DU PONT OF CANADA EXPLORATION LIMITED

WOLVERINE PROJECT

REPORT OF 1979 DIAMOND DRILLING PROGRAMME

COAL LICENCE NOS. 3914 TO 3929 INCLUSIVE

PEACE RIVER DISTRICT BC

NTS: 93-P-3 and 93-I-14

Lat. 55°02'38"N,
Long. 121°08'25"W

1980 June 06

C. B. Gunn, P.Eng.
Du Pont of Canada
Exploration Limited

00515

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SUMMARY

During 1979, a total of 697.2 m in two vertical exploratory diamond drill holes were drilled in the centre of the property to test the structure and obtain samples of coal.

The first hole encountered a repeated section caused by thrusting and was abandoned without reaching the target seams at a depth of 328 m. The second hole penetrated four major Gates coal seams and numerous minor seams. Because of mechanical difficulties, the hole was bottomed at a depth of 369 m, still in coal.

Visual and electric logs of the two holes are presented herein. Proximate analysis indicates that the coal seams contain good quality metallurgical coal of varying ash content.

Review of the data by Du Pont personnel and consultants indicates that good potential exists for the development of significant reserves of metallurgical coal, which may be mineable by underground or a combination of underground and open-pit methods. However, more drilling and coal testing would be required before presenting estimates of mining reserves or coal yields.

WOLVERINE - ASSESSMENT REPORT

INTRODUCTION

This report describes the diamond drilling programme carried out on the Wolverine property between 1979 October 8 and 1979 November 02 by Du Pont of Canada Exploration Limited, operators in a joint venture partnership with danadian Island Creek Ltd. Two vertical exploratory NQ size holes were drilled. One of these intersected four significant coal seams. The holes were logged graphically and electrically. Significant coal intersections were sent for proximate analysis. Analytical results and geological interpretations are presented below. The work was supervised and directed by C. B. Gunn of Du Pont assisted by M. Dawson of Robertson Research, 'who logged the core. Electric logging was carried out by D. Sim of Roke Oil Enterprises Ltd. The drilling contractor was J. T. Thomas Diamond Drilling. Additional property and seam evaluation was provided by D. M. Jeremic, Professor of Mining at the University of Alberta and Intermin Consultants Ltd. of Calgary, Alberta.

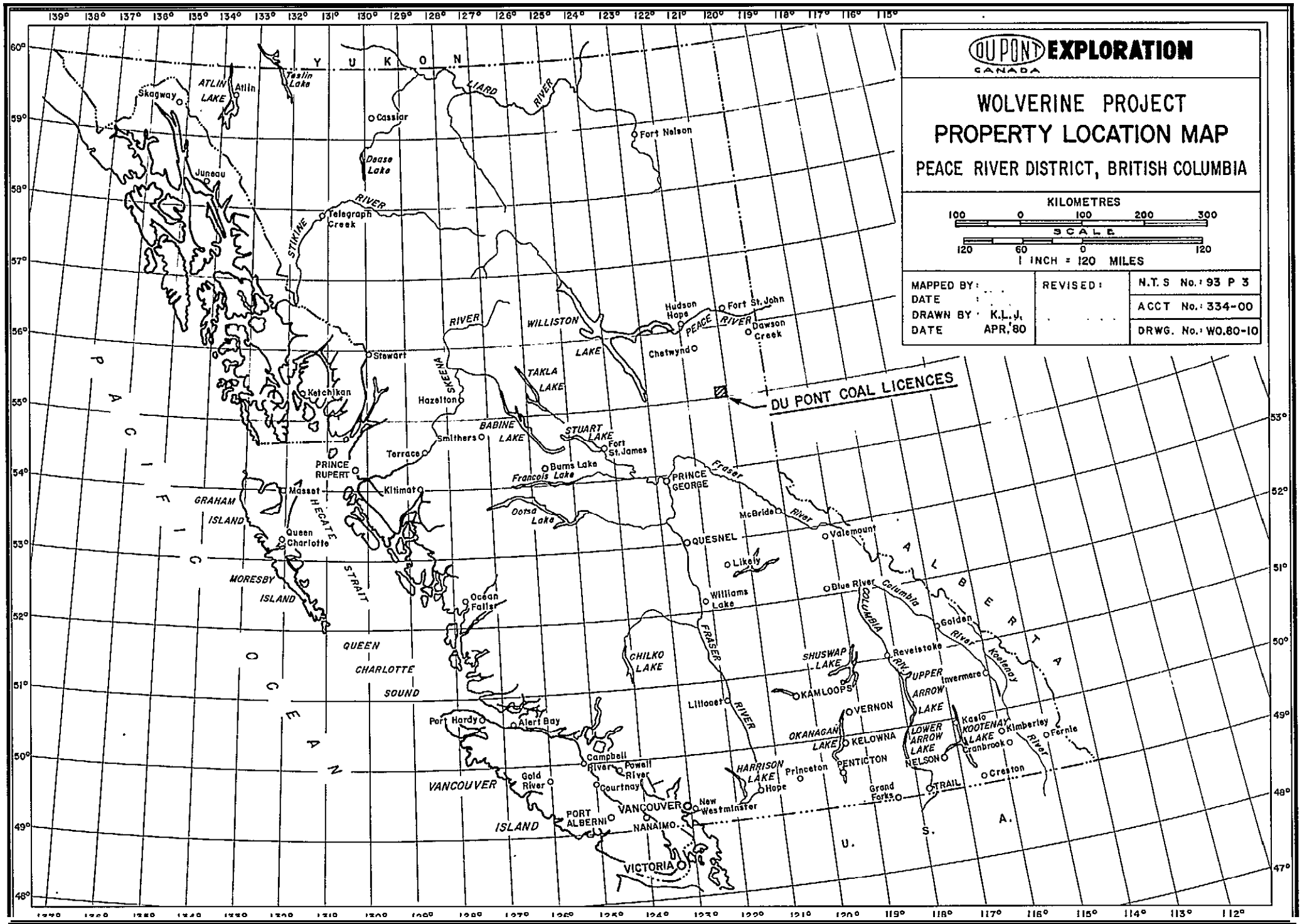
LOCATION AND ACCESS

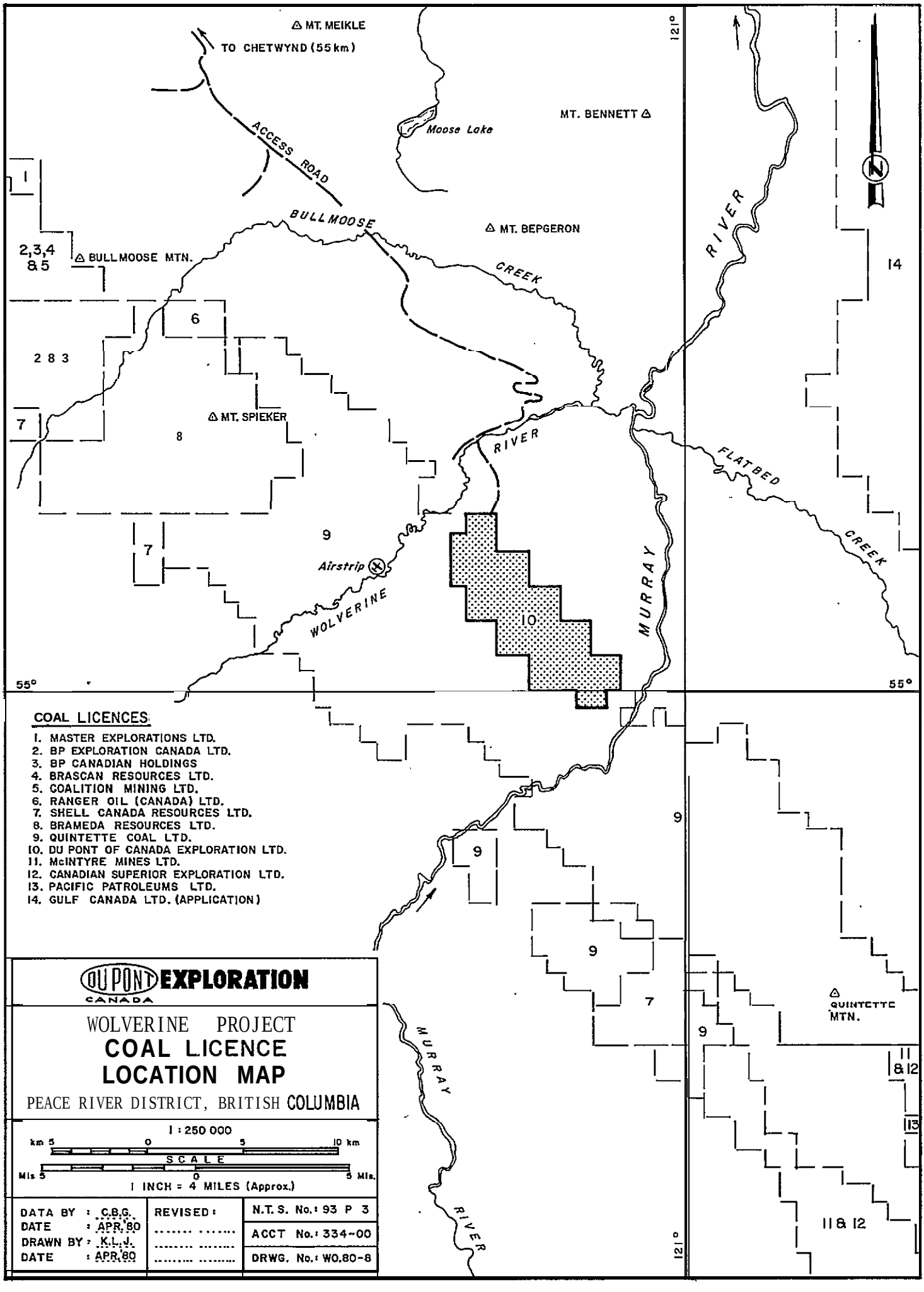
The property is in the Peace River coalfield, British Columbia in NTS 93-I-14 and 93-P-3 (Dwg. Wo 80-8). The licence area is 80 km south of the town of Chetwynd from which it is accessible by gravel surfaced 2-wheel-drive logging road. A steel bridge constructed by Denison Mines gives access across the Wolverine River at Mast Creek. From there a 4-wheel-drive road to Denison's adjacent Sheriff Mountain open pit prospect passes through the centre of Du Pont's property. A good gravel airstrip suitable for Twin Otter aircraft is situated in the Wolverine River valley, 2 km northwest of the property. Numerous helicopter pads exist on the property, chiefly along seismic lines cut for oil exploration. Elsewhere, places where a helicopter can land are scarce because of dense forest or secondary growth in previously cleared areas.

PROPERTY

The licences granted to Du Pont in June 1978 are as follows:

Licence No.	Acreage	Hectares	NTS	Block	Unit
3914	184	74	93-I-14	I	96
3915	734	297	93-P-3	A	5,6,15,16
3916	734	297	93-P-3	A	7,8,17,18
3917	734	297	93-P-3	A	9,10,19,20


DU PONT EXPLORATION
CANADA
WOLVERINE PROJECT
PROPERTY LOCATION MAP
PEACE RIVER DISTRICT, BRITISH COLUMBIA
KILOMETRES
100 0 100 200 300
SCALE
120 60 0 120
1 INCH = 120 MILES
MAPPED BY:
DATE
DRAWN BY: K.L.J.
DATE APR. '80
REVISED:
N.T.S No.: 93 P 3
ACCT No.: 334-00
DRWG. No.: WO.80-10
DU PONT COAL LICENCES
Y U K O N
ATLIN LAKE
Atlin
Skagway
Teslin Lake
Cassiar
Dease Lake
Juneau
Telegraph Creek
STIKINE RIVER
LIARD RIVER
Fort Nelson
Hudson Hope
Fort St. John
PEACE RIVER
Dawson Creek
Chetwynd
WILLISTON LAKE
TAKLA LAKE
Stewart
Ketchikan
Hazelton
SKEENA RIVER
BABINE LAKE
STUART LAKE
Fort St. James
Smithers
Terrace
PRINCE RUPERT
Burns Lake
Francois Lake
PRINCE GEORGE
Fraser River
Kitimat
Masset
GRAHAM ISLAND
HECATE STRAIT
Queen Charlotte
Ootsa Lake
McBride
Valemount
QUESNEL
Likely
MORESBY ISLAND
Ocean Falls
Williams Lake
Blue River
COLUMBIA
Columbia River
Golden
Kootenay River
QUEEN CHARLOTTE SOUND
CHILKO LAKE
FRASER RIVER
SHUSWAP LAKE
Revelstoke
UPPER ARROW LAKE
Invermere
KAMLOOPS
Lillooet
VERNON
Kaslo
KOOTENAY LAKE
Kimberley
Fernie
Cranbrook
OKANAGAN LAKE
KELOWNA
LOWER ARROW LAKE
NELSON
PENTICTON
Princeton
HARRISON LAKE
Hope
Grand Forks
TRAIL
Creston
Port Hardy
Alert Bay
Campbell River
Powell River
Courtnay
Gold River
VANCOUVER ISLAND
PORT ALBERNI
NANAIMO
VANCOUVER
New Westminster
VICTORIA
PACIFIC OCEAN
ALBERTA
U.S.A.


MT. MEIKLE
TO CHETWYND (55 km)
ACCESS ROAD
Moose Lake
MT. BENNETT
BULLMOOSE
CREEK
MT. BEPGERON
RIVER
BULLMOOSE MTN.
2,3,4 & 5
1
6
2 8 3
7
MT. SPIEKER
8
RIVER
FLATBED
CREEK
9
7
Airstrip
WOLVERINE
10
MURRAY
14
121°
55°
55°
COAL LICENCES
1. MASTER EXPLORATIONS LTD.
2. BP EXPLORATION CANADA LTD.
3. BP CANADIAN HOLDINGS
4. BRASCAN RESOURCES LTD.
5. COALITION MINING LTD.
6. RANGER OIL (CANADA) LTD.
7. SHELL CANADA RESOURCES LTD.
8. BRAMEDA RESOURCES LTD.
9. QUINTETTE COAL LTD.
10. DU PONT OF CANADA EXPLORATION LTD.
11. McINTYRE MINES LTD.
12. CANADIAN SUPERIOR EXPLORATION LTD.
13. PACIFIC PATROLEUMS LTD.
14. GULF CANADA LTD. (APPLICATION)
9
9
9
7
9
QUINTETTE MTN.
11 & 12
13
11 & 12
MURRAY
RIVER
121°
DU PONT EXPLORATION
CANADA
WOLVERINE PROJECT
COAL LICENCE
LOCATION MAP
PEACE RIVER DISTRICT, BRITISH COLUMBIA
1 : 250 000
km 5 0 5 10 km
SCALE
Mls 5 0 5 Mls.
1 INCH = 4 MILES (Approx.)
DATA BY : C.B.G.
DATE : APR. 80
DRAWN BY : K.L.J.
DATE : APR. 80
REVISED :
N.T.S. No.: 93 P 3
ACCT No.: 334-00
DRWG. No.: WO.80-8

3918	734	297	93-P-3	A	27,28,37,38
3919	734	297	93-P-3	A	29,30,39,40
3920	734	297	93-P-3	B	21,22,31,32
3921	733	297	93-P-3	A	49,50,59,60
3922	733	297	93-P-3	B	41,42,51,52
3923	733	297	93-P-3'	B	43,44,53,54
3924	733	297	93-P-3	B	61,62,71,72
3925	733	297	93-P-3	B	63,64,73.74
3926	367	149	93-P-3	B	65,75
3927	733	297	93-P-3	B	83,84,93,94
3928	184	74	93-P-2	B	85
3929	184	74	93-I-14	I	97
16	9 721	3 935			

The boundaries and numbers of the licences are shown on the geological field maps (Dwgs. Wo.79-16 to 19) and the Geological Compilation map (Dwg. Wo.80-9).

PREVIOUS WORK

Reconnaissance mapping was carried out in the licence area by B. I. Nesbitt in 1951 for Spooner Oil and by P.B. Jones in 1959 for Triad Oil. During the summers of 1959-61, D.F. Stott mapped the area on a regional basis. His stratigraphic compilations (G.S.C. Paper 62-39) are used as a basis for Du Pont's field mapping. G.S.C. Map 19-1961 shows general geological relations in the region. G.S.C. Open-File 286 and the B.C. Ministry of Mines 1977 compilation map of the Peace River Coalfield (B.P. Flynn 1977) also cover the licence area. All of the above appear to be based largely on air photo interpretation and lack detailed structural and stratigraphic information; nor do they agree in their interpretations.

In 1973 Kerr-McGee Corporation drilled a test well (Mast b-60-A) on licence No. 3921, and in 1974 a second well (Mast d-80-A) about 2 km to the north (see Dwg. Wo.80-9 and Wo. 79-2). Lithologic and electric logs for these wells indicated the presence of numerous subsurface coal seams and supplement our data obtained by mapping and drilling. In 1978, Northern Geophysical, under contract to British Petroleum, carried out seismic profiling on four lines across the property but the results are presently confidential.

In 1978, Du Pont of Canada Exploration Limited carried out'a programme of geological mapping under the direction of C.B. Gunn. The maps and sections at a scale of 1:10 000 resulting from this work appear in a report of May 1979 by C.B. Gunn, which was filed for assessment credit.

GEOLOGY

The licences are in the Rocky Mountain foothills belt and are underlain by a generally eastward dipping sequence of Lower Cretaceous fresh water and marine sediments of the Fort St. John Group. The stratigraphic sequence and general lithology are shown in the Table I. More detailed lithological descriptions are given by Stott in G.S.C. Paper 62-39.

Previous work indicated a strong anticlinal structure immediately to the northwest of the Murray River in the southeast part of the licences. This feature is easily visible on aerial photographs. Some previous workers have postulated folds in the relatively low lying country of the licences between the Murray and Wolverine Rivers, but these interpretations do not seem to have been based on detailed field mapping.

DU PONT FIELDWORK RESULTS 1979

Base Maps and Control

Using B.C. Government 1968 air photography, a photo mosaic was prepared in 1978 by Pacific Survey Corporation at a scale of 1:10 000. Contour information derived from government topographic sheets 93-P-3E and 92-I-14E at a scale of 1:50 000 was transferred to the semi-controlled mosaic for elevation control. This mosaic was used for location and mapping in the field. Mapping was also done directly on air photos with overlays. Selected photos from three series were used for this purpose:

a. B.C. low level photos at approximately 1:17 000 scale.

b. Federal high level photos at approximately 1:75 000 scale.

c. Burnette Surveys 1975 photography at 1:15 000 flown for Denison Mines Ltd. and purchased from them.

Also purchased from Denison Mines were controlled topographic maps at 1:5 000 scale with contours at 5 m intervals and a controlled topographic map at 1:25 000 scale derived from the 1:5 000 map with contours at 20 m intervals. The latter map, enlarged to 1:10 000 scale, serves as a base for the geological maps presented in this report.

TABLE I

TABLE OF FORMATIONS

Series	Group	Formation	Thickness (feet)	Lithology
Upper Cretaceous		Dunvegan	300-1,200	Marine and non-marine sandstone and shale
		Cruiser	350-800	Dark grey marine shale with sideritic concretions; some sandstone
		Goodrich	50-1,350	Fine-grained, crossbedded sandstone; shale and mudstone
		Hasler	500(?)-1,500	Silty, dark grey marine shale with sideritic concretions; siltstone and sandstone in lower part; minor conglomerate
Lower Cretaceous	Fort St. John Group	Commotion		
		Boulder Creek Member	240-560	Fine-grained, well-sorted sandstone; massive conglomerate; non-marine sandstone and mudstone
		Hulcross Member	10-450	Dark grey marine shale with sideritic concretions
		Gates[1]	220-900	Fine-grained, marine and non-marine sandstones; conglomerate; coal; shale and mudstone
		Moosebar	100-1,000	Dark grey marine shale with sideritic concretions; glauconitic sandstone and pebbles at base
		Gething	75-1,000	Fine- to coarse-grained, brown, calcareous, carbonaceous sandstone; coal, carbonaceous shale, and conglomerate
		Cadomin	45-600	Massive conglomerate containing chert and quartzite pebbles

[1]Gates sandstones in Peace River region are considered as a formation; farther south they are included in Gates Member of Commotion Formation.

D. F. Stott; G.S.C. Paper 62-39

STRATIGRAPHY

Stratigraphic identification of the units shown on the Du Pont maps is based on general published descriptions of the lithology in the area, detailed descriptions and identifications in the two test wells (b-60-A, d-80-A), discussions with geologists experienced in the area and orientation visits in the Peace River Coalfield with government and industry geologists. Electric logs of drill holes 79-l and 79-2 made this year have been compared with similar logs from Mt. Speiker and elsewhere. These logs confirm our stratigraphic interpretation of outcrops mapped in 1978, at least in the vicinity of the drill holes. Our mapping shows that the geology of the licence area may be structurally complex and, in view of the general lithological similarity of some units of different ages, significant revisions to the map may be required as more information becomes available.

Outcrop

Distribution of outcrops is shown on the accompanying geological map (drawing No. Wo 78-16 to 19) which was made in 1978 and revised in 1979. All areas of outcrop were initially identified on air photographs, checked by helicopter reconnaissance and examined by geologists on ground traverses. It is unlikely that any substantial areas of outcrop have been missed but there may be additional small outcrops obscured by tall trees or dense underbrush. Most of the exposures occur in creek beds or on the high ridges in the southeast portion of the licences. Due to the reconnaissance nature of the mapping, the areas of outcrop as depicted on the map are somewhat generalized. Areas without outcrops are mantled by a cover of till and soil of unknown depth. Stream bank cuts and drill records suggest that the cover might exceed 100 m in places. Depths of overburden encountered in DDH 79-l and DDH 79-2 were 40 m and 64 m respectively.

Lithology

Gates member. Outcrops assigned to the Gates member of the Commotion formation occur in the core of the anticlinal structure at the southeast end of the property (Dwg. Wo 78-19 and Wo 79-2, Section D). These are cross-bedded sandstones and pebble conglomerates. Lower lying ground between the ridges is believed to be underlain by shales, siltstones and coal seams below till and soil cover. Extensive outcrops of similar rocks containing at least two thick coal seams were examined on adjacent ridges to the southwest of the property. The Gates member is estimated to be 300 m thick in this area, of which perhaps the top third subcrops in the core of the anticline.

