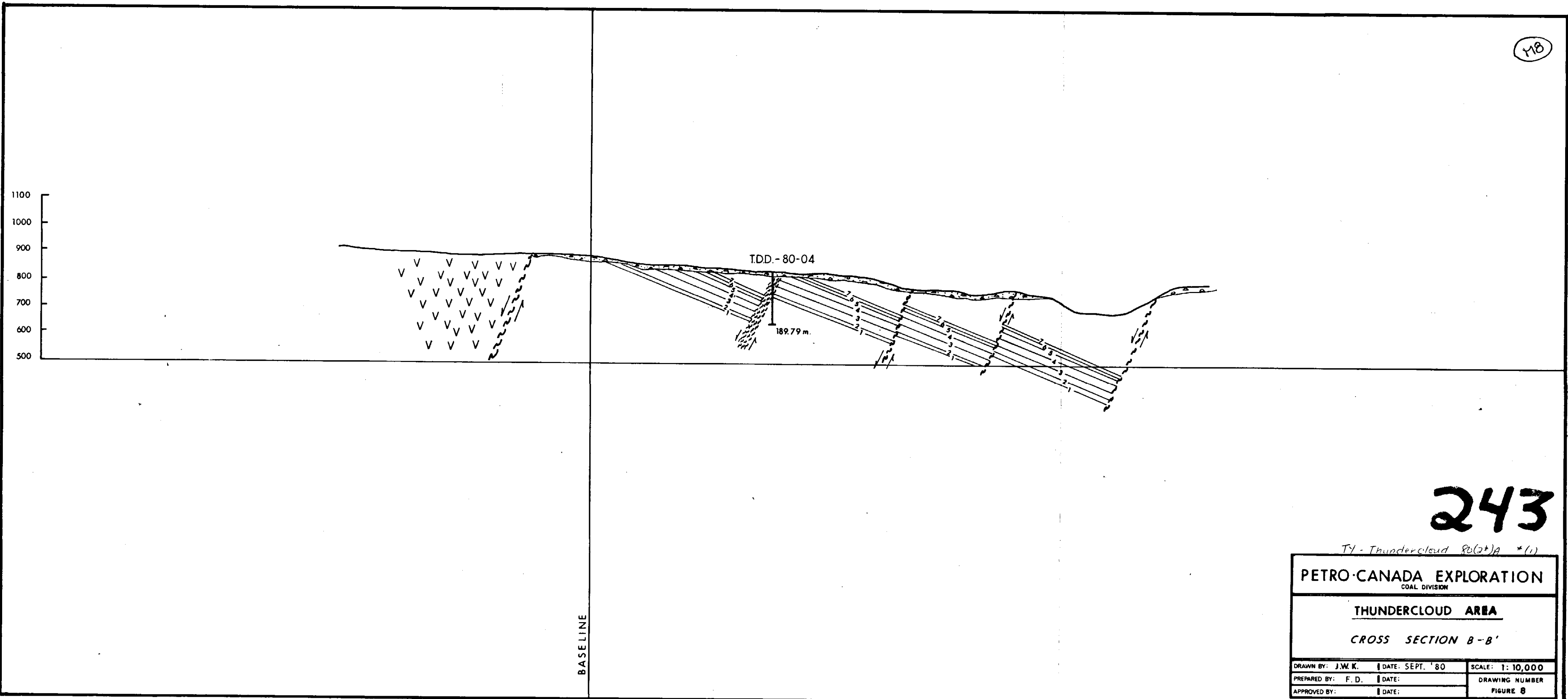


243

T- Thundercloud 80(2)A \*(1)

PETRO-CANADA EXPLORATION		
COAL DIVISION		
THUNDERCLOUD AREA		
CROSS SECTION C-C'		
DRAWN BY: J.W.K.	DATE: SEPT. '80	SCALE: 1:10,000
PREPARED BY: F.D.	DATE:	DRAWING NUMBER
APPROVED BY:	DATE:	FIGURE 9

118



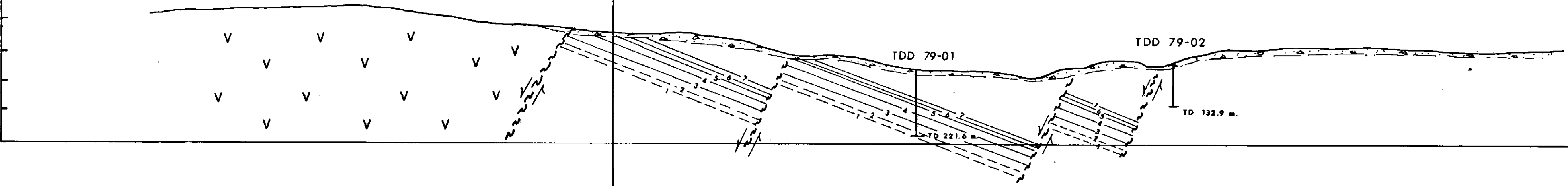
243

T4 - Thundercloud 80(2\*)A \*(1)