The drilling did not reach the base of the Gates, so the full thickness is not accurately known.

Hulcross member. Dark grey concretionary shale, believed to be Hulcross crops out in a steep-walled creek bed in the south limb of the anticline previously described. Shales exposed in the creek in the core of the anticline on Sections AA' and BB' are also ascribed to this unit.

The Hulcross member is a marine shale approximately 100 m thick in this area. A full section was intersected in DDH 79-2 where it is 94 m thick. It is indistinguishable in hand specimen and outcrop from the Hasler formation, which is separated from it by the Boulder Creek. The Hulcross, however, contains a number of bentonite bands which give a characteristic trace on the electric logs.

Boulder Creek member. Lithologically resistant and topographically prominent conglomerates and sandstones occur throughout the length of the property. These are very similar in hand specimens to sandstones and conglomerates of the Gates but the coarseness and higher proportion of conglomerate, with frequent green chert and the general stratigraphic relations indicate that this unit is Boulder Creek. The electric logs of DDH 79-1 and 79-2 confirm this identification in the vicinity of the drilling, but confusion with the Gates is possible in the absence of logs. Between the conglomerate horizons are cross-bedded sands and minor shales. Clastic fragments of coal were seen in some oucrops and larger float coal fragments were found in creek beds in the northwest of the property. The Boulder Creek is estimated to be about 120 m thick. A complete section was drilled in DDH 79-1. This is the highest member of the Commotion Formation.

Hasler Formation. Overlying the Boulder Creek, which is a useful marker horizon, is a thick series (about 750 m) of predominantly siltstones and sandstones. Where lithological subdivision is not possible, these are described in total as the Shaftesbury Formation. Elsewhere, they have been subdivided into three separate formations; the Hasler, Goodrich and Cruiser. This threefold division is used by us in the belief that the Goodrich is distinguishable from the Hasler. The Cruiser formation is not present on the property.

The Hasler is a unit of monotonous buff weathering siltstones, frequently with rusty concretions. Small to medium sized outcrops of Hasler occur in creek banks and road cuts in several parts of the property. The Hasler is estimated to be about 280 m thick.

Goodrich Formation. More massive cross-bedded sandstones interbedded with siltstones are ascribed to the Goodrich Formation. These form fairly persistent topographical features along the northeast flank of the property. Excellent exposures of both Goodrich and Hasler are to be seen in the incised creek draining southeast into the Murray River just to the northeast of the property. The more resistant Goodrich forms two waterfalls at the northeast corner of licence No. 2918. The Goodrich Formation is estimated to be 350 m thick. In some outcrops it has not been possible to distinguish between Hasler- and Goodrich.

Structure

The structural style of this part of the foothills belt is one of extensive en-echelon folds, frequently separated by westward dipping thrust planes. Intensity of deformation is generally strong in the southwest, decreasing northeastwards to the gently uniform dips of the plains.

In the Wolverine area, the transition from foothills to plains-structure appears to be marked by a steep westward-dipping thrust zone running roughly parallel to the strike of the folds along Mast Creek as far as the Denison Camp, beyond which it seems to die out. Minor local overturning or a detached fold are associated with this fault (see sections AA', BB': Dwg. wo 79-2). Interpretation of the logs of DDH 79-l and 79-2 indicate that there must be a previously unrecognized thrust between the two holes (see section CC). This appears to be a low angle southwest dipping thrust developed in Hulcross shale which repeats the section in this area. The lateral continuity of this thrust is not known. The axis of the underlying anticline is interpreted to lie about 500 m further to the northeast than previously thought.

The lack of unmistakable marker horizons and stratigraphic identifications based on cyclic and laterally discontinuous lithology make structural interpretation difficult and tentative at this stage. It is very likely that as more information becomes available, the detailed picture will be considerably modified.

The main structural feature recognized is a strong anticline running the length of the property, as shown on Sections AA' to DD' (Dwg. Wo 79-2). Lack of exposure between sections CC' and DD' makes the correlation of the anticlinal axes between the two sections doubtful at present.

A complex of folds (and possibly faults) to the southwest of the main anticlinal axis on section DD' probably continues

northwest up the southwestern flank of the property: but lack of exposure in the rolling till plain makes this conjectural.

Dips and stratigraphic relations at the northwest end of the property suggest the presence of another thrust but the actual fault plane was not observed.

In the southeastern extremity of the property, a structural discontinuity observed in-shales in a creek bank suggests the presence of a normal strike fault; an unexpected observation in an area of strong thrusting. In the larger creek to the north, the Shaftesbury formation is nearly horizontal but slight folding along NW-SE axes is visible.

No cross-faults were observed, but strong conjugate joint patterns were commonly observed and the presence of some cross-faulting may be suspected.

RESULTS OF THE 1979 DRILLING PROGRAMME

A total of 697.2 m of NQ wireline diameter core in two holes were drilled by J. T. Thomas Diamond Drilling Ltd. of Smithers, BC, using a Longyear Super 38 drill. The drill was supported by a tractor-bulldozer and water truck and serviced by $-wheel-drive vehicles. Mud was used throughout and overall core recovery was 95.7% for DDH 79-l and 98.9% for DDH 79-2. The drill crew and supervisory staff were housed in Denison Mines' Atco trailer camp adjacent to the property, which was rented for the purpose. The field programme started on October 8th and ended on November 3rd. The drilling took place between October 16 and November 1st. The core was logged in the field by M. Dawson, geologist, of Robertson Research. After logging, it was boxed and transported to Charlie Lake for storage. Sections to be analyzed were sent to Birtley Coal and Minerals Testing in Calgary. Electric logging was performed by Roke Oil Enterprises Ltd., Calgary. The operator was Mr. D. Sim.

Included in this report are copies of the geological logs, detailed geological logs of important seam intersections, visual stratigraphic logs, electric logs and proximate analyses.

The field programme required l.68 man-days of driller's, technical and supervisors time. Site cleanup was performed by the drilling contractor. No specific reclamation programme was required.

Summary statistics of the drill holes are as follows:

	DDH 79-1	DDH 79-2
Location	Licence 3922 NTS 93-P-3	Licence 3922 NTS 93-P-3
Latitude	55°02'39"N	55°02'29"N
Longitude	121°08'25"W	121°07'35"W
Collar elevation	1320 m (approx)	1130 m (approx)
Direction	Vertical	Vertical
Size	NQ wireline	NQ wireline
Total depth	328.05 m	369.15 m
Date drilled	1979 10 18 to 1979 10 24	1979 10 25 to 1979 11 01
Casing	132 ft left in place	210 ft left in place
Available logs:	-Detailed visual. -Graphic stratigraphic 1:200 -Gamma Ray Neutron 1:200 -Directional Survey	-Detailed visual. -Graphic stratigraphic 1:200 -Gamma Ray Neutron 1:200 -Directional Survey (seam sections at 1:40) -Sidewall densilog 1:200 -Caliper 1:200 -Seam section analytical data 1:40

DISCUSSION OF RESULTS

The drill-holes and the interpreted geological structure appear on section CC of the geological sections (Dwg. Wo 79-2, revised 1980 January 14). Hole 79-l was intended to penetrate the axis of an anticlinal structure believed to lie in this position on the basis of surface mapping in'1978. The hole penetrated a 'series of shales, sandstones and conglomerates similar to the Hulcross and Gates formations but without coal sections. Electric logging showed that the coarse clastics intersected between 130 m and 272 m are Boulder Creek formation and that the underlying Hulcross formation shows signs of thrusting. We

interpret this as indicating that the western limb of the anticlinal structure has been structurally thickened by a shallow dipping thrust. As the capacity of the drill was insufficient to reach the Gates below this thickened cover the hole was abandonned at 328 m.

The second hole 79-2 was located at a lower elevation on a pre-existing seismic line, 500 m southwest of the gas well b-60-A for which geological information is available. This hole entered bedrock in the Boulder Creek formation, cut a complete section of Hulcross shales and entered the Gates formation at 194 m. Several thin coal seams were intersected between 198 m and 226 m. The first significant seam of good quality coking coal was intersected at 302 m and from there to the bottom of the hole at 369 m, four significant coal seams were encountered. These are interpreted as being equivalent to the D, E, G and J seams of Denison's Quintette property and are provisionally named as such in this report. Details of these intersections are presented at a scale of 1:40 in this report. The hole became very tight during the drilling of the lowermost seam and, in spite of all attempts to continue, drilling had to be abandonned at 369.15 m while still in coal. The full thickness of the seam is therefore not known and it was not possible to lower the logging tools far enough to obtain electric logs of this seam.

The directions of dip as shown on the sections are deduced from core angles combined with directions of hole deviation and attitudes observed at surface.

Tables showing potentially mineable coal seam intersections, ash content and specific gravity have been prepared by Dr. M. Jeremic and Intermin Consultants on the basis of the drill hoie and analytical data for DDH 79-2 (See Appendix II).

COST OF WORK

(Coal Act Regulations - Schedule B)

		cost $
Geological Mapping:	Not Applicable.	
Geochemical/ Geophysical Surveys	Not Applicable.	
Road Construction:	Grading and culvert work.	
	Licence Nos. 3921 to 3924 inclusive	$ 1 200.00
	Access to Licence Nos. 3914 to 3929 incl.	1 255.50
Surface work:	Not applicable.	
Underground work:	Not applicable.	
Drilling:	Diamond wireline core 697 m.	67 046.78
	Contractor - J.T. Thomas Diamond Drilling Ltd., Smithers, BC.	
	Core storage - Charlie Lake.	
Logging:	Geological logging by Robertson Research.	4 839.54
	Geophysical logging by Roke. (Gamma-neutron, focussed beam, sidewall density, caliper).	6 387.96
Testing:	Birtley Coal & Minerals Testing.	
	18 proximate analyses @ $29.33	528.00
camp costs:	Rental of camp from Denison Mines.	7 373.60
	Camp servicing by Atco Ind.	1 297.00
	Fuel.	1 209.43
	Groceries - 145 man/days @ $10.58 per man day.	1 535.77

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COST OF WORK (cont.)

		cost $
Transportation on property:	Two 4 x 4's and 4.5 hrs helicopter.	$ 2 536.12
Other Work	Prefeasibility studies by M. Jeremic, Ph.D. and Intermin Consultants.	5 344.00
	Report preparation, Du Pont & Robertson Research.	7 413.07
	Logistics, field support and travel.	5 799.73
Reclamation work:	Not applicable.	

On Property Costs	$103 897.55
Off Property Costs	16 691.55
TOTAL Expenditures	$120 589.10

1980 June'09

C. B. Gunn, Senior Geologist

CERTIFICATION

I, Christopher B. Gunn, of 2867 Panorama Drive, North Vancouver, B.C. hereby certify that:

1. I am a professional geologist and have been engaged in the practice of geology and mineral exploration since 1962 in Europe, Africa, Central and North America.

2. I hold a B.Sc. Honours degree in geology from the University of Wales and a Master of Science degree in geology from the University of Western Ontario.

3. I am a Registered Professional Engineer in the provinces of British Columbia and Ontario. I am also a Chartered, Engineer of the United Kingdom.

4. The work described *in* this report was carried out by me or under my personal supervision.

5. I do not hold any beneficial interest, direct or indirect, in the subject property; nor do I expect to receive any such interest.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
C. B. GUNN

80-06-06

Christopher B. Gunn

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Well History Log of Km AEG MAST d-80-a, NTS 93-P-3 (Kerr McGee Corp.).

Well History Log of KM et al MAST b-60A, NTS 93-P-3 (Kerr McGee Corp.).

APPENDIX I b

Directional Surveys

DIRECTIO[illegible] URVEY

NOV 23 1979

ROKE OIL ENTERPRISES LIMITED

COMPANY: DUPONT EXPLORATION CANADA

GRID:

DATE SURVEYED: 25 OCT 79

DRILL HOLE: 79-1

LATITUDE;

SURVEY BY: SIM

LOCATION:

DEPARTURE:

WITNESSED BY: GUNN

FIELD: WOLVERINE RIVER PROJECT

ELEVATION:

CALCULATIONS BY:

MAGNETIC DECLINATION:

CORRECTION OF:

FOR: GRID:

Number	Cable Depth	Slant Angle	Slant Angle Bearing	Number	Cable Depth	Slant Angle	Slant Angle Bearing	Number	Cable Depth	Slant Angle	Slant Angle Bearing
0	0	0		11	165	4.8	31.4	22	325	0.4	27.7
1	15	1.2	171.9	12	180	4.9	28.8	23			
2	30	1.4	193.7	13	195	5.4	28.7	24			
3	45	2.1	77.4	14	210	5.5	28.3	25			
4	60	1.9	77.6	15	225	5.4	27.6	26			
5	75	1.9	65.4	16	240	6.9	28.8	27			
6	90	2.1	58.8	17	255	6.9	26.0	28			
7	105	2.6	54.1	18	270	8.a	26.0	29.			
8	120	3.1	47.2	19	285	7.4	26.2	30			
9	135	3.3	42.3	20	300	7.4	26.8	31			
10	150	4.6	37.9	21	315	7.4	27.2	32			

DIRECTION SURVEY

NOV 23 1979

ROKE OIL ENTERPRISES LIMITED

COMPANY: DUPONT EXPLORATION CANADA GRID: _____ DATE SURVEYED: NOVEMBER 2. 1979

DRILL HOLE: 79-2 LATITUDE: _____ SURVEY'BY: SIN

LOCATION: _____ DEPARTURE: _____ WITNESSED BY: GUNN

FIELD: WOLVERING RIVER PROJECT ELEVATION: _____ CALCULATIONS BY: _____

MAGNETIC DECLINATION: _____ CORRECTION OF: _____ FOR: _____ G R I D : _____

Number	Cable Depth	Slant Angle	Slant Angle Bearing	Number	Cable Depth	Slant Angle	Slant Angle Bearing	Number	Cable Depth	Slant Angle	Slant Angle Bearing
0	0	0.2		11	165	0.7	156.8	22	330	I.2	220.2
1	15	0.5		12	180	0.7	'167.3.	23	345	1.4	221.9
2	30	0.9		13	195	0.7	175.9	24	360'	1.3	225.9
3	45	1.1		14	210	0.8	173.8	25	365	1.3	226.0
4	60	1.1		15	225	1.4	179.8	26			
5	75	1.1	135.9	16	240	1.4	184.4	27			
6	90	1.0	141.6	17	255	1.1	191.2	28			
7	105	1.0	146.6	18	270	1.1	194.7	29			
8	120	0.8	151.8	19	285'	1.3	199.7	30			
9	135	0.8	155.8	20	300	1.3	205.5	31			
10	150	0.8	155.3	21	315	1.2	218.9	32			

APPENDIX II

(a) Analyses

(b) Seam ash content & specific gravity

(c) Ash-SG relationships

28 November 1979

CLIENT: 'DUPONT' CANADA LIMITED.

IVER EXPLORATION PROGRAM - CORE SAMPLES: 79 - 2

LAB.NO.	ADM%	HOIST.	ASH%	VOL%	FC.%	S.%	S.G.	F.S.I.'	
4211 SAMPLE,? 187	1.95	38.7		17.1	43.7	0.56	1.62	6	adb
	1	2.4	38.0	16.8	42.8		0.55	-	arb
			38.9	17.2	43.9	0.56	-	-	db
4212 188	2.4	-	81.2	-	-	-	2.34		adb
			-	-	-	-	-	-	arb
			-	-	-		-		db
4213 189	1.7	0.4	15.2	21.6	62.8	0.39	1.40	8 1/2	adb
		2.1	14.9	21.2	61.8	0.38	-	-	arb
		..	15.3	21.7	63.0	0.39	-	-	db
4214 190	0.6	-	47.4	-	-	-	1.78	-	adb
			-		-				arb
			-	-	-	-	-	-	db
4215 191	1.0	0.4	18.4	20.8	60.4	0.34	1.42	a 1/2	adb
		1.4	18.2	20.6	53.8	0.34	-		arb
	18.5		20.9		60.6.		0.34	-	db
4216 192	1.1	-	72.7	-	-	-	2.19	-	adb
						I-			arb
		I	-	-	-	-	-	-	db
4217 193	1.1	0.4	19.6	20.9	59.1	0.46	1.45	8 1/2	adb
		1.5	[illegible]	20.7	58.4	0.45	-	-	arb
			19.7	21.0	59.3	0.46	-	-	db
4218 198	0.7	0.5	17.8	17.7	64.0	0.65	1.47	3	adb
		1.2	17.7	17.6	63.5	0.65	-	-	arb
			17.9	17.8	64.3	0.65	-	-	db
4219 199	0.6	0.5	44.1	13.9	41.5	0.25	1.77		adb
		1.1	43.8	13.8	41.3	0.25		-	arb
			44.3	14.0	41.7	0.25	-	-	db

0

Birtley Coal

2 8 November 1979

CLIENT: DUPONT CANADA LIMITED.

SAMPLE: WOLVERINE RIVER EXPLORATION PROGRAM - CORE SAMPLES: DDH 79-2

LAB.NO.	ADM%	MOIST.	ASH%	VOL%	FC.%	S.%	S.G.	F.S.I.	
4220	1.7	0.4	12.8	20.3	66.5	0.47	1.40	5 1/2	adb
#200		2.1	12.6	20.0	65.3	0.46	-	-	arb
			12.9	20.4	66.7	0.47	-	-	db
4221	3.1	-	85.4	-	-	-	2.40		adb
#201									arb
									db
4222	2.9	0.5	22.0	19.1	58.4	0.62	1.48	7 112	abb
#202		3.4	21.4	18.5	56.7	0.60	-		arb
			22.1	19.2	58.7	0.62	-	-	db
4223	1.3	-	69.7	-	-	-	2.10		adb
#203									arb
		-			-	-	-	-	db
4224	1.8	0.6	24.1	18.2	57.1	0.49	1.50	7 1/2	adb
X204		2.4	23.7	17.9	56.0	0.48	-	-	arb
			24.2	18.3	57.5	0.49	-		db
4225	0.6	0.6	19.0	19.1	61.3	0.64	1.46	4 1/2	adb
#205		1.2	18.9	19.0	60.9	0.64	-	-	arb
			19.1	19.2	61.7	0.64	-	-	db
4226	0.3	-	91.8	-	-	-	2.60		adb
#206	3	-	-		-	-			arb
				-			-	-	db
4227	0.7	0.5	12.8	21.8	64.9	0.56	1.40	8 1/2	adb
#207		1.2	12.7	21.6	64.5	0.56	-		arb
			12.9	21.9	65.2	0.56	-	-	db
4228	4.0	0.5	9.6	20.2	69.7	0.27	1.38	6 1/2	adb
#208		4.5	9.2	19.4	66.9	0.26	-	-	arb
			9.6	20.3	70.1	0.27	-	-	db

Birtley Coal

TABLE 3-I

DUPONT OF CANADA EXPLORATION LTD.
WOLVERINE PROJECT

ASH CONTENT AND SPECIFIC GRAVITY
(Recalculation of M.L. Jeremic's Table I)

Coal/Rock	Seam D			Seam E			Seam G			Seam J		
	Thick m	Ash %	S.C.	Thick m	Ash %	S.C.	Thick m	Ash %	S.G.	Thick m	Ash %	S.G.
Cool	1.77	25.0	1.50	4.20	19.0	1.40	1.42	16.0	1.40	3.20	9.6	1.50
Rock	1.16	73.0	2.40	1.14	62.0	2.40	0.58	92.0	2.40	0.35	75.0	2.20
TOTAL	2.93	49.6	1.86	5.34	33.0	1.60	2.00	47.3	1.70	3.55	18.6	1.57

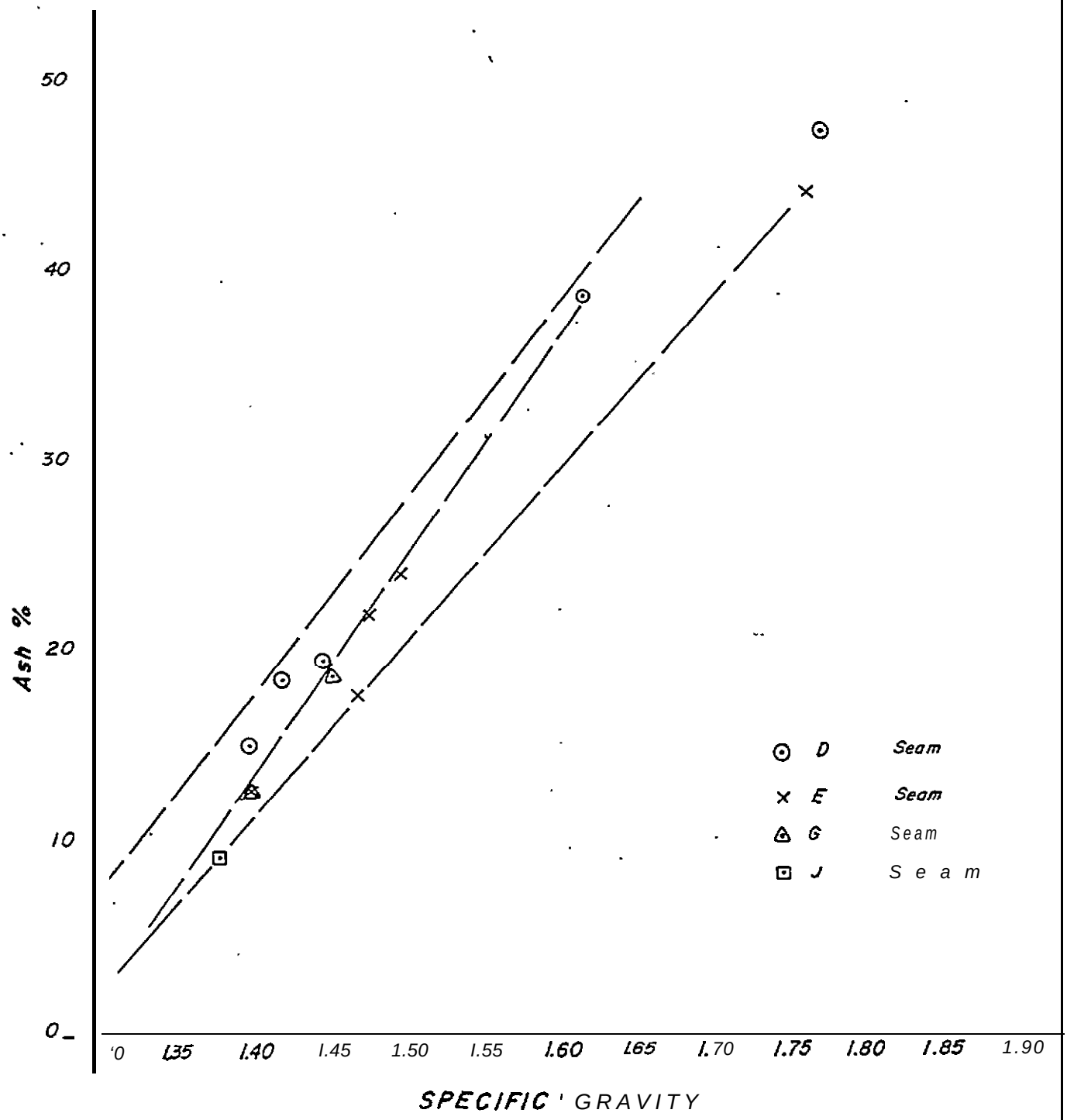


FIGURE 3-2.