PETRO-CANADA EXPLORATION COAL DIVISION		
THUNDERCLOUD AREA		
CROSS SECTION B-B'		
DRAWN BY: J.W.K.	DATE: SEPT. '80	SCALE: 1:10,000
PREPARED BY: F.D.	DATE:	DRAWING NUMBER
APPROVED BY:	DATE:	FIGURE 8

179

1100  
1000  
900  
800  
700  
600  
500



BASELINE

243

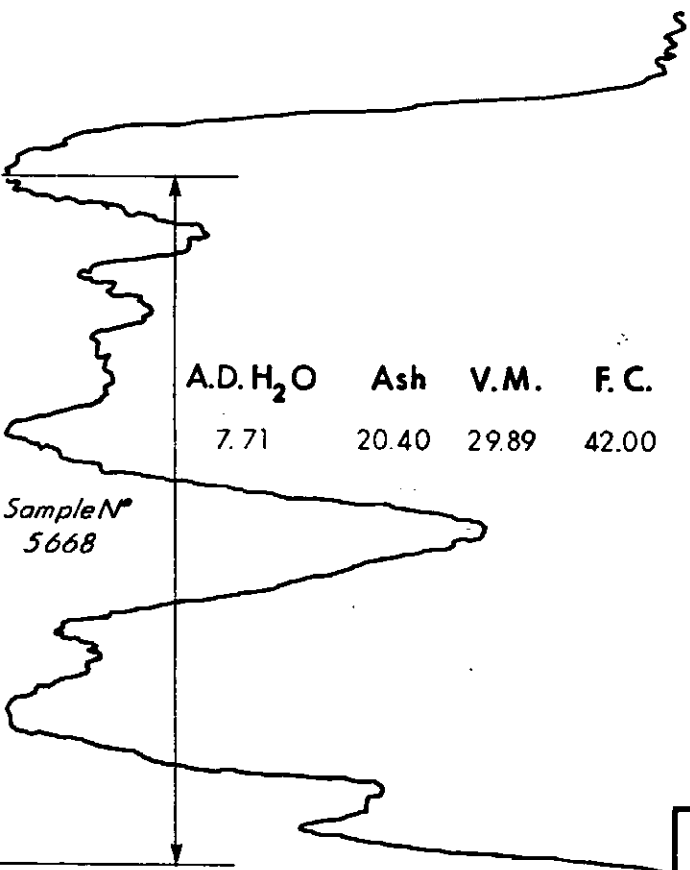
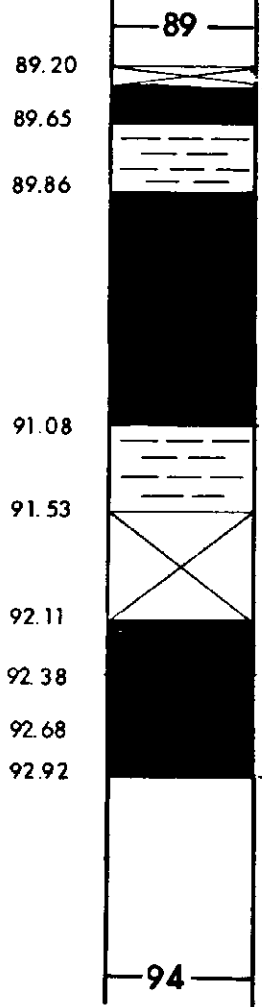
T4-Thundercloud 80(2\*)A\*(1)

PETRO-CANADA EXPLORATION COAL DIVISION		
THUNDERCLOUD AREA		
CROSS SECTION A-A'		
DRAWN BY: J.W.K.	DATE: SEPT. '80	SCALE: 1:10,000
PREPARED BY: F.D.	DATE:	DRAWING NUMBER
APPROVED BY:	DATE:	FIGURE 7

M10

1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

BULK DENSITY (Grams/c.c.)