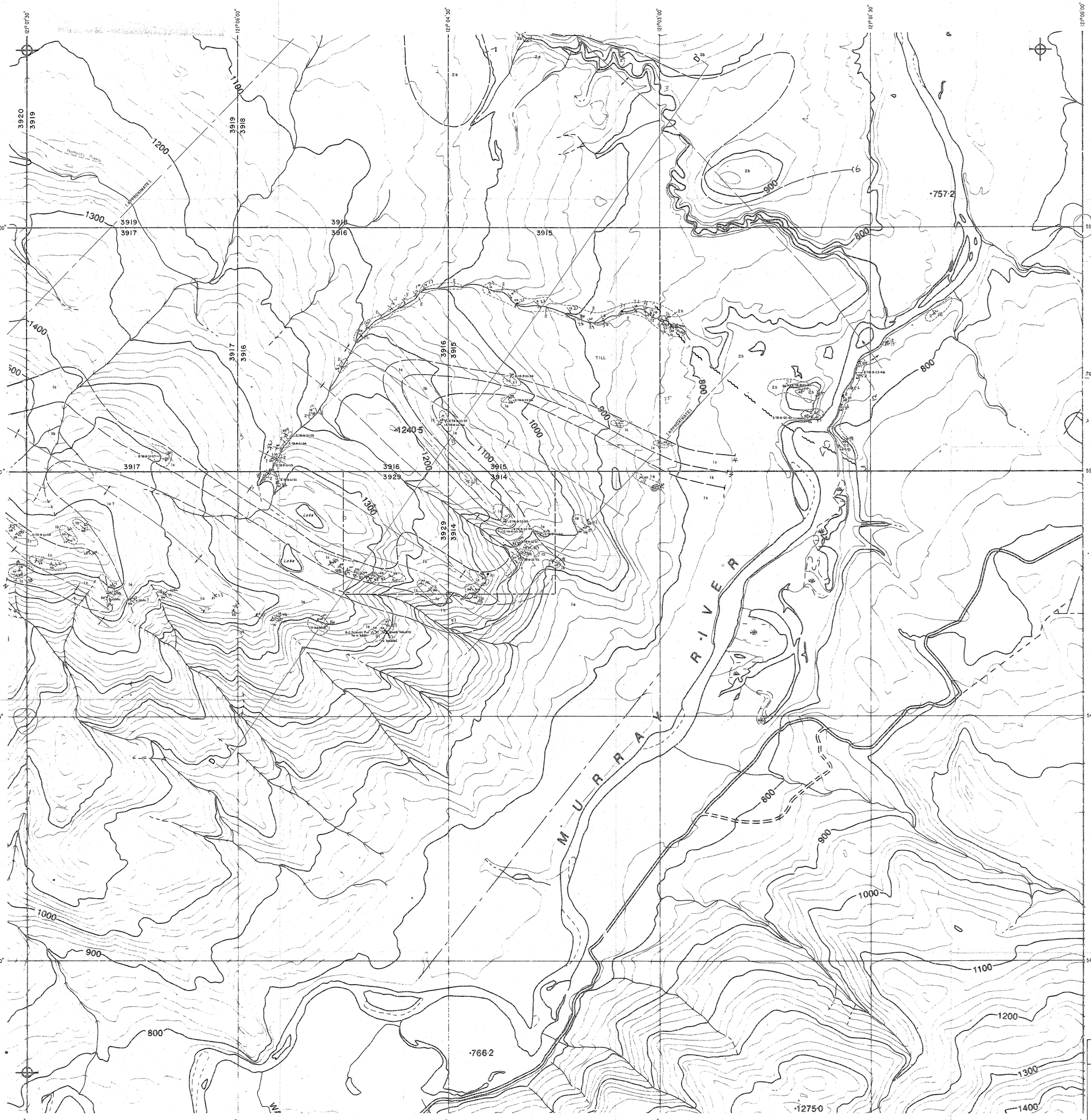
CLIENT
DUPONT OF CANADA EXPLORATION LTD

PROJECT
WOLVERINE COAL PROSPECT.

TITLE
COAL QUALITY:
ASH - S.G. RELATIONSHIP

INTERMIN CONSULTANTS LTD.

DRAWN BY	APPROVED BY	DATE	JOB No
M. D.		MAY 1980	PA 240



LEGEND

LOWER CRETACEOUS

FORT ST. JOHN GROUP

SHAFTSBURY FORMATION

- 2c — CRUISER FORMATION – SILTSTONE
- 2b — GOODRICH FORMATION – SANDSTONE, SHALE
- 2a — HASLER FORMATION – MARINE SHALE, SANDSTONE

COMMOTION FORMATION

- Ic — BOULDER CREEK MEMBER – SANDSTONE, CONGLOMERATE
- Ib — HULCROSS MEMBER – MARINE SHALE
- Ia — GATES MEMBER – SANDSTONE, SHALE, COAL
- MOOSEBAR FORMATION (NOT ON MAP)

SYMBOLS

- OUTCROP
- CONTACT
- FAULT SHOWING DIRECTION OF MOVEMENT
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- BEDDING
- BEDDING OVERTURNED
- JOINTING
- DRILL HOLE
- SURVEY PIN
- SEISMIC LINE
- E-78-9-21-35 ROCK SAMPLE
- SECTION LINE
- REFERENCE LINE
- DU PONT COAL LICENCE BOUNDARY

NW SHEET DRWG No. WO.78-16	NE SHEET DRWG No. WO.78-17
SW SHEET DRWG No. WO.78-18	SE SHEET DRWG No. WO.78-19

SHEET INDEX

515

PR - DU PONT WOLVERINE 79(2)A

DU PONT EXPLORATION CANADA

WOLVERINE PROJECT

GEOLOGY

PEACE RIVER AREA, BRITISH COLUMBIA

1 : 10 000

SCALE

1 INCH = FEET

MAPPED BY : C.B.G., L.K.E.	REVISED :	N.T.S. No.: 93 P 3
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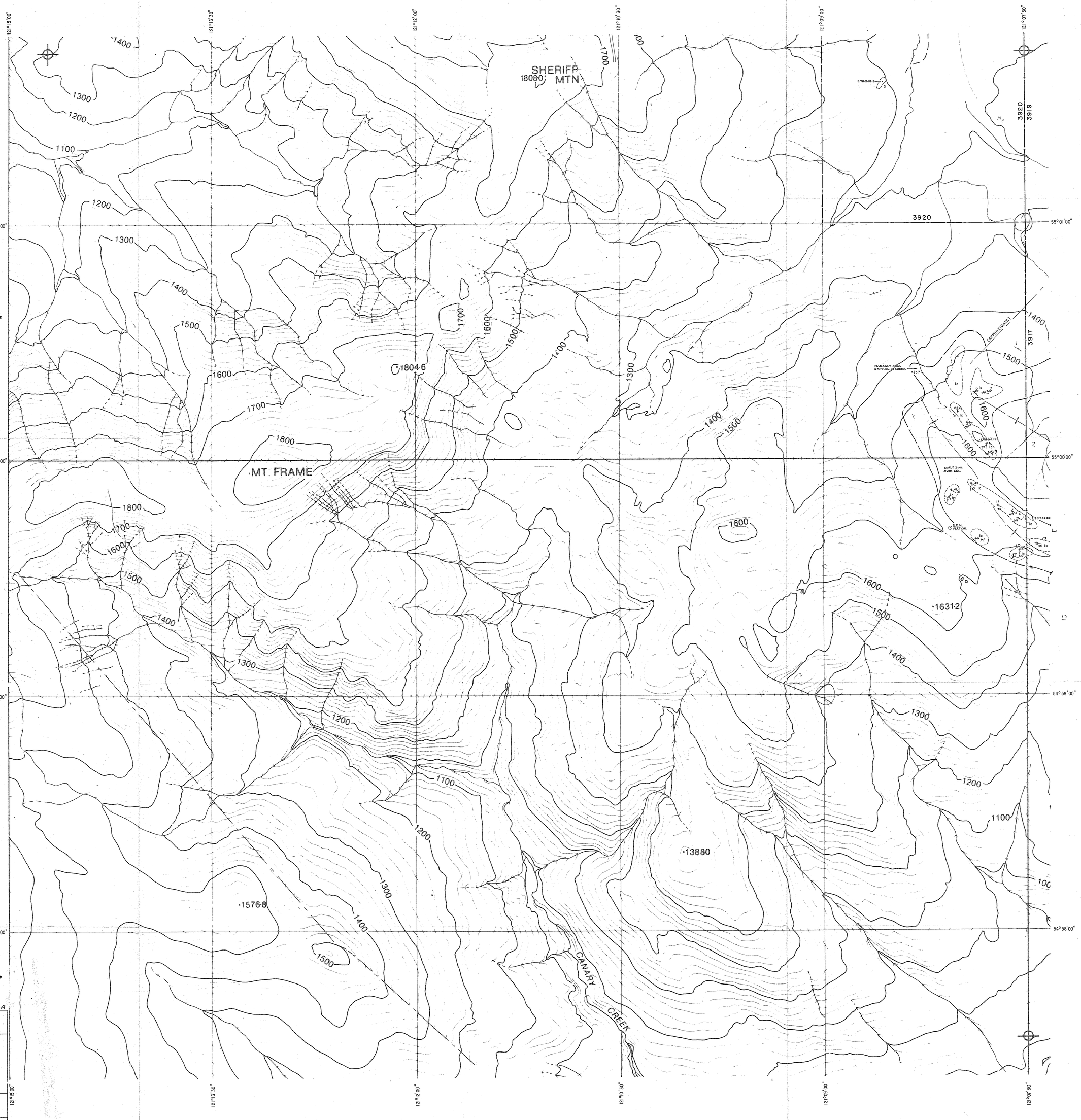
DATE : DEC. '78		



LEGEND

LOWER CRETACEOUS

FORT ST. JOHN GROUP

SHAFTSBURY FORMATION

- 2c — CRUISER FORMATION – SILTSTONE
- 2b — GOODRICH FORMATION – SANDSTONE, SHALE
- 2a — HASLER FORMATION – MARINE SHALE, SANDSTONE

COMMOTION FORMATION

- 1c — BOULDER CREEK MEMBER – SANDSTONE, CONGLOMERATE
- 1b — HULCROSS MEMBER – MARINE SHALE
- 1a — GATES MEMBER – SANDSTONE, SHALE, COAL
- MOOSEBAR FORMATION (NOT ON MAP)

SYMBOLS

- OUTCROP
- CONTACT
- FAULT SHOWING DIRECTION OF MOVEMENT
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- BEDDING
- BEDDING OVERTURNED
- JOINTING
- DRILL HOLE
- SURVEY PIN
- SEISMIC LINE
- E-78-9-21-35 ROCK SAMPLE
- SECTION LINE
- REFERENCE LINE
- DU PONT COAL LICENCE BOUNDARY

NW SHEET DRWG No. WO.78-16	NE SHEET DRWG No. WO.78-17
SW SHEET DRWG No. WO.78-18	SE SHEET DRWG No. WO.78-19

SHEET INDEX 515

PR-DU PONT WOLVERINE 79(2)A

DU PONT EXPLORATION CANADA

WOLVERINE PROJECT

GEOLOGY

PEACE RIVER AREA, BRITISH COLUMBIA

m 300 200 100 0 1 : 10 000 300 600 m

SCALE

0 1 INCH = FEET

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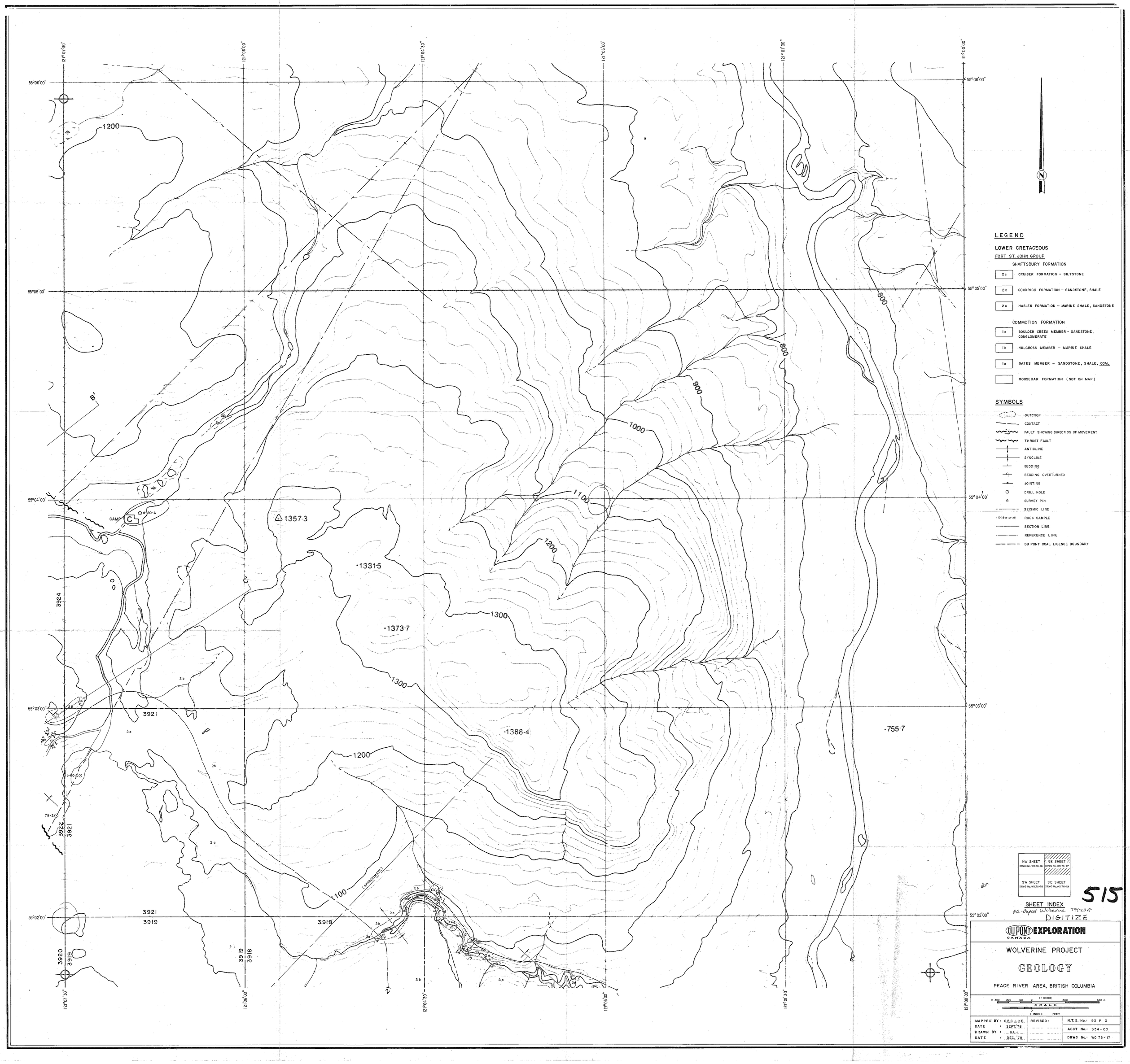
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LOWER CRETACEOUS
FORT ST. JOHN GROUP
SHAFTSBURY FORMATION
2c CRUISER FORMATION - SILTSTONE
2b GOODRICH FORMATION - SANDSTONE, SHALE
2a HASLER FORMATION - MARINE SHALE, SANDSTONE
COMMOTION FORMATION
1c BOULDER CREEK MEMBER - SANDSTONE, CONGLOMERATE
1b HULCROSS MEMBER - MARINE SHALE
1a GATES MEMBER - SANDSTONE, SHALE, COAL
MOOSEBAR FORMATION (NOT ON MAP)
SYMBOLS
OUTCROP
CONTACT
FAULT SHOWING DIRECTION OF MOVEMENT
THRUST FAULT
ANTICLINE
SYNCLINE
BEDDING
BEDDING OVERTURNED
JOINTING
DRILL HOLE
SURVEY PIN
SEISMIC LINE
ROCK SAMPLE
SECTION LINE
REFERENCE LINE
DU PONT COAL LICENCE BOUNDARY
55°06'00"
55°05'00"
55°04'00"
55°03'00"
55°02'00"
121°07'30"
121°06'00"
121°04'30"
121°03'00"
121°01'30"
121°00'00"
1200
1100
1000
900
800
1300
1357·3
1331·5
1373·7
1388·4
755·7
CAMP
3924
3921
3922
3919
3918
3920
(APPROXIMATE)
NW SHEET DRWG No. WO.78-16
NE SHEET DRWG No. WO.78-17
SW SHEET DRWG No. WO.78-18
SE SHEET DRWG No. WO.78-19
SHEET INDEX
515
DIGITIZE
DU PONT EXPLORATION CANADA
WOLVERINE PROJECT
GEOLOGY
PEACE RIVER AREA, BRITISH COLUMBIA
SCALE
1 INCH = FEET
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DATE : SEPT.78
DRAWN BY : K.L.J.
DATE : DEC. 78
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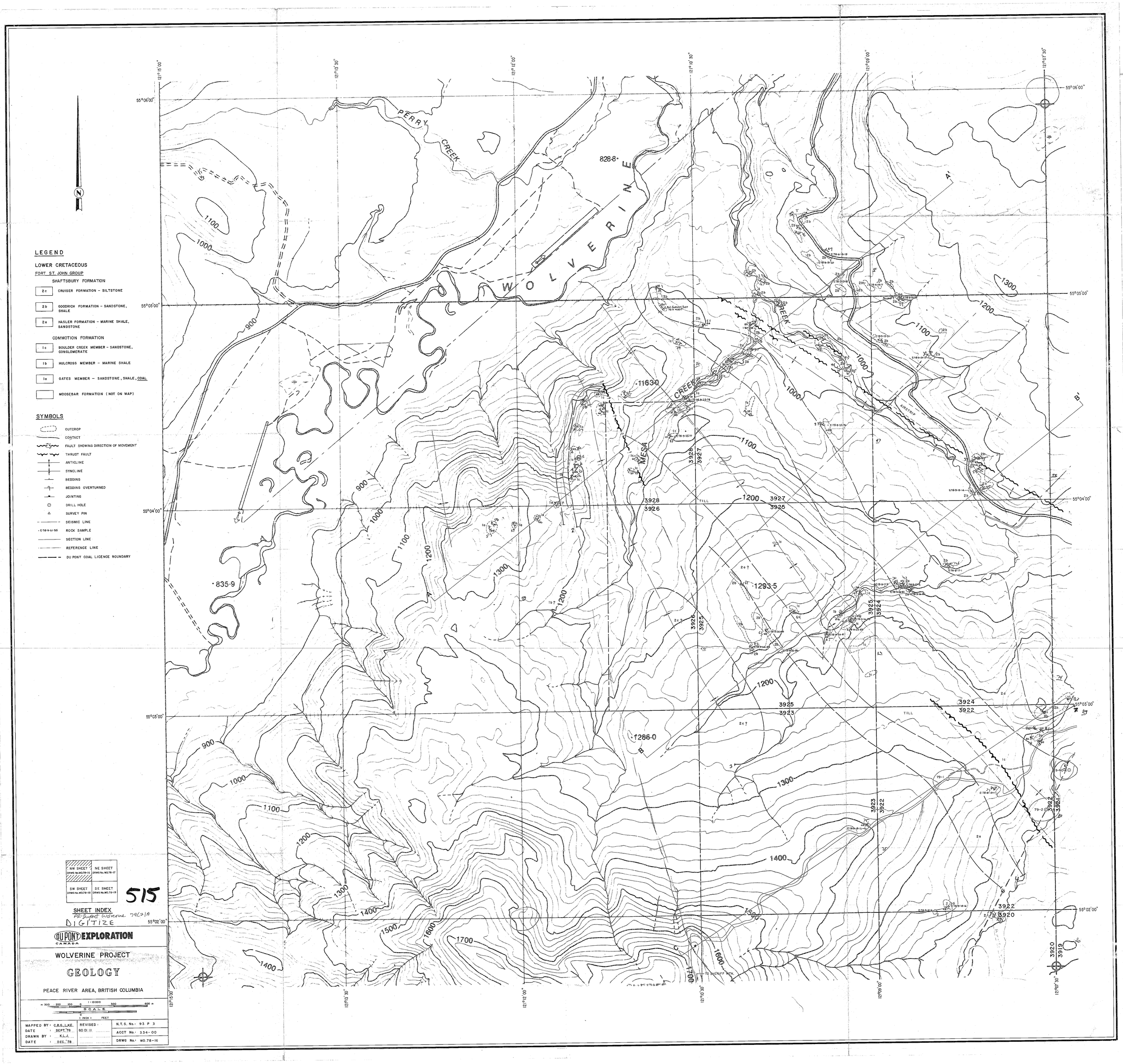
LEGEND
LOWER CRETACEOUS
FORT ST. JOHN GROUP
SHAFTSBURY FORMATION
2c CRUISER FORMATION – SILTSTONE
2b GOODRICH FORMATION – SANDSTONE, SHALE
2a HASLER FORMATION – MARINE SHALE, SANDSTONE
COMMOTION FORMATION
1c BOULDER CREEK MEMBER – SANDSTONE, CONGLOMERATE
1b HULCROSS MEMBER – MARINE SHALE
1a GATES MEMBER – SANDSTONE, SHALE, COAL
MOOSEBAR FORMATION (NOT ON MAP)
SYMBOLS
OUTCROP
CONTACT
FAULT SHOWING DIRECTION OF MOVEMENT
THRUST FAULT
ANTICLINE
SYNCLINE
BEDDING
BEDDING OVERTURNED
JOINTING
DRILL HOLE
SURVEY PIN
SEISMIC LINE
ROCK SAMPLE
SECTION LINE
REFERENCE LINE
DU PONT COAL LICENCE BOUNDARY
PERRY CREEK
WOLVERINE
MESA
CREEK
AIRSTRIP
TILL
TO SHERIFF MTN.
828.8
1163.0
1293.5
1286.0
835.9
55°06'00"
55°05'00"
55°04'00"
55°03'00"
55°02'00"
12°15'00"
12°13'30"
12°12'00"
12°10'30"
12°09'00"
12°07'30"
NW SHEET DRWG No. WO.78-16
NE SHEET DRWG No. WO.78-17
SW SHEET DRWG No. WO.78-18
SE SHEET DRWG No. WO.78-19
515
SHEET INDEX
Re-Digitized Wolverine 79C71A
DIGITIZE
DU PONT EXPLORATION CANADA
WOLVERINE PROJECT
GEOLOGY
PEACE RIVER AREA, BRITISH COLUMBIA
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SCALE
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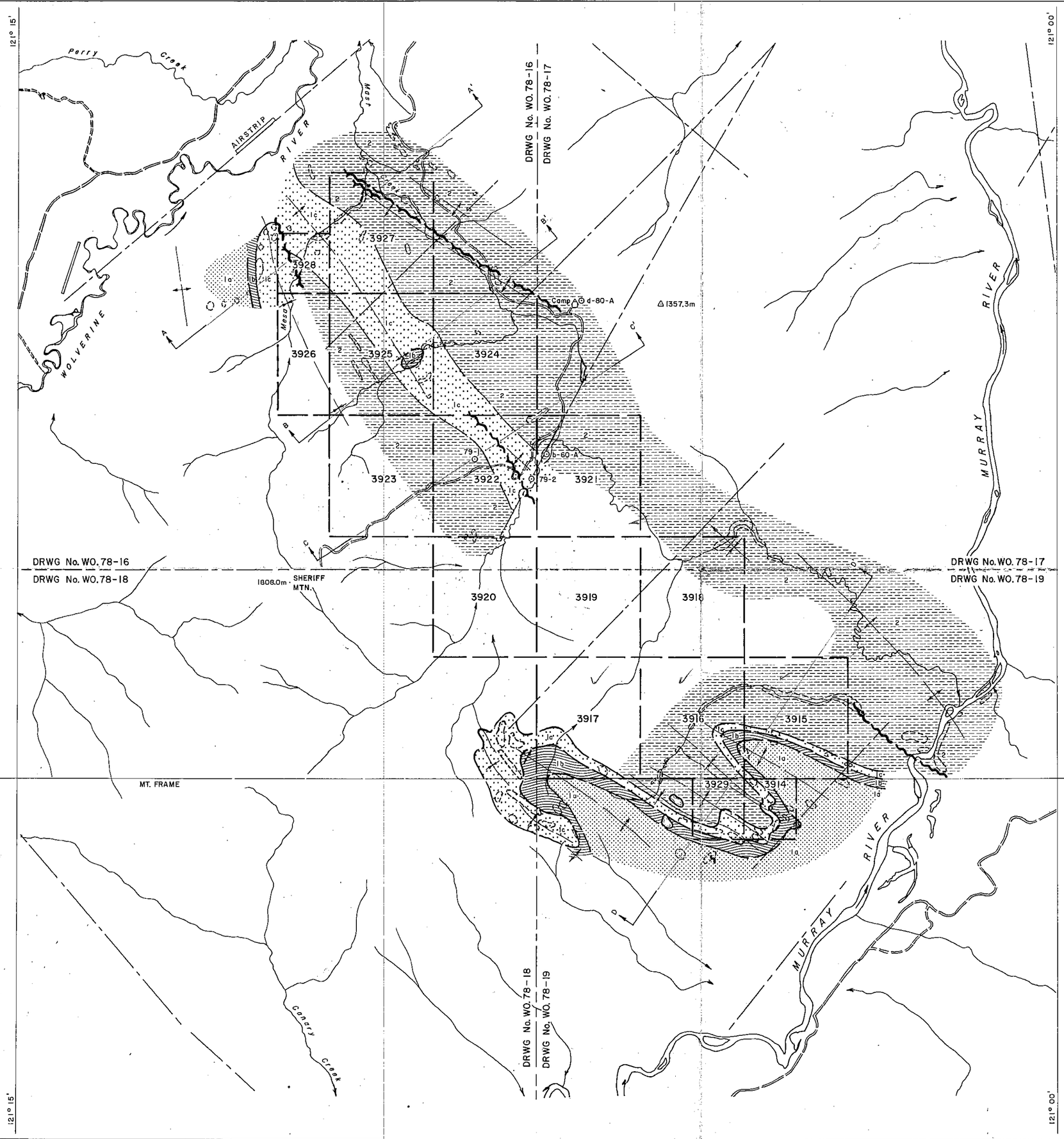

LEGEND

LOWER CRETACEOUS

FORT ST. JOHN GROUP

- SHAFTSBURY FORMATION

COMMOTION FORMATION

- BOULDER CREEK
- HULCROSS
- GATES

SYMBOLS

- OUTCROP
- CONTACT
- FAULT
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- DRILL HOLE
- SURVEY PIN
- SEISMIC LINE
- DU PONT COAL LICENCE BOUNDARY
- ROAD
- CREEK
- SECTION LINE

N

515

PR – DU-PONT WOLVERINE 79 (2) A

DU PONT EXPLORATION CANADA

WOLVERINE PROJECT

GEOLOGICAL COMPILATION MAP

PEACE RIVER DISTRICT, BRITISH COLUMBIA

1 : 50 000

Metres 1000 0 1000 2000 Metres

SCALE

Mile 1 1/2 0 1 Mile

MILES

MAPPED BY : C.B.G., L.K.E.	REVISED :	N.T.S. No.: 93 P 3
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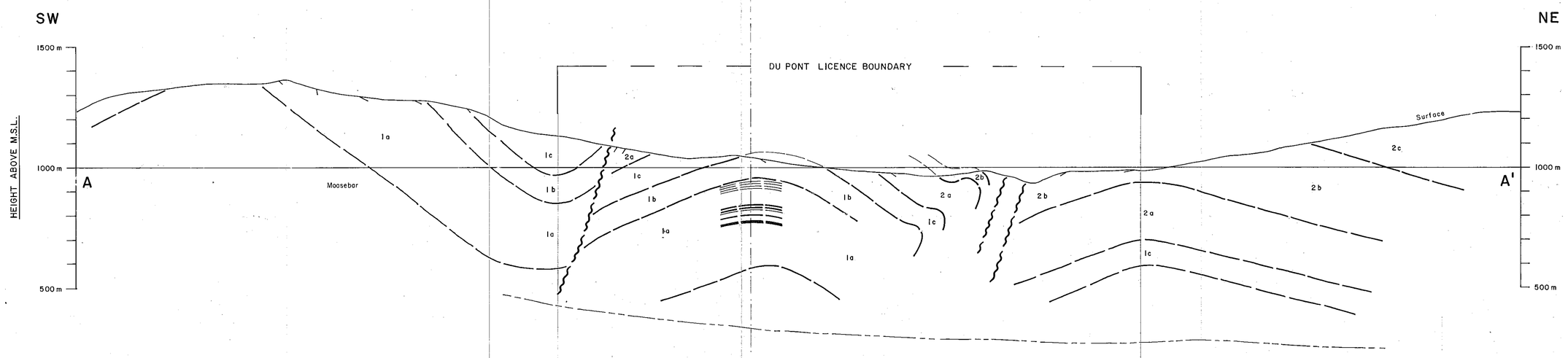

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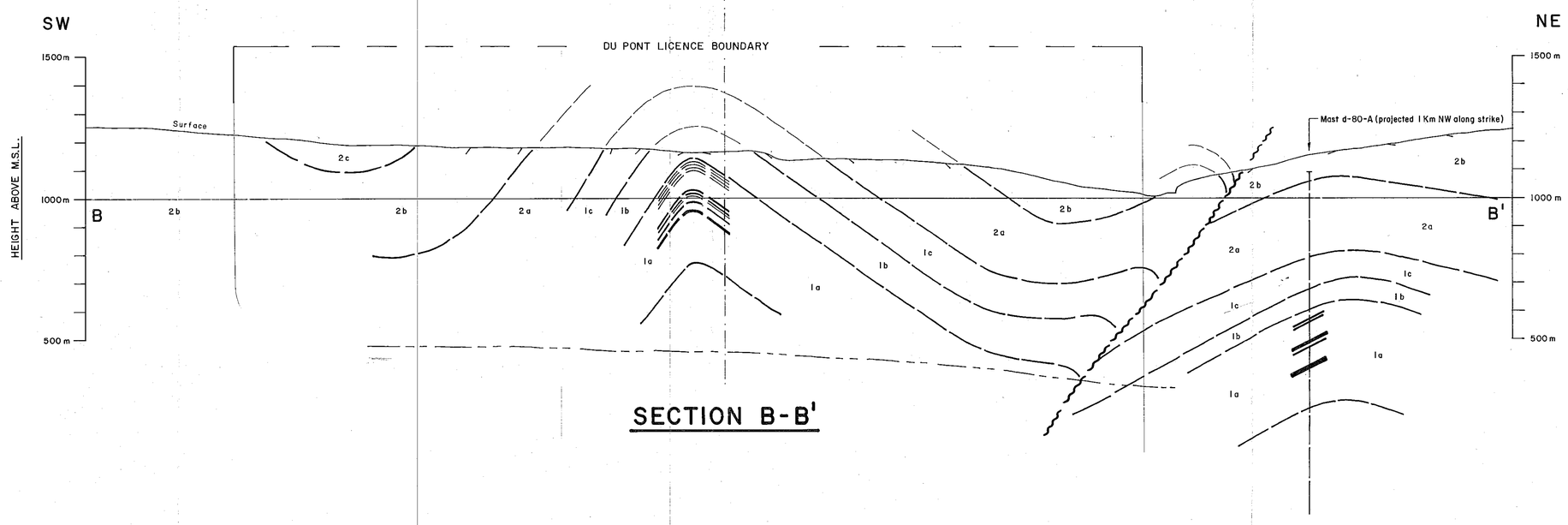

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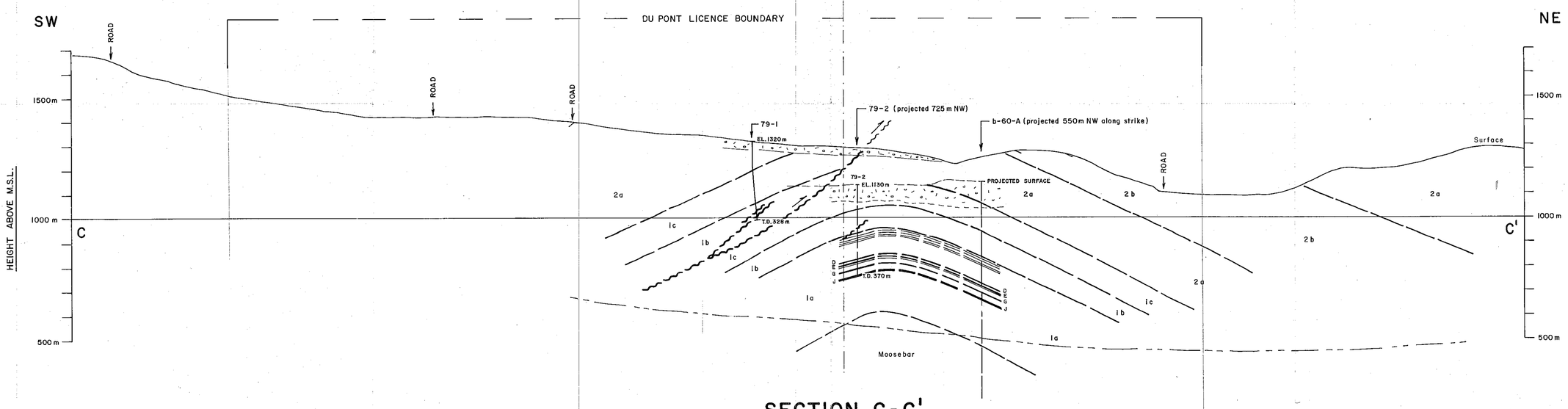

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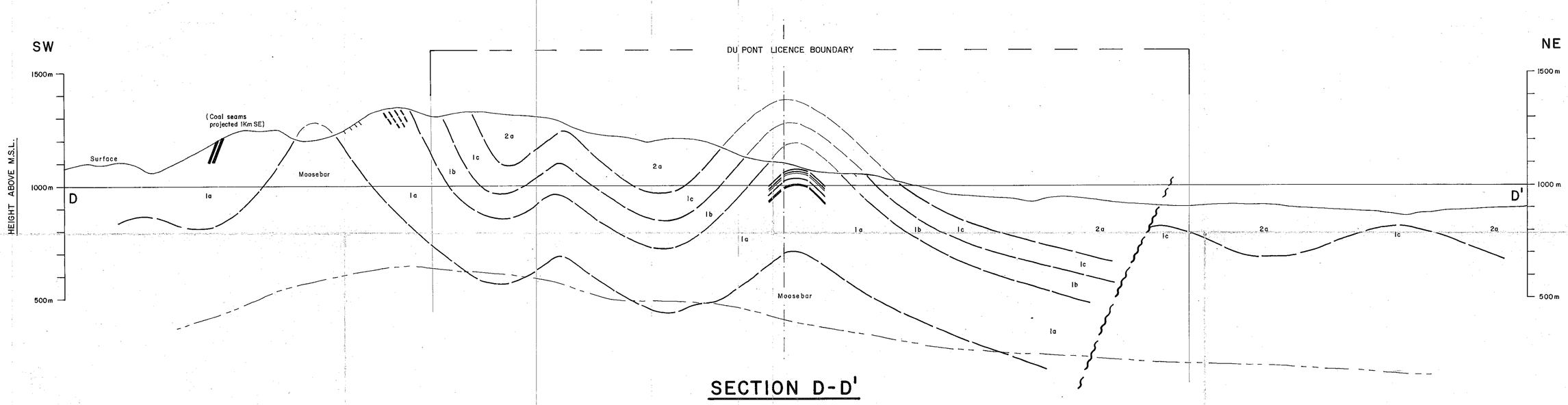


SECTION D-D'

LEGEND

LOWER CRETACEOUS

FORT ST. JOHN GROUP

SHAFTSBURY FORMATION

- 2c — CRUISER FORMATION - SILTSTONE
- 2b — GOODRICH FORMATION - SANDSTONE, SHALE
- 2a — HASLER FORMATION - MARINE SHALE, SANDSTONE

COMMOTION FORMATION

- 1c — BOULDER CREEK MEMBER - SANDSTONE, CONGLOMERATE
- 1b — HULCROSS MEMBER - MARINE SHALE
- 1a — GATES MEMBER - SANDSTONE, SHALE, COAL
- MOOSEBAR FORMATION

SYMBOLS

- CONTACT, INFERRED
- FAULT, INFERRED
- COAL SEAM
- COAL SEAM, INFERRED
- 700 METRES BELOW SURFACE
- REFERENCE LINE

515

PR - DU PONT WOLVERINE 79(2)A

DU PONT EXPLORATION CANADA

WOLVERINE PROJECT

GEOLOGICAL SECTIONS

LOOKING NORTHWEST

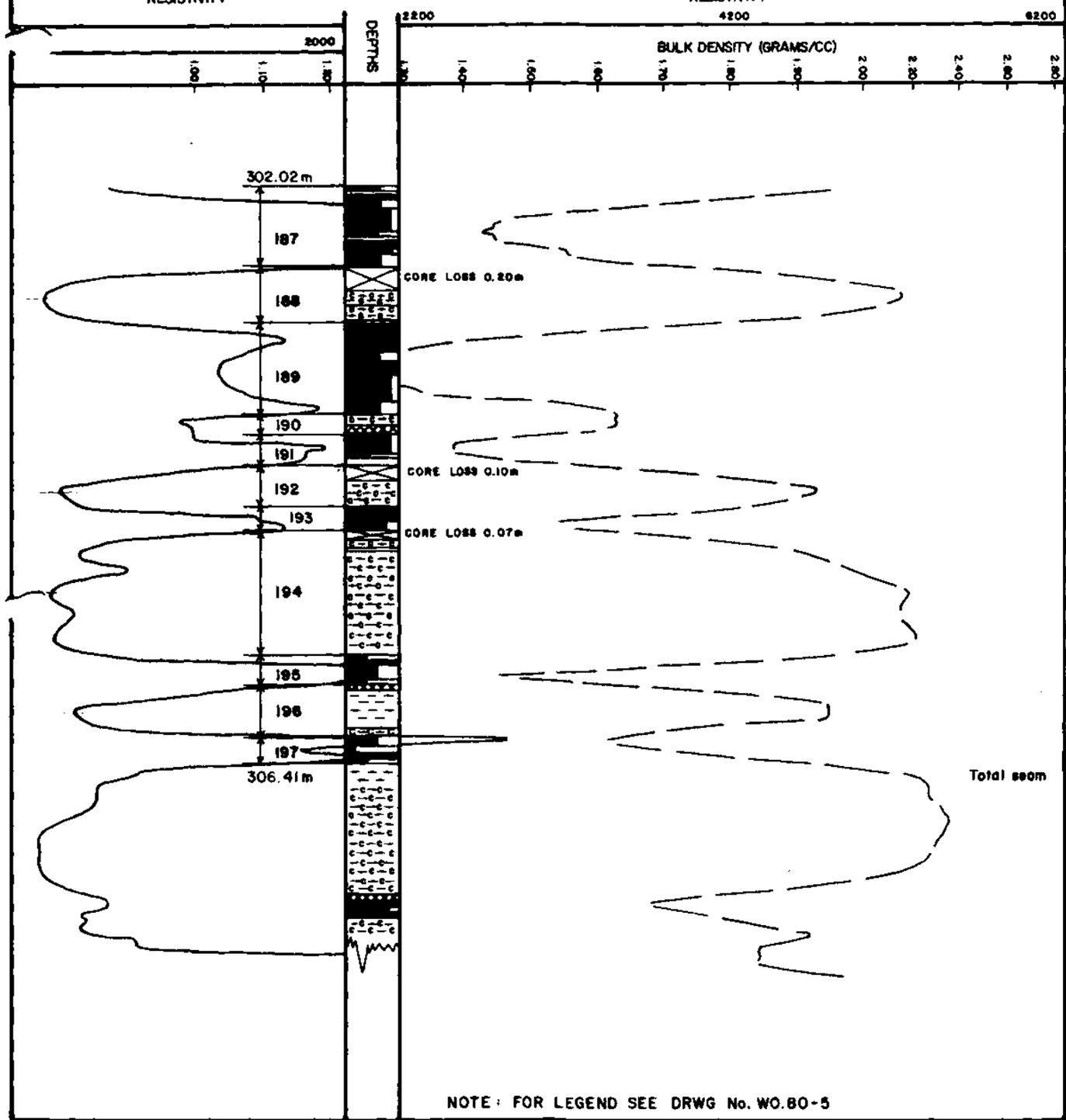
MURRAY RIVER AREA, BRITISH COLUMBIA

m 300 200 100 0 1:10 000 300 600 m

SCALE

0 1 INCH = FEET

DATA BY : C.B.G.	REVISED : 80 01 14	N.T.S. No.: 93 P 3
DATE : JAN. '79		ACCT No.: 334-00
DRAWN BY : K.L.J.		DRWG No.: WO. 79-2
DATE : JAN. '79		



	R %	INTERVAL (M)	SAMPLE NO. PLY	SAMPLE NO. COMP	AIR DRY BASIS MOIST %	ASH%	V.M.%	F.C %	S %	F S I	S G
187	100	0.61			0.5	38.7	17.1	43.7	0.56	6.0	[illegible]
188	51	0.41				81.2					2.34
189	100	0.72			0.4	15.2	21.6	62.8	0.39	8.5	1.40
190	100	0.16				47.4					1.78
191	100	0.26			0.4	18.4	20.8	60.4	0.34	8.5	1.42
192	67	0.30				72.7					2.19
193	100	0.19			0.4	19.6	20.9	59.1	0.46	8.5	1.45
194	93	0.95			NOT ANALYSED						
195	100	0.27									
196	100	0.34									
197	100	0.20									
Total seam	91.7	4.39									