A.D. H <sub>2</sub> O	Ash	V.M.	F.C.	S.	C.V. (kJ/kg)
7.71	20.40	29.89	42.00	.46	21,490

Sample N° 5668

243

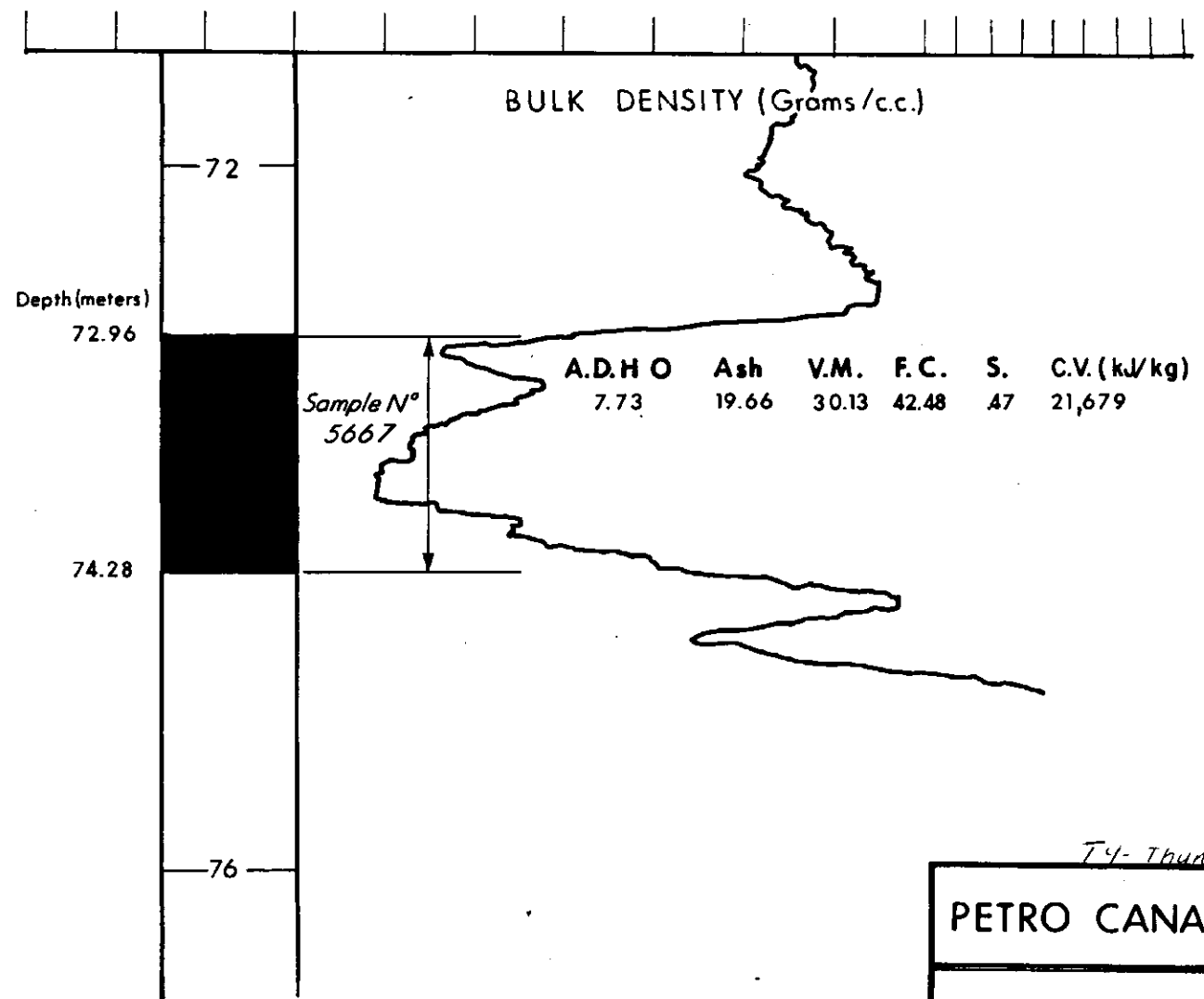
T-Thundercloud 80(2)A \* (1)

PETRO CANADA EXPLORATION		
COAL DIVISION		
THUNDERCLOUD PROJECT		
SEAM PROFILE - SEAM 1		
T. D. D. - 80-04		
DRAWN BY: J W K	DATE: SEPT, '80	SCALE: 1:40
PREPARED BY: F. D.	DATE:	FIGURE 3
APPROVED BY:	DATE:	

M11

1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

BULK DENSITY (Grams/c.c.)