Prepared by:
ROBERTSON RESEARCH CANADA LIMITED
for
DU PONT OF CANADA EXPLORATION LIMITED

DATE: Nov. 1979

RESISTIVITY ———
BULK DENSITY — · —
R% = RECOVERY - TOTAL SEAM

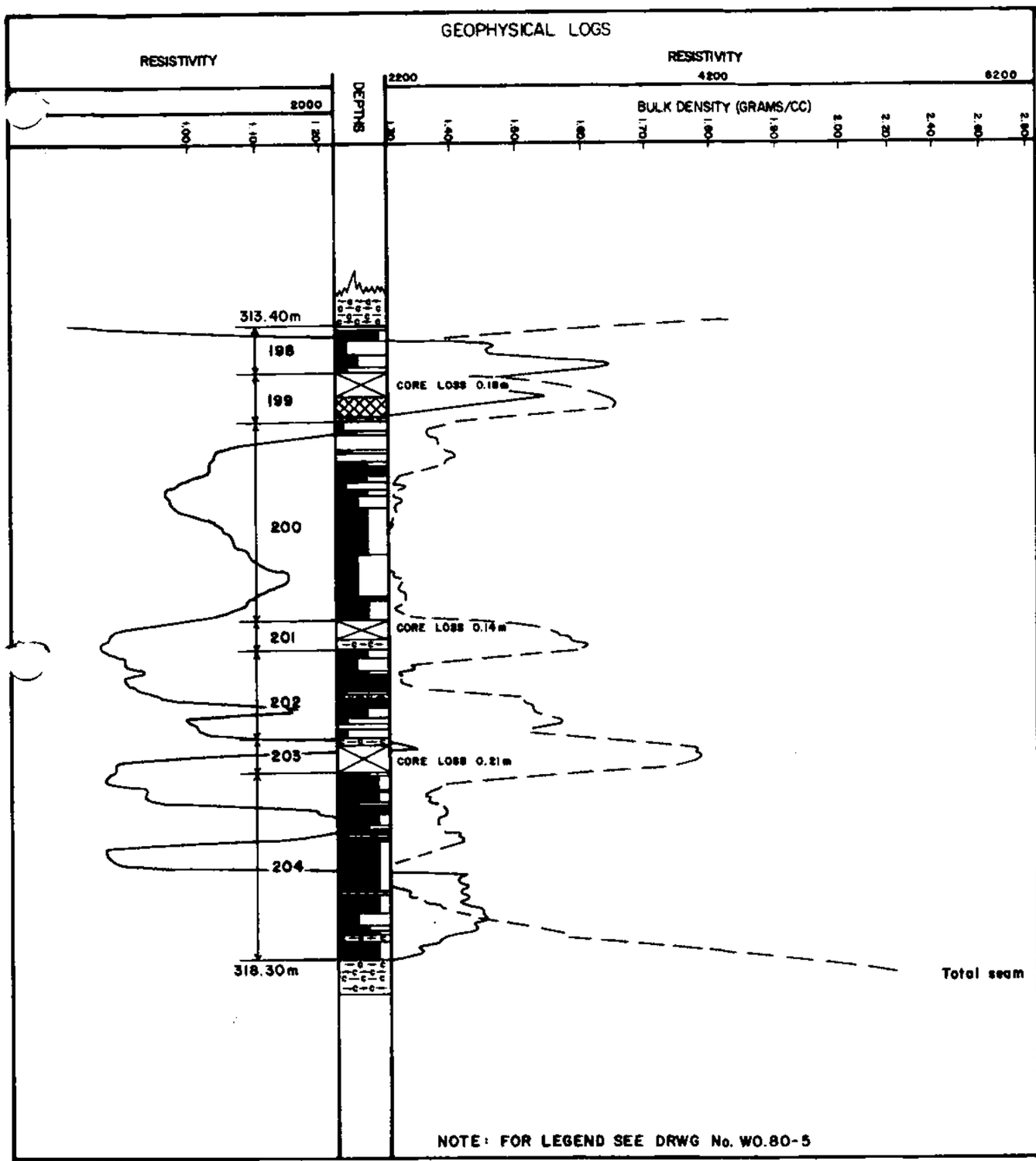
SCALE: 1:40

SEAM SECTION AND ANALYTICAL DATA

WOLVERINE RIVER PROJECT

GATES 'D' SEAM. DDH 79-2

DOX DRWG No. WO.80-2



	R %	INTERVAL (M)	SAMPLE NO PLY	SAMPLE NO COMP	AIR DRY BASIS MOIST %	ASH%	VM %	FC %	S %	FSI	SG
198	100	0.36			0.5	17.8	17.7	64.0	0.65	3.0	1.47
199	52.6	0.38			0.5	44.1	13.9	41.5	0.25	[illegible]	1.77
200	100	1.53			0.4	12.8	20.3	66.5	0.47	5.5	1.40
201	26.3	0.19				85.4					2.40
202	100	0.71			0.5	22.0	19.1	58.4	0.62	7.5	1.48
203	29	0.27				69.7					2.10
204	100	1.46			0.6	24.1	18.2	57.1	0.49	7.5	1.50
Total seam	89.2	4.90									

NOTE: FOR LEGEND SEE DRWG No. WO.80-5

Prepared by
ROBERTSON RESEARCH CANADA LIMITED
for
DU PONT OF CANADA EXPLORATION LIMITED

DATE Nov. 1979

RESISTIVITY ———
BULK DENSITY — —
R% = RECOVERY – TOTAL SEAM

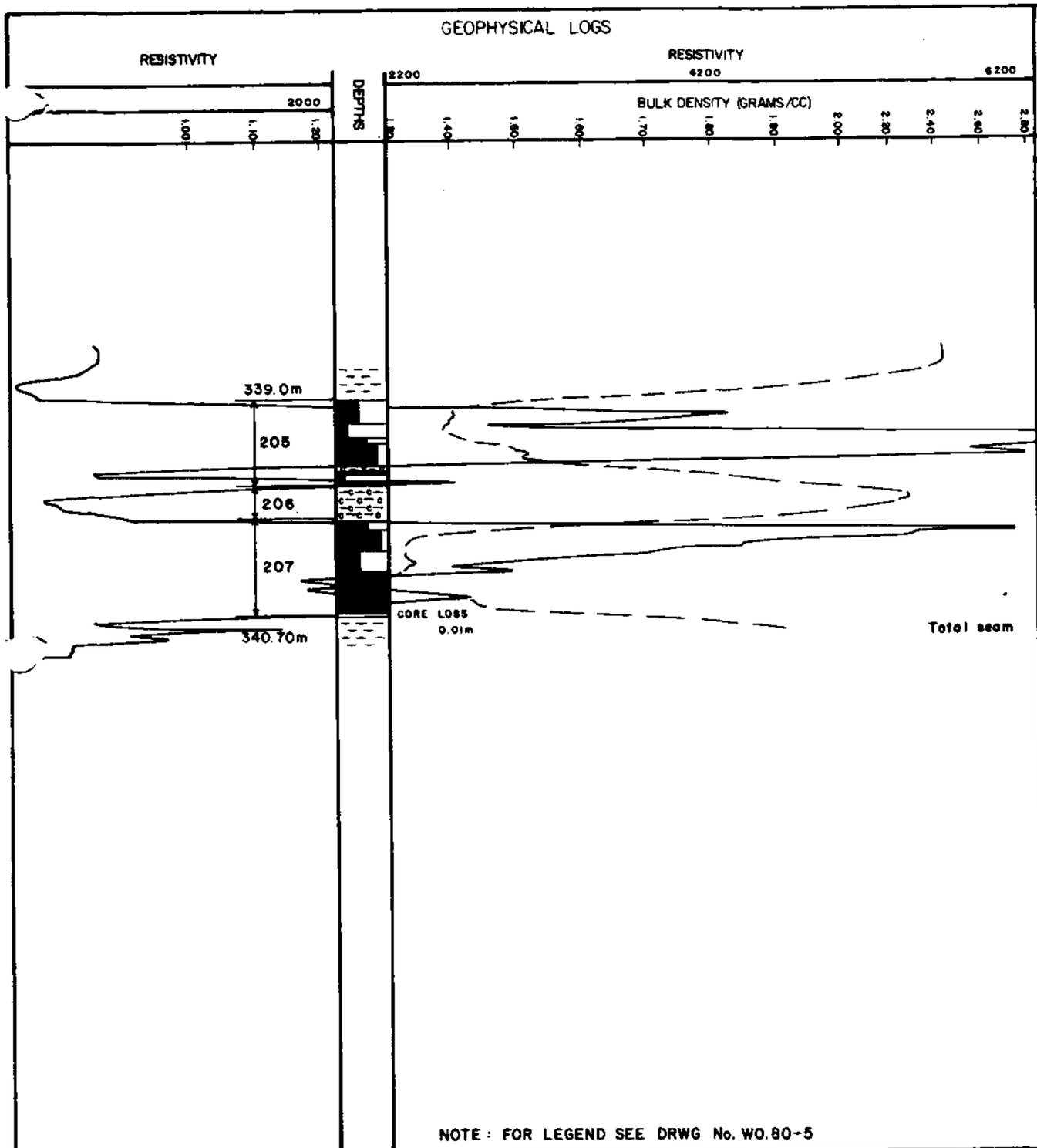
SCALE 1:40

SEAM SECTION AND ANALYTICAL DATA

WOLVERINE RIVER PROJECT

GATES 'E' SEAM. DDH 79-2

DOX DRWG No. WO. 80-3



R %	INTERVAL (M)	SAMPLE NO PLY	SAMPLE NO COMP	AIR DRY BASIS MOIST %	ASH%	V.M.%	F.C %	S %	F S I	S G
100	0.68			0.6	19.0	19.1	61.3	0.64	4.5	1.46
100	0.28				91.8					2.60
99	0.74			0.5	12.8	21.8	64.9	0.56	8.5	1.40
100	1.70									

Prepared by
ROBERTSON RESEARCH CANADA LIMITED
for
DU PONT OF CANADA EXPLORATION LIMITED

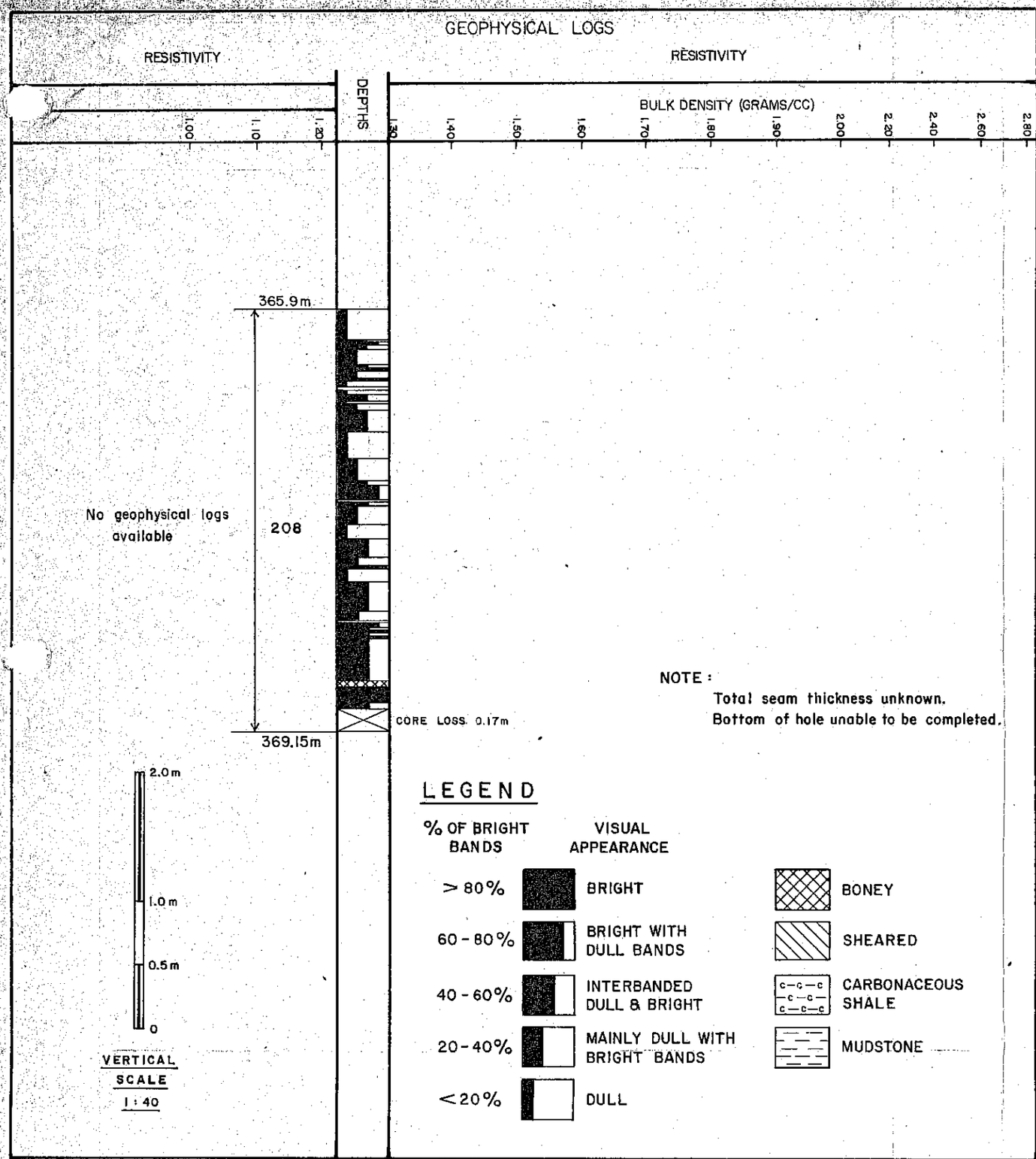
DATE Nov. 1979

RESISTIVITY ———
BULK DENSITY — —
R% = RECOVERY - TOTAL SEAM

SCALE 1:40

SEAM SECTION AND ANALYTICAL DATA
WOLVERINE RIVER PROJECT
GATES 'G' SEAM. DDH 79-2

DOX DRWG No. WO.80-4



R %	INTERVAL (M)	SAMPLE NO. PLY	SAMPLE NO. COMP	AIR DRY BASIS MOIST %	ASH%	V.M.%	F.C. %	S %	FSI	SG
95	3.25			0.5	9.6	20.2	69.7	0.27	6.5	1.38

Prepared by :
ROBERTSON RESEARCH CANADA LIMITED
for
DU PONT OF CANADA EXPLORATION LIMITED

DATE Nov. 1979

RESISTIVITY ————
BULK DENSITY — — —
R% = RECOVERY – TOTAL SEAM

SCALE 1:40

SEAM SECTION AND ANALYTICAL DATA

WOLVERINE RIVER PROJECT
GATES 'J' SEAM. DDH 79-2

DOX DRWG No. WO.80-5

APPENDIX I a

Diamond Drill Logs

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

DEC 1979

LE NO: 79.1

TE BEGUN: October 18, 1979 TOTAL DEPTH: 328.05 m

TE FINISHED: October 24, 1979 HOLE ANGLE: Vertical

T. 15°02'39"N LONG: 121°08'25"W

BEARING: Vertical

ELEV. COLLAR:

LOGGED BY: Dawson

U.T.M.

COAL LICENSE: Wolverine #3922

CORE SIZE: N . Q .

.A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	0.00	39.67		39.67			Over burden	
							Box No. 1	
	39.67	39.94	).27	0.24			Mudstone: Dark grey. competent with thin interbeds of medium grey siltstone and light grey. very fine grained sandstone. unit is heavily bioturbated with occasional worm burrows. Coal is fairly broken along bedding planes.	0.27,
						39.94		
	29.94	42.37	2.43	2.20				2.43
							Box No. 2	
	42.37	42.87	).50	0.45			As above	0.50
						42.99		
	42.87	44.41	1.54	1.40			Joint Plane 20" to CA - Open with no infilling and very rough surf aced. Core Loss	1.54
	44.41	44.51	).10	0.91				
						$4.51		
	44.51	45.01	).50	0.45			As above	0.50
							Box No. 3	
	45.01	45.95	).94	0.05				0.94
						46.04		
	45.95	47.35	1.40	1.27				1.40
						47.56		
	47.35	47.56	0.21	0.19				0.21

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
E BEGUN:
E FINISHED:
:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:'

A.

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec..
						Box No. 4	
47.56	40.76	1.20	1.09			Siltstone: medium to dark grey with thin interbeds of light grey very fine grained sandstone and dark grey mudstone, unit is competent with bioturbation.	5.20'
					49.09		
48.76	50.20	1.44	1.31			Core broken along bedding planes occasiona joint planes perpendicular to bedding, joi planes are rough with no infilling. Unit is highly crossbedded.	1.44
						Box No. 5	
50.20	51.76	1.56	1.41			As above	1.56
					52.13		
51.76	52.76	1.00	0.91				1.00
					53.05		
52.76	53.05	0.29	0.26			Core Loss	
						Box No. 6	
53.05	54.40	1.43	1.30			As above - minor bioturbation	1.43
					54.57		
54.48	54.93	0.45	0.41				0.45
54.93	55.64	3.71	0.64				0.71
						lox No. 7	
55.64	57.90	Z.26	2.05			As above	2.26
					58.23		

LE NO: 79.1
TE BEGUN:
TE FINISHED:
TOTAL DEPTH:
HOLE ANGLE:
LONG:
BEARING:
ELEV. COLLAR:
LOGGED BY:
U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
57.90	58.25	0.35	0.32				0.35
58.25	58.58	0.33	0.30			Core Loss Box No. 8	
58.58	59.78	1.20	1.09		59.76	As above .	1.20
59.78	61.22	1.44	1.31		61.28		1.44
						Box No. 9	
61.22	62.72	1.50	1.34		62.80	As above	1.50
62.72	63.86	1.14	1.03				1.14
						Box No. 10	
63.86	64.14	0.28	0.25		64.33	Asabove with frequent sandstone interbeds. Occasional blebs of marcasite approximately 20mm in diameter.	0.28
64.14	65.67	1.53	1.39		65.85		1.53
65.67	66.63	0.96	0. a7				0.96
66.63	66.81	0.18	0.16			Core loss	
						Box No. 11	
66.81	67.35	0.54	0.49		67.38	As above: Abundant bioturbation throughout, occasional worm burrows	0.54
67.35	68.83	1.48	1.34		68.90		1.48
68.83	69.45	0.62	0.56				0.62
						Box No. 12	

OLE NO: 79.1
ATE BEGUN: TOTAL DEPTH: BEARING: U.T.M.
ATE FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
AT: LONG: LOGGED BY: CORE SIZE:

.C.A.	UNIT From	UNIT TO	THICKNESS Thick	THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
25°	69.45	70.32	0. a7	0.79			As'above with minor bioturbation equal percentage of	0.87
						70.43	mudstone and sandstone interbeds.	
	70.32	*71.29*	0.97	0.88			Abundant crossbedding, equal.	0.97
						71.49		
	71.29	71.99	0.70	0.63				0.70
							Box No. 13	
	71.99	72.81	0.82	0.74			As above	0.82
						73.17'		
	72.81	74.30	1.49	1.35				1.49
						74.70		
	74.30	74.50	0.20	0.18				0.20
							Box No. 14	
	74.50	75.55	1.05	0.95			As above: Occasional. thin bands of heavily bioturbat	1.05
						75.91	sandstone.	
	75.55	77.02	1.47	1.33				1.47
						77.44		
	77.02	77.14	0.12	0.11				0.12
							Box No. 15	
	77.14	78.59	1.45	1.31			As above	1.45
						78.96		
	78.59	79.87	1.28	1.16				1.28
	79.87	80.24	0.37	0.34			Core Loss	
							Box 'No. 16	
	80.24	80.49	0.25	D.23			As above	0.25
						50.49		

LE NO: -79.1
TE BEGUN:
TE FINISHED:
:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

.A.

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
80.49	82.03	1.54	1.40				1.54
					82.16		
82.03	82.93	a.90	0.82				0.90
						Box No. 17	
82.93	83.59	0.66	0.60			As above	0.66
					83.84		
83.59	55.72	2.13	1.93				2.13
						Box No. 18	
85.72	36.62	0.90	0.82			Calcite infilling of joint plan&, possible pelecypod fragments.	0.90
					87.04		
86.62	38.10	1.48	1.34				i.48
					88.51		
88.10	38.34	0.24	0.22				0,24
88.34	18.75	0.41	0.37			Core Loss	
						Box No. 19	
88.75	10.07	1.32	1.20			Mudstone: Dark grey, competent, with occasional interbeds of medium grey siltstone and light grey sandstone, minor crossbedding end bioturbation. Occasional small blebs and bands of marcasite. Core broken parallel to bedding, joint plane 20° to CA - Open with no infilling.	1.32

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA, LTD.

.E.NO: 79.1

TE BEGUN:

TE FINISHED:

TOTAL DEPTH:

HOLE ANGLE:

LONG:

BEARING:

ELEV. COLLAR:

LOGGED BY:

U.T.M.

COAL LICENSE:

CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						90.21		
	90.07	91.48	1.41	1.28				1.41
						91.65		
	91.48	91.65	0.17	0.15			Core Loss Box No. 20	
	91.65	93.29	1.54	1.40			As above .	1.54
						93.29		
	93.29	94.44	1.25	1.13				il.25
							Box No, 21	
	94.44	94.74	0.30	0.27			As above	0.30
						94.82		
	94.74	96.28	1.54	1.40				1.54
						96.34		
	96.28	97.16	0.88	0.80				0.88
							Box No. 22	
	97.16	97.85	0.69	0.63			As above	0.69
						97.87		
	97.85	99.39	1.54	1.40				1.54

DIAMOND DRILL CORE LOG .

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
'E BEGUN:
'E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
L O G G E D BY:

U.T.M:
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS 'hick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						99.39		
	99.39	99.95	.56	0.51				0.56
							Box No. 23	
	99.95	00.81	.86	0.78			As above - Very few interbeds	0.86
						00.91		
	.00.81	02.38	.57	1.42				1.57,
						oz.44		
	.02.38	02.78	.40	0.3'6				0.40
	.02.78	02. 84	.0G	0.05			Core Loss Box No. 24	
	.02.84	03.08	.24	0.22			As above	0.24
						103.96		
	.03.08	04.72	.64	1.49				1.64
						105.49		
	04.72	05.64	.92	0.83				0.92
							Box No. 25	
	05.64	06.99	.35	1.22			As above: Occasional fractures parallel. to C.A.	il.35
						107.01		
	OG.99	38. 44	.45	1.31				1.45

E NO: 79.1

E BEGUN: TOTAL DEPTH: S E A R I N G : , U.T.M.

'E FINISHED: HOLE ANGLE: ELEV. COLLAR : COAL LICENSE:

L O N G : LOGGED BY: CORE SIZE:

A.

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
					108.54	Box No. 26	
108.44	110.06	1.62	1.47			As above, frequent interbeds	1.62
					110.06		
110.06	111.21	1.15	1.04				1.15
iii. 2i	111.67	0.46	0.42			Box No. 27	0.46
					111.59	As above	
111.67	113.03.	1.34	1.21				1.34
113.01	113.97	0.96	0.87		113.11	Joint Planes - open, rough sided with no infilling, 20° to CA.	0.96
						Box No. 28	
113.97	114.48	0.51	0.46			As above: Occasional interbeds. Core competent breaking parallel to bedding. Slickenside parallel to bedding at 115.7m and 116.16m. Occasional marcasite blebs.	0.51
114.48	116.00	1.52	1.38		114.63		1.52
					116.16		
116.00	116.66	0.66	'0.60				0.66
						Box No. 29	
Ll.6.66	117.41	0.75	0.68			As Above: Slickenside on joint plane at 117.62 calcite infilled 20° to CA.	0.75
					117.68		
117.41	118.94	1.53	1.39				1.53

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
E BEGUN:
E FINISHED:
:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
					119.21		
118.94	119.34	0.40	0.36				0.40
						Box No. 30	
119.34	120.41	1.07	0.10			As above: Frequent bedding plane slickensides	1.07
					120.73		
120.41	121.92	1.51	1.37				1.51
					122.26		
121.92	122.12	0.20	0.18				0.20
122.12	122.46	0.34	0.31			Core Ldss	
						Box No. 31	
122.46	123.82	1.36	1.23			As above;' Very few interbeds. Slickensides and calcite infilling on joint plane 20° to CA.	1.36
					123.78		
123.82	125.20	1.38	1.25				1.38
						Box No. 32	
125.20	L25.33	0.13	0.12			As aboye: Occasional bedding plane slickensides	0.13
					125.30		
125.33	126.83	1.50	1.36				1.50
					L26.83		
126.83	L27.78	0.95	1.86				0.95

E NO: 79.1
E BEGUN:
E FINISHED:
TOTAL DEPTH:
HOLE ANGLE:
LONG:
BEARING:
E L E V . COLLAR:
LOGGED BY:
U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 33	
	L27.78	128.29	0.51	0.46		128.35	Siltstone: Medium grey, interbedded with thick (25mm) light grey sandstone lenses and thin (lmm) dark grey mudstone lenses, minor bioturbation throughout, sharp basal contact;	0.51
	L28.29	129.51	1.22	1.11				1.22
	1.29.51	129.74	0.23	0.21		129.88	Conglomerate (TOP OF BOULDER CREEK). - Pebbles of Quarts and green & black chert - Dark grey sandy matrix. Pebbles vary from 1 mm to 15 mm in diameter Some calcite infilled joints 20° to CA.	0.23
	129.74	130.11	0.37	0.34				0.37
	130.11	130.42	0.31	0.28			Siltstone: Medium grey, uniform and competent	0.31
							Box No. 34	
	130.42	131.24	0.82	0.74		131.40	Siltstone: As above; thin interbeds of light grey sandstone'at base, minor bioturbation in sandy lenses.	0.82
	131.24	131.96	0.72	0.65				0.72
	131.96	132.66	0.70	0.63		132.93	Sandstone: Light grey, very fine grained with thin stringers of dark grey mudstone. Occasional coal wisps. Minor cross-bedding and bioturbation. Joint planes closed and infilled with calcite 20° to CA.	0.70
	132.66	133.12	0.46	0.42				0.46
							'Box No. 35	
	133.12	134.46	1.34	1.21			Sandstone: Coarse grained with thin interbeds of medium grained sandstone and fine conglomeratic bands. Light to medium grey, well sorted with occasional chert pebbles throughout, sharp basal contact.	1.34.

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
E BEGUN :
E FINISHED:
TOTAL DEPTH'
HOLE ANGLE :
LONG,
GEARING:
ELEV. COLLAR:
LOGGED BY:
U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
134.46	135.74	1.28	1.16			Claystone: Light brown, very soft, possible fault gouge at top of unit.	1.28
					135.98		
135.74	135.98	0.24	0.22			Core Loss	
						Box No. 36	
135.98	138.23	2.25	2.04			Siltstone: Medium grey, competent, occasional sandy lenses towards base.	2.25
138.23	138.76	0.53	0.48			Sandstone: Light grey with thin interbeds of medium grey siltstone and dark grey mudstone. Frequent crossbedding.	0.53
						Box No. 37	
3.38.76	138.96	0.20	6.18			Mudstone: Dark grey, core highly broken	0.20
138.96	139.02	0.06	0.05			Siltstone: Medium grey, competent, occasional coaly fragments.	0.06'
					139.02		
139.02	140.12	1.10	1.00				1.10
140.12	140.41	0.28	0.25			Sandstone: Light grey very fine grained, occasional chert pebbles, no sorting or cross-bedding.	0.28
					140.55		
3.40.40	140.65	0.25	0.23			Mudstone: Dark grey, competent, occasional coaly fragments.	0.25
140.65	141.49	0.84	0.76				0.84
						Box No. 38	
x41.49	141.87	0.38	0.34			As above: Occasional slickensides parallel to bedding, minor chert pebbles, possible fault plane at 143.55m.	0.38
					1 4 2 . 0 7		
141.87	143.27	1.40	1.27				1.40
					143.60		

E NO: 79.1
3 BEGUN : TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
LONG... LOGGED BY: CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
143.27	144.26	0.99	0.90			Mudstone: Dark grey with thin interbeds of light grey very fine grained sandstone.	0.99
144.26	144.60	0.34	0.31			Core LOSS	
						Box No. 39	
144.60	144.03	0.23	0.21			As above.	0.23
144.83	145.18	0.35	0.32		145,12	Siltstone: Medium grey, massive, no evidence of bedding, core highly broken at top of unit.	0.35
145,18	146.65	1.47	1,33		146.65		1.47
146.65	147.27	0.62.	0.56				0.62
						Box No. 40	
147.27	148.03	0.76	0.69		148.17	Mudstone: Dark grey, uniform, competent, calcite slickensided bedding planes, joint plane, open 20° to CA.	0.76
148.03	149.51	1.48	1.34		149.70		I.48
149.51	150.04	0.53	0.48				0.53
						Box No. 41	
150.04	150.78	0.74	0.67		151.22	Siltstone: Medium grey, massive	0.74

E NO: 79.1
E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR! COAL LICENSE: .
: LONG: LOGGED BY: CORE SIZE:

A.	From	To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	ECOVERY m. Rec.
	150.78	151.48	0.70	0.63				.70
	151.48	152.29	0.81	0.73			Mudstone: Dark grey, competent	.81
						152.74		
	152.29	152.44	0.15	0.14				.15
	152.44	152.64	0.20	0.18			Breccia zone: Mudstone and chert fragments, well cemented, zone is approximately 0.2m.	.20
	152.64	152.84	0.20	0.18			Siltstone: Medium grey with thin bands of light grey sandstone.	.20
							Box No. 42	
	152. a4	154.38	1:54	1.40			As Above: Core highly broken	.54
						155. la		
	1.54 .38	155.31	0.93	0.84				.93
							Box No. 43	
	L55.31	155.75	0.44	0.40			'As Above	.44
						156.71		
	155.75	157.25	1.50	1.36				.50
						158.23		
	157.25	157.99	0.74	0. b7			Mudstone: Dark grey, competent, occasional thin silty lenses.	.74

E NO: 79.1
'E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
'E FINISHED: HOLE ANGLE, ELEV. COLLAR : COAL LICENSE:
LONG: LOGGED BY: CORE SIZE:

A.

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 44	
157.99	158.63	0.64	0.58			As Above: Core highly broken	0.64
					'159.77		
158.63	160.52	1.89	1.71				1.89
					161.89		
160.52	160.65	0.13	0.12				0.13
l.G0.65	162.02	1.37	1.24			Core Loss Box No. 45	
162.02	162.49	0.47	0.43			As Above	0.47
162.49	162.69	0.20	0.18			Claystone: Dark grey to black, some carbonaceous fragments, core highly broken, obvious core loss.	
162.69	162.99	0.30	0.27			Core Loss	
162.99	163.29	0.30	0.27			Siltstone: Medium grey, massive, minor sandstone	0.30
					163.29		
163.29	164.52	1.23	1.11				1.23
164.52	164.02	0.30	0.27			Mudstone: Dark grey with thin bands of siltstone, base of unit highly slickensided core highly broken - Possible fault zone (0.10m thick)	0.30
					164.82		
164.82	165.08	0.26	0.24				0.26
						Box No. 46	
165.08	3.6G.26	1.18	1.07			Siltstone: Medium grey, competent,, massive	1.18

E NO: 79.1
E BEGUN:
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
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BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE1
CORE SIZE:

A	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						166. 16		
	166.26	167.76	1.50	1.36				1:50
						167.77		
	167.76	167.86	0.10	0.91				0.10
							Box No. 47	
	167.86	169.34	i.48	1.34			As above: Thin interbeds of light gray sandstone towards base.'	1.48
						169.39		
	169.34	170.04	0.70	0.63				0.70
	170.04	170.50	0.46	0.42			Mudstone: Dark grey, competent	0.46
							Box No. 48.	
	170.50	170.88	0.38	0.34			As above: Occasional chart and carbonaceous blebs.	0.38
						70.73		
	170.88	172.40	1.52	1.38				1.52
						72.56		
	172.40	173.06	0.66	0.60				0.66
							Box No. 49 . .	
	173.06	L73.18	0.12	0.11			Core highly broken at base - Possible fault zone	0.12
	173.18	173.93	0.75	0.68			Siltstone: Medlum grey, massive	0.75
						74.09		

E NO: 79.1
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TOTAL DEPTH:
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BEARING:
ELEV. COLLAR:
LOGGED BY: .
U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE. NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
173.93	175.43	1.50	1.36				1.50
					L75.61		
175.43	15.76	0.33	0.30				0.33
						Box No. 50	
175.46	77.02	1.26	1.14			As above: Thin carbonaceous stringers at 177.5m.	1.26
					L77.13		
177.02	78.56	1.54	1.40				1.54
						Box No. 51	
178.56	78.62	0.66	0.05			As above: Occasional sandy lenses and chert nodules. Slickensides along bedding planes'calcite infilled.	0 . 0 6
					L78.66		
178.62	80.02	1.40	1.27				1.40
180.02	80.08	0 . 0 6	0.05			Mudstone: Dark grey, thin silty lenses, minor slickensides parallel. to bedding.	0.06
					180.18		
180.08	81.24	1.16	1.05				1.16
						Box No. 52	
181.24	81.66	0.42	0.38			Siltstone: Medium grey with thin interbeds of light grey, very fine grained sandstone. Unit is massive with occasional slickensides parallel to bedding.	0.42
					L81.77		
181.66	83.07	1.41	1.28				1.41

E NO: 79.1
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U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	ECOVERY m. Rec.
					183.23		
183.07	184.01	0.94	0.85				.94
						Box No. 53	
184.01	184.11	0.10	0 .09			As above	.10
184.11'	184.41	0.30	0.27			Sandstone: Light gray fine grained, interbedded with thin bands of dark grey mudstone and medium grey siltstone, minor cross bedding throughout.	.30
					184.76		
184.41	184.56	0.15	0.14				.15
184.56	185.91	1.35	1.22			Siltstone: Medium grey with thin interbeds of light grey sandstone.	.35
					186.28		
185.91	186.76	0.85	0.77				.85
						Box No. 54	
186.76	107.49	0.73	0.66			As above	.73
					187.80		
187.49	188.99	1.50	1.36				.50
					189.33		
l.88.99	189'. 56	0.57	0.52				.57
						Box No. 55	
189.56	190.09	0.53	0 . 48			As above	.53

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.
E BEGUN:
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TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	190.09	190.99	0.90	0.82			Sandstone: Light grey, coarse grained, minor cross-bedding, massive	0.90
						192.38		
	190.99	191.37	0.38	0.34				0.38
							Box No. 56	
	191.37	192.59	1.22	1.11			As above: Occasional coaly fragments and chert pebbles.	1.22
						193.90		
	192.59	194.12	1.53	1.39				1.53'
						195.43		
							'Box No. 57	
	194.12	194.70.	0.58	0.53			As above: Sharp basal contact	0.58
	194.70	194.90	0.20	0.18			Conglomerate: Small pebbles of chert and quartz	0.20
	194.90	195.64	0.74	0.67			Sandstone: As above, sharp basal contact	0.74
						L96.95		
	1.95.64	195.98	0.34	0.31				0.34
	195.98	l.96.91	0.93	0.84			Siltstone: Medium grey, massive,' thin interbeds of light grey very fine grained sandstone.	0.93
							Box No. 58	
	196.91	197.11	0.26	0.18			As above	0.20
						.98.48		

E NO: 79.1

'E BEGUN:

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TOTAL DEPTH:

HOLE ANGLE:

LONG:

BEARING:

ELEV. COLLAR:

LOGGED BY:

U.T.M.

COAL LICENSE:

CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	197.11	198.73	1.62	1.47				1.62
						zoo. 00		
	198.73	199.64	0.91	0.82				0.91
							Box No. 59	
	199.64	199.92	0.28	0.25			As above	0.28
	199.92	200.09	0.17	0.15			Sandstone: Light grey, very fine grained with thin bands of very coarse grained sandstone, massive slickens-ides parallel to bedding calcite infilled.	0.17
						201.52		
	zoo. 09	201.66	1.57	1.42				1.57
						203.05		
	201.66	201.92	0.26	0.24			Claystone: Dark grey to black, many slickensides at hop, possible core loss.	0.26
	201.92.	202.50	0.58	0.53			Sandstone: Light grey, fine grained with thin carbonaceous stringers. Unit is highly crossbedded, competent joint plane 20° to CA, calcite infilled.	0.58
							Box No. 60	
	202.50	202.98	0.48	0.44			Carbonaceous Claystone: Dark grey to black with abundant coaly fragments. Core highly broken with obvious loss (coalseam).	
						205.47		
	202.98	203.13	0.15	0.14				0.15
	203.13	205.62	2.49	2.26			Core Loss	

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
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TOTAL DEPTH:
HOLE ANGLE:
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BEARING:
ELEV. COLLAR'
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

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UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
205.62'	206.89	1.27	1.15		206.10	Siltstone: Medium grey, massive, uniform minor interbeds of light grey sandstone towards base	1.27
206.89	207.55	0.66	0.60				0.66
						Box No. 61	
207.55	207.75	0.20	0.18			As above	0.20
207.75	208.25	0.50	0.45		207.50	Mudstone: 'Dark grey with occasional thin interbeds of medium grey siltstone, unit is competent.	0.50
208.25	209.73	1.48	1.34		209.15		1.48
209.73	210.34	0.61	0.55				0.61
						Box No. 62	
210.34	210.49	0.15	0.14			As above	0.15
210.49	210.66	0.17	0.15			Sandstone: 'Light grey, fine grained, crossbedded	0.17
210.66	210.86	0.20	0.18			Mudstone: As above	0.20
210.86	211.16	0.30	0.27			Sandstone: As above	0.30
211.16	211.31	0.15	0.14			Mudstone: As'above	0.15
211.31	211.63	0.32	0.29		211.63	Carbonaceous Claystone: Dark grey to black with thin interbeds of coal., core highly broken with obvious core loss,	0.32

E NO: .79 1
E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR : COAL LICENSE:
LONG: LOGGED BY: CORE SIZE:

4. UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
211.63	212.16	0.53	**0.48**			Mudstone: Dark grey, competent, uniform, occasional slickensides along joint planes 20° to CA	0.53
212.16	213.05	**0.89**	0.81				**0.89**
						Box No. 63	
213.05	213.17	0.12	**0.11**			As above	**0.12**
213.17	214.67	1.50	1.36			Siltstone: Medium grey with thin interbeds of dark grey mudstone and light grey very fine grained sandstone. Zone of broken core and rock flour at 214.5m (0.10m thick). Possible fault but believed to be due to drilling.	1.50
					214.33		
23.4.67	215.36	0.69	0.63				0.69
					215.24		
215.36	215.72	0.36	'0.33				0.36
						Box No. 64	
215.72	216.81	1.09	0.99			As above: Unit is very massive.	1.09
					216.77		
216.81	218.39	1.58	1.43				**1.58**
					218.29		
						Box No. 65	
218.39	219.86	1.47	1.33			As above: Slickensides on bedding planes.	1.47
					19.82		

: NO: 7 9 . 1
E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
LONG: LOGGED BY: CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
219.86	221.17	1.31	1.19			Mudstone: Dark grey, competent, occasional thin bands of medium grey siltstone. Occasional large chert clasts. Slickensides along bedding planes.	1.31
						Box No. 66	
221.17	221.29	0.12	0.11			As above	0.12
					221.34		
221.29	221.71	0.42	0.38				0.42
221.71	222.89	1.18	1.07			Siltstone: -Medium grey, massive, grading into sandstone at base.	1.18
					222.87		
222.89	223.24	0.85	0.77				0.85
223.74	223.80	0.06	0.05			Sandstone: Light grey, fine grained, crossbedded abundant coaly fragments throughout.	0.06
223.80	223.96	0.16	0.05			Siltstone: As above	0.16'
						Box No. 67	
223.96	224.36	0.40	0.36			As above	0.40
					224.39		
224.36	225.59	1.23	1.11			Sandstone: Light grey, fine grained, massive, sharp basal contact	1.23
225.59	225.79	0.20	0.18			Mudstone: Dark grey with thin interbeds 'of light grey sandstone.	0.20
					225.91		

E NO: 79.1
E BEGUN:
E FINISHED:
TOTAL DEPTH:
HOLE, ANGLE:
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BEARING:
ELEV. COLLAR!
LOGGED BY:
U.T.M.
COAL LICENSE'
CORE SIZE:

4. UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
225.79	226.73	0.94	0.85				0.94
						Box No. 68.	
226.73	227.09	0.36	0.33			As Above	0.36
221.09	227.14	0.05	0.04			Carbonaceous Claystone: Dark grey to black, very coaly core highly broken, with core loss.	0.05
227.14	221.39	0.25	0.23			Mudstone: Dark grey with thin bands of light grey siltstone and light grey sandstone.	0.25
					227.44		
227.39	228.80	1.49	1.35				1.49
					228.96		
228.88	229.55	0.67	0.61				0.67
						Box No. 69	
229.55	229.82	0.27	0.24			Carbonaceous Claystone: Dark grey, highly slickensided with coaly fragments throughout, obvious core loss.	0.27
					!30.18		
229.82	230.73	3.91	0.82				0.91
					!31.40		
230.73	231.28	3.55	0.50				0.55
					!32.32		
231.28	231.38	3.10	0.09				0.10

E NO: 79.1
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HOLE ANGLE:
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U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
					232.62		
231.38	231.75	0.37	0.34				0.37
					233.23		
						Box No. 70	
231.75	231.95	0.20	0.18			As above	0.20
231.95	232.00	0.05	0.04			Carbonaceous Shale: Medium, grey brown, fissile, highly broken	0,05
232.00	232.70	0.70	0.63			Core Loss	
232.70	233.05	0.35	0.32			Mudstone: As above	0.35
					233.84		
233.05	233.28	0.23	0.21				0.23
233.28	233.53	0.25	0.23			Siltstone: Medium grey, massive, slickensides, calcite infilled 20 to CA	0.25
					234.45		
233.53	234.47	0.94	0. a5				0.94
					235.06		
234.47	234.77	0.30	0.27				0.30
234.77	235.01	0.24	0.22			Claystone: Medium brown, very soft, semi fissile many slickensides parallel to bedding.	0.24
						Box No. 71	
235.01	235.48	0.47	0.43			As above	0.47
					235.98		
235.48	237.68	2.20	1.99				2.20

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
E BEGUN :
E F I N I S H E D :

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick.	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 72	
237.60	240.02	2.34	2.12			**Siltstone:** Medium grey, massive, silica infilled, joint planes 20° to CA.	2.34
					241.04		
240.02	240.44	0.42	0.38				0.42
						Box No. 73	
240.44	241.59	1.15	1.04			As above.: Sharp basal contact.	1.15
					242.68		
241.59	241.99	0.40	0.36				0.40
241.99	243.49	1.50	1.36			Sandstone: Light grey, coarse grained, well bedded, occasional plant rootlets, and blebs of chert and mudstone, unit is massive with no major jointing.	1.50
					244.21		
243. 49	243.65	0.16	0.15				0.16
						Box No. 74	
243.65	245.03	1.38	1.25			As'above: Carbonaceous sandstone band at 245 m, sharp basal contact.	1.38
					245.73		
245.03	245.96	D.93	0.84.				0.93
245.96	246.36	3.40	0.36			**Conglomerate:** Pebbles of quartz and dark grey chert: unit is cemented with a sandy matrix, pebble size varies from lmm to 15mm. Joint planes,- Open with silica infilling.	0,40

E NO: 79.1
E BEGUN :
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COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE UMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 75	
	24G.36	246.46	0.10	0.09		247.26	As above: Thin bands of well sorted conglomerate, pebbles less than 1 mm approximately 0.10m thick, occasional coaly fragments.	0.10
	246.46	248.00	1.54	1.40		248.78		1.54
	248.00	249.03	1.03	0.93				1.03
							Box No, 76	
	249.03	249.45	0.42	0.38		250.30	As above: Unit is very massive	0.42
	249.45	251.03	1.58	1.43		251.83		1.58
	251.03	251.87	0.84	0.76				0.84
	251.87	252.15	0.28	0.25			Sandstone: Light gray, coarse grained with occasional pebbles of chert.	0.28
							Box No. 77	
	252.15	253.11	3.96	0.87		253.35	Conglomerate: As above, minor crossbedding.	0.96
	253.11	254.11	1.00	0.91		254.27		1.00
o	254.11	254.97	0.86	0.78		255.49	Sandstone:. Light gray, medium grained, well bedded, occasional conglomerate lenses. Abundant silica infilled joint planes 30° to CA.	0.86
							Box No. 78'	
	254.97	255.21	0.24	0.22			As above	0.24

E NO: 79.1
E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE!
LONG: LOGGED BY: CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
255.21	255.81	0.60	0.54			Conglomerate: As above	0.60
					256.40		
255.81	257.48	1.67	1.51				1.67
					257.62		
257.48	257.62	0.14	0.13				0.14
						Box No. 79	
257.62,	258.60	0.98	0.89			As above: Sharp basal contact	0.98
258.60	258.77	0.17	0.15			Sandstone: Medium grained to fine grained, light grey, massive, occasional chert pebbles and carbonaceous fragments.	0.17
					258.84		
258.77	260.34	1.57	1.42				i.57
					260.41		
						Box No. 80	
260.34	261.78	1.44	1.31			As above	1.44
					261.85		
261.78	263.01	1.23	1.11				1.23
						Box No. 81	
263.01	263.24	0.23	0.21			As above	0.23
					263.31		
263.24	264; 74	1.50	1.36				1.50
					264.81		
264. 74	265.66	0.92	0.83				0.92
						Box No. 82	
265.66	266.27	0.61	0.55			As above	0.61
					267.07		
266.27	267.84	1.57	1.42				1.57
					268.60		