243

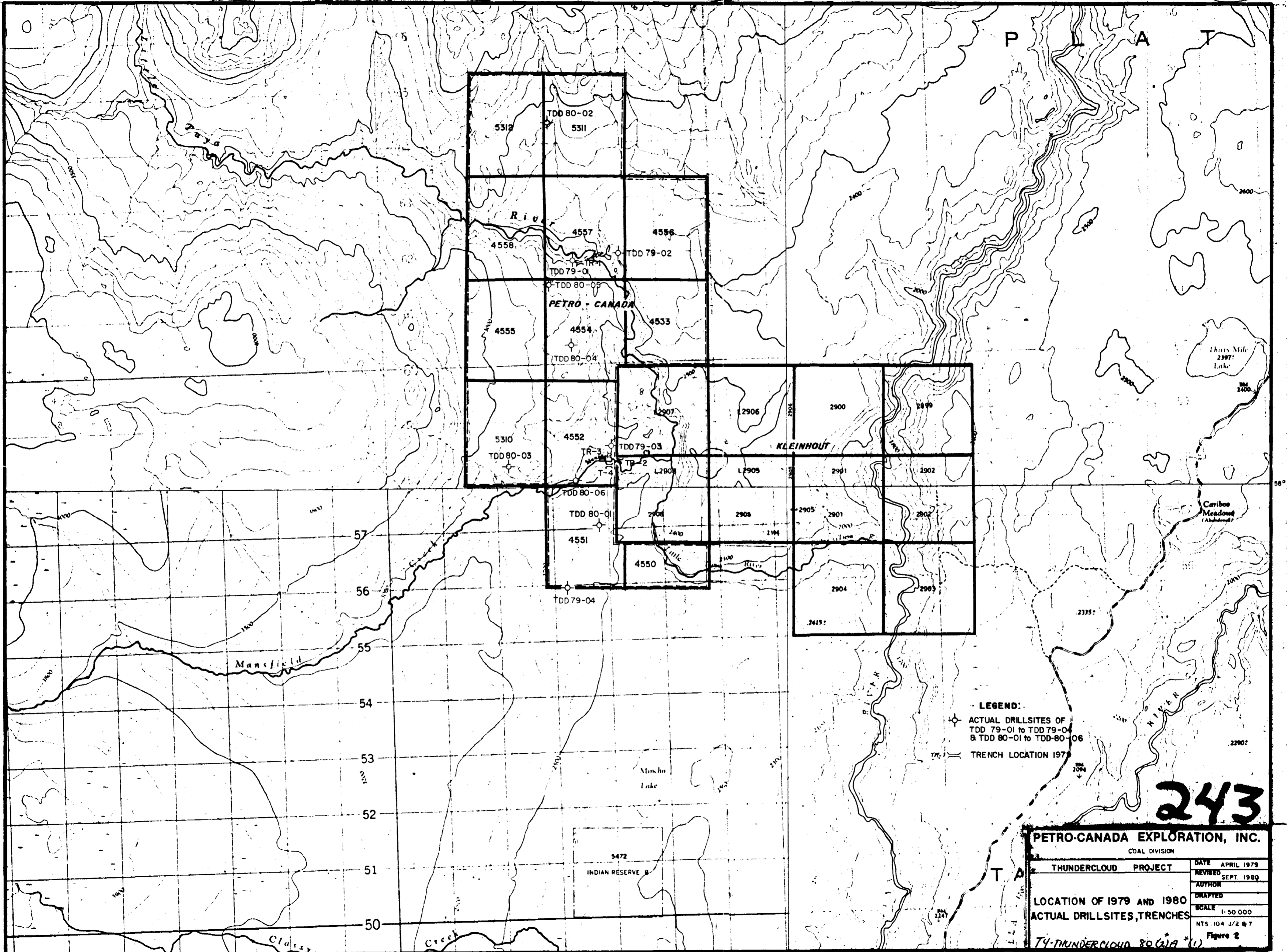
T4- Thundercloud 80(2\*)A \*(1)

<b>PETRO CANADA EXPLORATION</b> COAL DIVISION		
<b>THUNDERCLOUD PROJECT</b> SEAM PROFILE - SEAM 2 T.D.D. - 80-04		
DRAWN BY: J.W.K.	DATE: SEPT, '80	SCALE: 1:40
PREPARED BY: F.D.	DATE:	<b>FIGURE 4</b>
APPROVED BY:	DATE:	



130°48'58.015

112



**LEGEND:**  
 ○ ACTUAL DRILLSITES OF TDD 79-01 to TDD 79-04 & TDD 80-01 to TDD 80-06  
 TR-1 TRENCH LOCATION 1979

<b>PETRO-CANADA EXPLORATION, INC.</b>	
COAL DIVISION	
THUNDERCLOUD PROJECT	DATE APRIL 1979
	REVISED SEPT 1980
	AUTHOR
	DRAFTED
LOCATION OF 1979 AND 1980 ACTUAL DRILLSITES, TRENCHES	SCALE 1:50 000
	NTS. 104 J/2 & 7
	Figure 2

T4-THUNDERCLOUD 80(2)A (1)