E NO: 79.1.
E DEGUN:
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	267.84	268.33	0.49	0.44				0.49
	268.33	269.09	0.76	0.69			Core Loss	
							Box No. 83	
	269.69	269.29	0.20	0.18			As above	0.20
	269.29	269.53	0.24	0.22			Mudstone: Dark grey with thin bands of coal and sandstone.	0.24
	269.53	270.13	0.60	0.54			Sandstone: As above, , ,	0.60
						279.12		
	270.13	270.43	0.30	0.27				0.30
o	270.43	271.49	1.06	0.96			Interbedded sandstone and mudstone: Thin bands of light grey sandstone'and dark grey mudstone.	1.06
						271.65		
	271.49	271.80	0.31	0.28				0.31
							Box No. 84	
	271.80	272.27	0.47	0.43			Sandstone: As above	0.47
	272.27	272.86	0.60	0.54			Interbedded sandstone and mudstone	0.60
						273.17		
	272.86	274.43	1.56	1.41				1.56
	274. 43	274.53	0.10	0.09				0.10
						274.70		
							Box No. 85.	
	274.53	275.95	1.42	1.29			Interbedded sandstone and siltstone: Light grey sandstone and medium gray siltstone, minor cross bedding.	1.42'
						276.22		
	275.95	277.32	1.37	1.24				1.37
	277.32	277.74	1.42	0.41			Core Loss	
						277.74		

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

.E NO: 79.1
'E BEGUN:
TE FINISHED:
':

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 86	
277.74	279.29	1.55	1.40			Mudstone: Darkgrey black, very uniform, occasion-	1.55
279.29	280.36	1.07	0.97		279.29	al marcasite blebs.	1.07
						Box No. 07	
280.36	282.30	1.94	1.76			As above	1.94
					282.32		
282.30	283.13	0.83	0.75				0.83
283.13	283.21	0.08	0.07			C o r e L o s s	
						Box No. 88	
283.21	283.04	0.63	0.57			As above: Frequent thin bands of light gray	0.63
					283.84	sandstone, slickensides parallel to bedding.	
283.84	205.88	2.04	1.85				2.04
						Box No. 89	
285.88	286.53	0.65	0.59			Interbedded sandstone & mudstone: 'Light grey, fine	0.65
					286.77	grained sandstone interbedded with dark	
286.53	287.73	1.20	1.09			greymudstone. Abundant pyrite blebs	1.20
					207.80	throughout minor bioturbation and	
						occasional slickensides.	
						Box No. 90	
287.73	287.80	0.07	0.06			Core Loss	
287.80	288.47	0.67'	0.61			As above: Frequent slickensides parallel to bedding,	0.67
					i 8 9 . 3 3	concentrated at 289.6m to 289.7m	
288.47.	289.91	1.44	1.31			(Possible fault).	1.44
289.91	290.59		0.62		290.85		
		0.68					0.68

E NO: 79.1
E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
LONG: LOGGED BY: CORE SIZE:

From	TO	UNIT THICKNESS Thick	TWO	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Roc.
						Box No. 91	
290.59	291.42	0.83	0.75		292.56	As above	0.83
291.42	291.64	0.22	0.20				0.22
291.64	291.76	0.12,	0.11.			Fault zone: Breciated mudstone, fault gouge and calcite infilling, fault is parallel to bedding.	0.12
291.76	292.75	0.99	0.90			core Loss	
292.75	292.99	0.24	0.22		292.99	Interbedded sandstone & mudstone: As above	0.24
292.99	294.29	1.30	1.18				1.30
						Box No. 92	
294.29	295.25	0.96	0.87		294.51	As above: Frequent. slickensides along bedding plane.	0.96
295.25	296.67	1.42	1.29		296.04		1.42
296.67	296.98	0.31	0.28				0.31
						Box No. 93	
296.98	297.59	3.61	0.55		297.56	As above: Frequent bedding plane slickensides	0.61
297.59	299.06	L.47	1.33		299.09		1.47
299.06	299.70	1.64	0.58				0.64
						Box No. 94	
199.70	300.64	1.94'	3.85		300.61	As above: Frequent slickcnsides parallel to bedding. Calcite infilling along some planes. Minor drag fold with core - Dip in drag increases to 45° - Lenght approximately 0.05m. Core is very competent with no breakage.	0.94
300.64	302.12	1.48	1.34		302.13		1.48,

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.1
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TOTAL DEPTH:
HOLE ANGLE:
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BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	302.12	302.48	0.36	0.33				0.36
							Box No. 95	
	302.48	303.71	1.23	1.11		303.66	As above: Frequent slickensides parallel to bedding	1.23
	303.71	305.23	1.52	1.38		305.18		1.52
	305.23	305.28	0.05	0.04				0.05
							Box No. 96	
	305.28	305.99	0.71	0.64		306.71	As above: Unit contains extensively drag-folded bed: from 305.30 m to 305.60 m. Dip of strata increases from 25° to 50° to 25° - No overturning of unit. Frequent slickensides throughout.	0.71
	305.99	308.09	2.10	1.90				2.10
							Box No. 97	
	308.09	308.22	0.13	0.12		308.23	As above: Small drag fold at 309.2 m, occasional slickensides, calcite infilled.	0.13
	308.22	309.74	1.52	1.38'		309.76		1.52
	309.74	310.80	1.06	0.96				1.06
							Box No. '98'	
	310.84	311.16	0.36	0.33		311.28	As above	0.36
	311.16	312.72	1.56	1.41		312.80		1.56
	312.72	313.64	0.92	0.83				0.92

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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E BEGUN:
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 99	
313.64	314.24	0.60	0.54		314.33	As above	0.60
314.24	315.37	1.13	1.02				1.13
315.37	315.47	0.10	0.09			Fault gouge Zone 0.10 m thick of, mixed mudstone and clay.	0.10
315.47	315.69	0.22	0.20		315.85	Mudstone and sandstone: As above	0.22
315.69	316.29	0.60	0.54				0.60
						Box No. 100	
316.29	316.89	0.60	0.54			As above	0.60
316.89	316.94	0.05	0.04			Bentonite	0.05
316.94	317.04,	0.10	0.09		317.38	Mudstone and sandstone: As above	0.10
317.04	317.09	0.05	0.04			Bentonite	0.05
317.09	318.59	1.50	1.36		318.90	Mudstone: Dark grey with thin interbeds of medium grey siltstone, minor bioturbation.	1.50
318.59	319.08	0.49	0.44				0.49
						Box No. 101	
319.08	319.52	0.44	0.40			Core loss	
319.52	320.42	0.90	0.82		320.43	As above: Occasional slickensides infilled with calcite, parallel to bedding.	0.90
320.42	321.95	1.53	1.39		321.95		1.53
321.95	322.29	0.34	0.31				0.34

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

: NO:' 79.1
: BEGUN :
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TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 102	
322.29	323.46	1.17	1.06			As above	1.17
					323		
323.46	324.96	1.50	1.36				1.50
					32:		
324.96	325.06	0.10	0.09				0.10
325.06	325.27	0.23.	0.19			Core loss	
325.21	326.52	1.25	1.13			As above	
					326		
326.52	320.05	1.53	1.39				1.53
					32E		
						TOTAL DEPTH 328.05m	

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 79-2
TE DEGUN: October 25/79 TOTAL DEPTH: 369.15' m BEARING: U.T.M.
TE FINISHED: November 1/79 HOLE ANGLE: Vertical ELEV. COLLAR: 1130 metres COAL LICENSE: Wolverine #3922
: 55°02'29"N LONG: 121°07'35"W LOGGED BY: Dawson CORESIZE: N.Q.

.A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	0.00	64.00					Overburden	
	64 .00	64.36	0.36	0.35			Core Loss	
							Box No. 1	
	64.36	66.26	1.90	1.84		66.16	Mudstone: Dark grey, very soft. core highly broken, blocky, unit is highly leached with abunda rust staining throughout.	1.90
	66.26	67.06	0.80	0.77				0.80
							Box No. 2	
	67.06	68.66	1.65'	1.59		68.60	As above	1.65
	68.66	69.43	0.82	0.79				0.82
							Box No. 3	
	69.43	70.09	0.56	3.54		59.97	As above: Thin interbeds of light grey siltstone.	3.56
5°	70.09	72.04	1.95	1.88		71.65		1.95
	72.04	72.13'	0.09	3.09				3.09
							Box No. 4	
	72.13	72.73	0.60	).58			As above: Sharp Basal Contact	).60
)°	72.73	73.59	0.86.	).85			Sandstone: Light grey, coarse grained, salt & pepper, unit is crossbedded, thin coaly stringers.,	).86
							Sharp Basal Contact	

.E NO: 79.2
TE DEGUN: TOTAL DEPTH: BEARING: U.T.M.
TE FINISHED: HOLE ANGLE: ELEV. COLLAR COAL LICENSE:
': LONG: LOGGED BY: CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER' m. Rec.
0'	73.59	74.34	0.75	D.74			Conglomerate: Pebbles of quartz, green and black chert, thin coaly lenses throughout, unit is'very well. consolidated in a fine grained sandstone matrix, pebble size from 1 mm to 20mm, occasional thin sandstone lenses	0.75
	74.34	74.84	0.50	0.49			Sandstone: Light grey, fine grained, crossbedded, occasional plant rootlets.	0.50
	74.84	74.99	0.15	3.15			Sandstone:' Light grey, fine grained, massive.	0.15
							Box No. 5	
	74.99	75.05	0.06	3.06		74.70	As above: Occasional mud "rip up" clasts at 75.7m.	0.06
	75.05	77.02	2.71	2.73				2 77
							Box No. 6	
	'77.82	78.13	0.31	).31		77.74	As above: Gradational basal contact, occasional "rip up" clasts throughout.	0.31
	78.13	80.38	2.25	2.22				2.25
	80.38	80.62	0.24	).24			Conglomerate: Pebbles of green, black and grey chert, size ranges from 1 mm to 30 mm, fine grained sandstone matrix.	0.24

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 73.2
TE BEGUN:
TE FINISHED:
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TOTAL DEPTH:
HOLE ANGLE:
LONG:

GEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.:
COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 7	
	80.62	80.83	0.21	0.21			As above	0.21
	80.83	81.11	0.28	0.28			Sandstone: Light grey. coarse grained, crossbedded, sharp basal contact, salt & pepper.	0.28
	81.11	81.17	0.06	0.06		80.79	Conglomerate: Pebbles of green, black chert, quartz. sandstone matrix.	0.06
	81.18	81.82	0.65	0.64			Large pebbles of green chert greater than 50mm, occasional thin bands of light grey, fine grained sandstone, gradational basal. contact.	0.65
	81.82	82.39	0.57	0.56			Sandstone: Light grey. coarse grained, sharp basal contact,.	0.57
	82.39	83.41	1.02	1.02			Sandstone: Fine grained, light grey, cross-bedded, occasional chert pebbles.	1.02
							Box No. 8	
	83.41	83.99	0.58	3.58		84.15	As above	0.58
	83.99	86.27,	2.28	2.27				2.28
							Box No. 9	
	86.27	86.35	0.08,	0.08			Core Loss	
	86.35	87.20	0.85	0.85		37.20	As above: Unit is very massive.	0.85
	87.20	89.18	1.98	1.97				1.98

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 79.2
TE BEGUN:
TE FINISHED:
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TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 10	
	89.18	90.38	1.20	1.20		90.34	As above: Occasional chert pebbles throughout.	1.20
	90.38	92.06	1.68	1.67				1.68
							Box No. 11	
	92.06	93.44	1.38	1.37			As above	1.38
	93.44	93.48	3.04	0.04		93.29	Mudstone: Dark grey with thin interheds of light grey sandstone.	0.04
	93.48	94.04	3.56	0.56			Sandstone: As above - with thin interbeds of mudstone towards base.	0.56
	94.04	94.14	1.10	3.10			Mudstone: As above	3.10
	94.14	94.94	1.80	3.80			Sandstone: As above	3.80
							Box No. 12	
	94 94	95.71	).77	I.77			As above: Unit is highly cross-bedded with minor hioturbation in mudstone lenses,	).77
	95.71	96.13	).42	).42			Mudstone: Dark grey with thin bands of light grey sandstone, minor bioturbation throughout, occasional chert pebbles.	).42

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2
'E BEGUN:
'E FINISHED:
TOTAL DEPTH:
HOLE ANGLE:
LONG:
BEARING:
ELEV. COLLAR:
LOGGED BY:
U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS TWO	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	96.13	96.43	0.30	0.30			Interbedded Mudstone and Sandstone*	0.30
	96.43	'97.68	1.25	1 . 2	5	96.34,	Light grey, cross-bedded sandstone along with dark grey mudstone, large zones of chert more than 20mm thick throughout, bioturbation throughout.	1.25
							Box No 13.	
	97.68	99.35	1.67	1.66			As above: Joint Plane 10" to CA open with no infilling.	1.67
)°	99.35	99.39	0.04	0.04		99.39		0.04
	99.39	100.43	1.04	1.02				1.04
							Box No. 14	
							HULCROSS FORMATION	
	00.43	102.41	1.98	1.95		102.44	Mudstone: Dark grey with thin interbeds of light grey siltstone, unit is heavily bioturbated.	1.98
	02.41	103.23	0.82	0.81				0 82
	03.23	103.26	0.03	0.03			Core Loss	
							Box No. 15	
	03.26	103.39	0.13	0.13			As above	0.13
)°	03.39	103.43	0.04	0.04			Bentonite: grey, very soft.	0.04
	03.43	105.55	2.12	2.09		105.49	Mudstone: As above	2.12
	05.55	106 04	0.49	0.48				0.49

. DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 79.2
TE OEGUN:
TE FINISHED:
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TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

.A	UNIT From	UNIT To	UNIT THICKNESS Thick.	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 16	
	106.04	108.5:	2.47	2.43			Mudstone: As above	2.47
	108.51	108.5	0.03	0.03		108.54	Core Loss	
	1.08. 54	108.8	0.31	0.33.				0.31
							Box No 17	
0'	108.85	111.6:	2.78	2.74		111.55	Mudstone: As above	2.78
							Box No. '18	
	111.63	113.7	2.11	2.08			Siltstone: Medium grey with thin interbeds of dark grey mudstone and light grey siltstone, unit is heavily bioturbated and cross-bedded, joint plane - 20" to CA - open with no infilling.	2.11
	113.74.	113.76	0.02	3 02			Bentonite: Light grey, soft.	3.02
	113.76	114.56	0.80	1.79			Siltstone: As above	3.80
							Box No. 19	
	114.56	114.66	0.10	1.10		L14.63	As above	1.10
	114.66	117.31	2.65	2.61				2.65

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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ELEV. COLLAR :
LOGGED BY'
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COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 20	
	117.31	119.81	2.50	2.46			As above: Minor bioturbation.	2.50
	119.81	120.19	0.38	0.37				0.38
							Box No. 21	
	120.19	1.20.52	0.33	0.32			As above	0.33
	120.52	120.73	0.21	0.21		20.73	Core Loss	
	120.73	123.28	2.55	2.51				2.55
							Box No. 22	
0°	123.28	123.95	0.67	0.66		23.66	As above.	0.67
	123.95	126.01	2.06	2.03				2.06
							Box No. 23	
	126.01	126.71	0.70	3.69			As above	3.70
0°	126.71	126.83	0.12	3.12		26.83		0 12
	126.83	128.93	2.10	1.07				2 10
							Box No. 24	
	128.93	128.98	0.05	0.05			'As above.'	0.05

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 1 9 . 2
E OEGUN:
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	From	To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	128.98	129.01	0.03	0.03			Bentonite: Light grey, thin wisps of bentonite interbedded with mudstone.	0.03
	129.01	129.12	0.11	0.11			Mudstone: As above	0 . 1 1
	129.12	129.27	0.15	0.15		129.27	Core Loss	
	129.27	131.91	2.64	2.60				2.64
							Box No. 25 .	
	131.91	132.31,	0.40	0.39			As above	0.40
	132.31	133.35	1.04	1.02		132.32		1.04
	133.35	133.50	0.15	0.15			Bentonite· Thin bands of light grey bentonite interbedded with dark grey mudstone. unit is very fissile.	0.15
	133.50	134.79	1.29	1.27			Mudstone: As above	1.29
							Box No. 26	
	134.79	134.95	0.16	0.16			As above	0.16
	134.95	135.10	0.15	0.15			Bentonite: Light grey, very soft, fissile.	0.15
	135.10	137.45	2.35	2.31			Mudstone: As above. Frequent slickensides parallel to bedding.	2.35
							Box No 27	
	137.45	138.51	1.06	1.04			As above	1.06

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	138.51	138.60	0.09	0.09		138.60	Core Loss	
	138.60	140.40	1.80	1.77				1.80
							Box No. 28	
	140.40	141.71	1.31	1.29		141.62	As above	1.31
	141.71	143.28	1.57	1.55				1.57
							Box No. 29	
)°	143.28	144.81	1.53	1.51		144.70	As above	1.53
	144.81	146.11	1.30	1.28				1.30
							Box No 30	
	146.11	147.88	1.77	1.74		147.83	As above	1.77
	147.88	148.99	1.11	1.09,				1.11
							Box No. 31	
	148.99	150.94	1.95	0.92		150.88	As above	1.95
	150.94	151.78	I.84	3.83				0.84
							Box No. 32	
	151.78	154.11	2.33	2.29		153.96	As above: Unit is heavily bioturbated.	2.33
	154.11	154.66	).55	).54				3.55

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 79.2
TE BEGUN:
TE FINISHED:
T:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 33	
	154.66	157.16	2.50	2.46			As above: Heavily bioturbated, occasional worm burrows.	2.50
0°						57.01		
	157.16	157.47	0.31	0.31				0.31
							Box No. 34	
	157.47	157.97	0.50	0.49			As above	0.50
	157.97	158.07	0.10	0.10			Bentonite: Light grey. interbedded with dark grey mudstone.	0.10
	158.07	160.17	2.10	2.07				2.10
						60.24		
	160.17	160.24	0.07	0.07			Core Loss	
							Box No. 35,	
0'	160.24	163.17	2.93	2.89			As above: Minor bioturbation. unit is highly crossbedded.	2.93
							Box No. 36	
	163.17	163.28	0.11	0.11			As above	0.11
	163.28	163.38	0.10	9.10		63.38	Core Loss	
	163.38	164.48	1.10	1.08				1.10
	164.48	164.54	0.06	3.06			Mud: Highly gaseous (H_2S)	0.06
	164.54	164.63	0.09	3.09		64.63	Core Loss	

LE NO: 19.2
TE BEGUN: TOTAL DEPTH: BEARING: U.T.M.
TE F I N I S H E D : HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
: LONG: LOGGED BY: CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVER) m. Rec.
	164.63	166.07	1.44	1.42			Mudstone: Dark grey, with occasional thin bands of light grey siltstone.	1.44
							Box No. 37	
	166.07	166.63	0.56	0.55			Mudstone: As above	0.56
	166.63	167.10	0.47	0.46		166.46		0.47
	167.10	167.75	0.65	0.64			Mudstone: Heavily bioturbated with frequent silt-stone bands.	0.65
	167.75	168.90	1.15	1.13			Mudstone: Dark grey, no bioturbation, occasional siltstone bands.	1.15
							Box No. 38	
	168.90	169.27	0.37	0.36			As above	0.37
	169.27	169.51	0.24	0.24		169.51	Core Loss'	
	169.51	171.89	2.38	2.34			'Mudstone: Dark grey with frequent interbeds of light grey siltstone, unit is highly crossbedded with occasions1 bioturbation.	2.38
							Box No. 39	
	171.89	172.18	0.29	3.29			As above	0.29
	172.18	172.20	0.02	3.02			Bentonite: Light grey, fissile.	3.02
	172.20	172.62	0.42	3.41			Mudstone: As above	3.42
	172.62'	174.84	2.22	2.19				2.22

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

.E NO: 79.2
'E BEGUN:
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TOTAL DEPTH:
HOLE ANGLE!
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

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UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 40	
0° 174 a4	175.54	0.70	0.69			Mudstone:' As above	0.70
175.54	175.61	0.07	0.07		175.61	Core Loss	
						Box No. 41	
177.73	178.17	0.44	0.43			As above	0 44
178.17	178.32	0.15	9.15			Bentonite: Light grey, soft, interbedded with dark grey mudstone.	0.15
178.32	178.53	0.21	0.21			Mudstone: As above	0.21
178.53	178.66	0.13	0.13		178.66	Core Loss	
178.66	1~0.74	2.08	2.05				2.08
						Box No. 42	
180.74	181.68	0.94	0.93			As above	0.94
181.68	181.71	0.03	0.03		181.71	Core Loss	
181.71	183.65	1.94	1.91				1.94
						Box No. 43	
183 65	184.81	1.16	1.14			As above	1.16
1a4.a1	185.19	0.38	0.37		184.76		0.38

E NO: 79.2
E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
LONG: LOGGED BY: CORE SIZE:

A.	UNIT From	UNIT TO	UNIT Thick	CKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	185.19	185.61	0.42	0.41			Mudstone: As above - unit is highly slickensided dip of strata increases to 25" (fault plane) minor drag fold associated with faulting.	0.42
0'	185.61	186.42	0.81	0.80			Mudstone: As above with no structural complications.	0.81
							Box No. 44	
	186.42	187.92	1.50	1.48		187.80	Sandstone: Light grey, very fine grained in&bedded with thin bands of dark grey mudstone unit is highly crossbedded with minor bioturbation.	1.50
	107.92	189.21	i.29	1.27				1.29
							Box No. 45	
	189.21	191.02	1.81	1.78		190.85	Sandstone: As above.	1.81
	191.02	192.04	1.02	1.00				1.02
							Box No. 46	
	192.04	193.44	1.40	1.38			As above: unit becomes very sandy towards base.	1.40
							TOP OF GATES FORMATION	
	193.44	193.72	0.28	3.28			Sandstone: Light grey, very fine grained, massive.	0.28
	193.72	193.90	0.26	3.26			Siltstone: Medium grey, competent.	3.26

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	193.98	194.15	0.17	0.17		193.90	Sandstone: Light grey, fine grained, minor cross-. bedding, occasional coaly fragments.	0.17 ,
	194.15	194.52	0.37	0.36				0.37
	194.52	194.90.	0.38	0 37			Siltstone: As above.	0.38
							Box No 47	
	194.90	197.32	2.42	2.38		196.95	Mudstone: Dark grey, competent, uniform.	2.42
	197.32	197.71	0.39	0.38				0.39
							Box No. 48	
	197.71	198.72	1.01	0.99			As above	1.01
	198.72	198.88	0.16	0.16		198.48	Coal: Core highly ground, probable core loss.	0.16
	198.88	199.42	0.54	0.53			Mudstone: As above.	0.54
	199.42	199.78	0.36	0.35			Sandstone: Light grey. fine grained thin interbeds of medium grey siltstone towards base unit is highly crossbedded with minor bioturbation.	0.36
	199.78	200.01	0.23	0.23			Mudstone: Dark grey, competent.	3.23
	200.01	200.03	0.02	0.02			laystone: Dark grey to black, occasionally carbona-ceous.	0.02
	200. 03	200.17	0.14	0.14			Mudstone: As above.	0.14
	200.17	200.37	0.20	0.20.			Sandstone: Light grey, medium grained, crossbedded, occasional plant rootlets.	0.20

.E NO: 79.2
'E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
'E FINISHED: HOLE ANGLE: ELEV. COLLAR! COAL LICENSE:
': LONG: LOGGED BY: CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	200.37	200.38	0.01	0.10		200.00	Coal: bright.	0.01
							Box No. 49	
	200.30	200.90	0.52	0.51			Mudstone: Dark grey, occasional coaly fragments.	0.52
	200.90	201.71	0.81	0.80			Sandstone. Light grey, fine grained, crossbedded.	0.81
	201.71	202.84	1.13	1.11			Siltstone: Medium grey, uniform.	1.13
	202.84	203.21	0.37	0.36			Mudstone: Dark grey, with phases of medium grey siltstone.	0.3;
							Box No. 50	
	203.21	203.49	0.28	0.28			As above	0.28
						203.05		
	203.49	206.11	2.62	2.58				2.62 ~~2.58~~
							Box No. 51	
	206.11	206.59	0.48	0.47			As above	0.48
						206.10		
	206.59	207.57	0.98	0.97				0.98.
	207.57	208.11	0.54	0.53			Sandstone: Light grey, fine grained. thin bands of medium grey siltstone, unit is highly crossbedded with minor bioturbation, occasional plant rootlets.	0.54

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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'E BEGUN :

'E FINISHED:

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LONG:

BEARING;

ELEV. COLLAR:

LOGGED BY:

U.T.M.

COAL LICENSE:

CORE SIZE:

A.	From	To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	208.11	208.14	0.03	0.03			Carbonaceous claystone: Dark grey with coaly lenses.	0.03
	208.14	208.97	0.83	0.82			Mudstone: As above.	0.83
							Box No. 52	
	208.97	209.09	0.12	0.12			Carbonaceous claystone: dark grey with coaly lenses.	0.12
	209.09	209.53	0.44	0.43		209.15	Coal.	0.44
	io9.53	209.56	0.03	0.03			Carbonaceous claystone.	0.03
	209.56	209.67	0.11	0.11			Coal - core highly broken.	0.11
	209.67	209.91	0.24	0.24			Mudstone: dark grey.	0.24
	209.91	211.73	1.82	1.79			Siltstone: Medium grey with phases of light grey sandstone and dark grey mudstone, unit is highl crossbedded.	1.82
							Box No. 53	
	211.73	212.34	0.61'	0.60		212.20	As above: unit becomes very sandy towards base.	0.61
	212.34	214.06	1.72	1.69				1.72
	214.06	214.64	0.58	0.57			Mudstone: dark grey, with phases of medium grey siltstone.	0.58

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2

TE OEGUN: TOTAL DEPTH: BEARING: U.T.M.

TE FINISHED: HOLE ANGLE: ELEV. COLLAR : COAL LICENSE:

: LONG: LOGGED BY: CORE SIZE:

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UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 54	
214.64	215.45	0.81	0.80.			As above	0.81
					215.24		
215.45	217.55	2.10	2.07				2.10
						Box No. 55	
217.55	218.45	0.90	0.89			Sandstone: Light grey, medium grained with phases of dark grey mudstone and medium gray silt-	0.90
					218.29		
218.45	220.02	1.62	1.60			stone. each phase is approximately 0.10m thick; unit is highly crossbedded with sharp basal contacts between phases, occasional "rip up" clasts of mudstone, unit becomes very coarse grained towards base.	1.62
220.07	220 40	0 33	0.32			Mudstone: Dark grey, competent, ' thin (0.1m) bands of coarse grained sandstone, unit is cross- bedded with some bioturbation.	0.33
						Box No. 56	
220.40	221.47	1.07	1.05			As above	1.07
					221.34		
221.47	221.98	0.51	0.50			Sandstone: Light grey, medium grained crossbedded. sharp basal contact.	0.51
221.98	222.71	0.73	0.72			Claystone: Dark grey, competent. grading into a carbonaceous claystone.	0.73

LE NO: 79.2
TE BEGUN: TOTAL DEPTH: BEARING: U.T.M.
TE FINISHED: HOLE ANGLE: ELEV. COLLAR : COAL LICENSE:
T: LONG: LOGGED BY: CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS TWO	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
222.71	223.24	0.53	0.52			Carbonaceous Claystone: Dark grey to black with thin bands of carbonaceous shale and coal, unit is highly broken within the very fissile shale bands.	0 53
						BOX no. 57	
223.24	223.49	0.25	0.25			Coal: Bright with occasional pyrite blebs.	0.25
223.49	223.96	0.47	0.46			Claystone: Dark gray.	0.47
223.96	224.59	0.63	0.62		224.39	Mudstone: Dark grey, with phases of medium grey siltstone.	0.63
224.59	226.10	1.51	1.49				1.51
						BOX NO. 58	
226.10	226.32	0.22	0.22			Claystone: Dark grey with occasional coaly lenses.	0.22
226.32	226.57	0.25	0.25			Coal: Bright	3 . 2 5
226.57	227.50	0.93	0.92		227.44	Mudstone: Dark grey, competent	0.93
227.50	228.99	1.49	1.47			Sandstone: Light gray, fine grained with thin interbeds of dark grey mudstone, occasional coaly fragments, unit is crossbedded with minor bioturbation.	1 . 4 9
						Box No. 59	
228 99	229.33	0.34	1.33			As above: Sharp basal contact.	1.34
229.33	230.47	1.14	1.12		230.49	Sandstone: Medium to coarse, grained, light grey, massive with occasional mudstonc blebs.	1.14
230.47	231.81	1.34	1.32				1.34

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 19.2
TE BEGUN:
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TOTAL DEPTH:
HOLE ANGLE:
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ELEV. COLLAR:
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U.T.M.
COAL LICENSE:
CORE SIZE:

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UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Roc.
						Box No. 60	
231.81	233.55	1.74	1.71		233.54	As above: thin phases of conglomerate.	1.74
233.55	234.65	1.10	1.08				1.10
						Box No. 61	
234.65	236.63	1.98	1.95		236.59	As above: phases of well bedded fine grained sandstone.	1.98
236.63	237.46	0.83	0.82				0.83
						Box No. 62	
237.46	239.66	2.20	2.17		239.63	As above: Unit is very massive, salt and pepper texture.	2.20
239.66	240.33	0.67	0.66				0.67
						Box No. 63	
240.33	242.66	2.33	2.29		242.68	As above: unit becomes very coarse grained with many conglomeritic pebbles.	2.33
242.66	242.68	3.02	0.02			Core Loss	
242.60	243.21	1.53	0.52			Conglomerate: Pebbles of grey and black chert in a coarse grained sand matrix, pebble size between 0.5mm and 10mm.	0.53

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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r E BEGUN :
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ELEV. COLLAR:
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COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 64	
	243.21	244.06	0.85	0.84			As above.	0.85
	244.06	245.03	0 97	0.96			Sandstone: Light grey, very coarse grained, cross-bedded, occasional conglomeratic pebbles towards base; Sharp basal contact, frequent coaly fragments.	0 9 7
	245.03	245.57	0.54	0.54			Mudstone: Dark grey, competent.	0.54
	245.57.	245.73	0.16	0.16		245.7:	Core Loss	
	245.73	246.19	0.46	0.46				0.46
							Box No. 65	
0'	246.19	247.51	1.32	1.30			Sandstone Medium grey, very fine grained, thin bands of dark grey mudstone, sharp basal contact	1.32
	247.51	247.66	0.15	0.15		247.56	Mudstone: Dark grey, competent.	0.15
	247.66	240.99	1.28	1.26		249.09		1.28
							Box No. 66	
0°	248.94	251.46	2.52	2.48			Sandstone: Medium grey, very fine grained with phases of dark grey mudstone.	2.52
	151.46	251.83	0.37	0.36		257.83	Mudstone: Dark grey with phases of sandstone.	3.37

DIAMOND DRILL CORE LOG

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LONG:

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COAL LICENSE:
CORE SIZE!

.A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 67	
	251.83	254.71	2.88	2.04			Sandstone: Light to medium grey with phases of dark grey mudstone.	2.88
							Box No. 68	
	254.71	254.94	0.23	0.23			As above: Small bands of mudstone containing worm burrows, minor bioturbation.	q.23
						254.88		
	254.94	255.45	0.51	0.50				0.51
						255.49		
	255.45	257.52	2.07	2.04				2.07
							Box No. 69	
	257.52	258.04	0.52	0 51			As above: Differential compaction slickensides.	0.52
						257.93		
	258.04	258.18	0.14	0.14				0.14
	258.18'	260.21	2.03	2.00			Sandstone. Medium grey, very fine grained, minor crogsbedding.	2.03
	260.21	260 34	0.13	0.13			Mudstone: Dark grey.	0.13
							Box No. 70	
	2G0.34	261.05	0.71	0.70			Sandstone: Light grey. fine grained, highly cross-bedded with thin interbeds of dark grey mudstone.	0 71
						260.98		
	261.05	Z63.24	2. 1.9	2.16				2.19

LE NO: 79.2
TE BEGUN: TOTAL DEPTH: BEARING: U.T.M.
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.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 71	
	263.24	263.63	0.39	0.38			As above: sharp basal contact.	0.39
	263.63	'263.77	0.14	0.14			Conglomerate: Pebbles of green, grey and black chert, pebble size 1 mm to 20 mm.	0 . 1 4
	263.77	264.20	0.45	0.42			Mudstone: Heavily bioturbated, brownish grey, thin wisps of coaly fragments, abundant pyrite blebs throughout	0.43
						264.02		
	264.20	266.09	1.89	1.86			Claystone: Dark grey to black with occasional coaly fragments.	1.89
							Box No. 72	
	266.09	267.19	1.10	1.08			As above	1.10
						267.07		
	267.19	269.05	1.86	1.83				1.86
							Box No. 73	
	269.05	270.23	1.18	1.16			As above	1.18
						270.12		
	270.23	271.96	1.73	1.70				1.73
							Box No: 74	
	271.96	273.29	1.33	1.31			As above	1.33
	273.29	274.84	L.55	1.53				1.55
							Box No. 75	
	274.84	275.68	3.84	0.83			As above	0.a3

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

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E DEGUN : TOTAL DEPTH:
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CORE SIZE:

A. UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
275.68	276.36	0.68	0.67		276.22	Sandstone: Light grey'with phases of medium grey siltstone, unit highly crossbedded throughout.	0.68
276.36	277.64	1.28	1.26,				1.28
						Box No. 76	
277.64	279.32	1.68	1.65		279.77	As above	1.68
279.32	280.47	1.15	1.13				1.15
						Box No. 77	
280.47	280.88	0.41	0.40			As above: Sharp basal contact.	0.41
280.88	282.38	1.50	1.48		282.32	Sandstone: Light grey, 'medium grained. abundant "rip up" clasts of mudstone, unit is highly crossbedded with abundant coaly fragments, unit becomes massive towards base. Occasional slickensides at 60° to CA	1.50
282.38	283.21	0.83	0.82				0.83
						Box No. 78	
283.21	285.26	2.05	2 02		285.37	As above	2.05
285.26	285.89	0.63	0.62				0 63'
						Box No. 79	
285.89	288.26	2.37	2.33		288.41	As above: Phases of coarse grained salt and pepper sandstone.	2.37
188.26	288.41	0.15	0.15			Core Loss	

E NO: 79.2
E BEGUN : TOTAL DEPTH: BEARING: U.T.M.
E FINISHED: HOLE ANGLE: ELEV. COLLAR : COAL LICENSE:
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A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	288.41	288.94	0.53	0.52				0.53
							Box No. 80	
	288.94	291.42	2.48	2.44			As above	2.48
0°	291.42	291.80	0.38	0.37		291.46		0.38
							Box No. 81	
	291.80	294.53'	2.73	2.69		294 51	As above: Unit becomes very coarse grained towards base, frequent coaly fragments.	2.73
	294.53	294.66	0.13	0.13				0.13
							Box No. 82	
	294.66	296.19	2.25	2.12			As above: Sharp basal contact.	2.25
	296.91	297.54	0.63	0.62		297.56	Mu&tone: Dark grey, phases of medium grey siltstone.	0.63
							Box No. 83	
	297.54	300.41	2.87	2.83			As above: Minor jointing 20° to CA, no infilling.	2.87
							Box No. 84	
	300.4 1	300.61	0.20	0.20		300.61	As above becomes very fissile with frequent coaly bands at 300.6 metres.	0.20.
	300.61	301.67..	1.06	1.04				1.06
	3'01.67	301.78	0.11	0.11			Core Loss	

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2

E BEGUN: TOTAL DEPTH: BEARING: U.T.M.

E FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:

LONG: LOGGED BY: CORE SIZE:

A.	From	To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	301.78	301.81	0.03	0.03			Carbonaceous Shale: Dark grey. coaly fragments throughout, unit very fissile.	0.03
	301.81	301.96	0.15	0.15			Mudstone: As above. joint plane, open with no infilling 20" to CA.	0 . 1 5
	301.96	301.97	0.01	0.01			Carbonaceous Shale: As above	0.01
	301.97.	302.02	0.05	0.05			Mudstone: As above	0.05
	302.02	302.06	0.04,				Coal: Dull & bright'-: Core highly broken with core loss.	0.04
	302.06	302.08	0.02				Bony	0.02
	302.08	302.09	0.01				Dull banded	0.01
	302.09	302.11	0.02				Bony	0.02
	302.11	302.19	0.08		187		Dull & bright	0.08
	302.36	302.36	3.17				Bright banded	0.17
	302.36	302 42,	3.06				Dull & bright	0.06
	302.42	302.44	3.02				Bony	0 . 0 2
	302.44	302.50	3.06				Bright	0.06
	302.50	302.53	3.03				Bright banded	0.03
	302.53	302.63	3.10		A--- AI		Dull & bright,	0.10
	302.63	302.83	3.20		188	302.74	Core Loss	
							Box No. 85	
	302.63	302.94	1.11		188		Carbonaceous claystone	3.11
	302. 94	303.04	).10				Carbonaceous shale (very fissile - wet)	0.10

E NO: 19.2
'E BEGUN: TOTAL DEPTH: BEARING: U.T.M.
'E FINISHED: HOLE ANGLE: ELEV. COLLAR COAL LICENSE:
: LONG: LOGGED BY: CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	303.04	303.07	0.03				Coal: Stony	0.03
	303.07	303.29	0.22'				Bright	0.22
	303.29	303.36	0.07				Dull & bright	0.07
	303.36	303.47	0.11		189		Bright	0.11
	303.47	303.48	0 01				Dull & bright	0.01
	303.48	303.68	0.20				Bright banded	0.20
	303.68	303.76	0.08				Dull banded	0.08
						303.68		
	303.76	303.83	0.07		190		Carbonaceous claystone	0.07
	303.83	303.91	0.08			303.96	Coal: Stony	0.08
	303.91	304.06	0.15				Coal: Bright banded	0.15
	304.06	304.10	0.04		191		Dull Banded	0.04
		304.16	0.06				Bony	0.06
		304.26	0.10				core Loss	
	304.26	304.46	0.20		192		Carbonaceous claystone	0.20
	304.46	304.54	0.08				Coal: Bright	0.08
	304.54	304.57	0.03				Dull & bright	0.03
	304.57	304.64	0.07		193		Bright banded	0.07
	304. 64	304.65	0.01				Bony	0.01
	304.65	304.72	0.07		194		core Loss	
	304.72	304.78	0.06				Carbonaceous'claystone	3.06
	304.78	304.80	0.02				Coal: Bony	0.02
	304. 80	305.08	0.28		194		Carbonaceous claystone: Occasional. bands of carbon-aceous shale. .	0.28
						304.88		
	305.08	305.44	0.36					0.36
							Box No. 86	

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

.E NO: 79.2

TE BEGUN: | TOTAL DEPTH: | BEARING' | U.T.M.

TE FINISHED: | HOLE ANGLE: | ELEV. COLLAR : | COAL LICENSE:

T: | LONG, | LOGGED BY: | CORE SIZE:

.A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS TWO	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	305.44	305.60	0.16		194		As above	0.16
	305.60	305.65	0.05				Coal: Dull banded	0.05
	305.65	305.67	0.02				Bright	0.02
	305.67	305.78	0.11		195		Dull & bright	0.11
	305.78	305.82	0.04				Dull banded	0 04
	305.82	305.87	0.05		A L - -		stony	0.05
	305. a7	306.12	0.25		T 196		Mudstone: Core highly shattered	0.25
	306.]2	306.13	0.01				Coal: Bony	0.01
	305.13	306.21	0.28				Carbonaceous claystone	0.28
	306.21	306.28	0.07				Coal: Dull & bright	0.07
	306.28	306.29	0.01				Dull	0.01
	306.29	306.34	0.05		197		Bony	0.05
	306.34	306.38	0.04				Bright	0.04
	306.38	306.41	0.03				Dull banded	0.03
						306.71		
	306.41	307.41,	1.00	0.99			Claystone: Dark grey to black with abundant coaly lenses.	1.00
	307.41	307.46	0.05				Coal: stony	0.05
	107.46	307.50	0.04				Bright	0.04
	307.50	307.55	0.05				Bright banded	0.05
	107.55	307.58	0.03				Bright	0.03
						307.62		
	307.58	308.08	0.50				Claystone: Core highly broken	0.50
	308.08	308.13	0 05				Core Loss	

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 79.2
TE BEGUN:
TE FINISHED:
r:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR.'
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 87	
	308.13	309.71	1.58	1.56		309.76	Mudstone: Dark grey with phases of medium grey siltstone. Joint plane 20" to CA - no infilling, sandy phases towards base.	1.58
	309.71	310.96,	1.25	1.23				1.25
							Box No. 88	
	310.96	312.42'	1.46	1.44			Sandstone: Light grey, fine grained, phases of medium grey siltstone, unit is crossbedded.	1.46
	312.42	312.70	0.28	0.28		312.80	Claystone: Dark grey with occasional coaly lenses.	0.28
	312.70	313.34	0.64	0.63				0.64
	313.34	313.40	0.06	0.06			Carbonaceous claystone	0.06
	313.40	313.43	D.03				Coal: Bony	0.03
	313.43	313.52	0.09				Bright banded	0.09
	313.52	313.62	0.10				Dull	0 10
	313.62	313.73	0.11				Dull banded	0.11
					198		Box No. 89	
	313.73	313.76	1.03				Coal: Dull	0.03
	313/76	313.94	1.18				Core Loss	
	11.3. 94	314.11	).17				Coal: stony	3.17
					199			
	314.1.1	3 14 14	).03				Claystone	3.03

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2
E BEGUN:
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	31.4.1.4	314.21	0.07				Coal: Dull	0.07
	314.21	314.24	0.03				Dull banded	0.03
	31.4. 24	314.35	0.11				Bony	0.11
	31.4 . 35	314.38	0.03				Dull	0 . 0 3
	31.4.38	314.44	0.06				B o n y	0 . 0 6
	31.4 . 44	314.48	0.04		200		Dull & bright	0.04
	314.48	314.55	0.07				Bright	0.07
	314.55	314 .60	0.05				Dull & bright	0.05
	31.4. 60	314.67	0.07				' D u l l	0.07
	314.67	314.70	0.03				Dull & bright	0.03
	314.70	314.81	0.11				Dull banded	0.11
	31.4 . 81.	315.17	0.36				Dull & bright	0.36
	315.17	315.50	0.33				Dull banded	0 . 3 3
	315.50	315.51	0.01				Dull	0.01
	31.5.51.	315.53	0.02				Bright	0.02
	31.5.53	315.67	0.14				Dull & bright - core highly brokeh	0 . 1 4
						315.85		
	31.5.67	315.81	0.14		201		Core Loss	
	31.5 .81	315.86	0.05				Carbonaceous claystone	0.05
	315.86	315.90	0.04				Coal: Bright banded	0.04
	315.90	315.95	0.05				Dull & bright	0.05
	315.95	316.05	0.10				Dull banded - core highly broken	0.10
	316.05	316.06	0.01				Bony'- core highly broken	0.01
	316.06	316.00	0.02				Dull & bright - core highly broken	0.02
	316.08	316.20	0.12				Bright	0.12
	316.20	316.22	0.02				D u l l	0.02
					202			
	316.22	316.26	0.04				Carbonaceous claystone	0.04
	316.26	316:34	0.08				Coal: Bright,	0.08
	31.6. 34	316.41	0.07				Dull & bright	0.07
	316.41	316.46	0.05				Dull	0 . 0 5
	316.46	316.52	0.06				Bony	0.06

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2
E OEGUN :
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG :

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	TWO	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
						Box No. 90	
316.52	316.57	0.05		202		Coal: Dull	0.05
316.57	316.63	0.06		203		Carbonaceous claystone	0.06
316.63	316.84	0.21				Core Loss	
31.6.84	316.88	0.04				Coal: Dull & bright	0.04
316.88	316.97	0.09				Bright banded	0.09
316.97	316.98	0.01				Dull	0.01
316.98	317.05	0.07				Bright banded	0.07
317.05	317.06	0.01		204		Dull	0.01
317.06	317.10	0.04				Dull banded	0.04
317.10	317.13	0.03				Bright	0.03
317.13	317.15	0.02				Bony	0.02
317.15	317.24	0.09				Bright banded	0.09
31.7.24	317.29	0.05				Dull. & bright	0.05
31.7.29	317.30	0.01				Coal: Bright	0.01
317.30	317.31	0.01				Bony	0.01
31.7.31	317.35	0.04				Dull	0.04
317.35	317.36	0.01				Carbonaceous claystone	0.01
317.36	317.38	0.02				Coal:. Bright	0.02
317.38	317.77	0.39				Bright banded	3.39
31.7.77	317.81	0.04		204		Stony	3.04
317.81	317.94	0.13				Bright banded	0.13
31.7.94	318.05	0.11				Dull banded	1.11
318.05	318.06	0.01				Bony	1.01
318.06	318.09	0.03				Dull & bright	3.03
338.09	318.11	0.02				Bright banded	3.02
318.11	318.17	0.06				Carbonaceous claystone	0.06
318.17	318.30	0.13				Coal: Bright banded	3.13

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2
E BEGUN:
E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	318.30	318.58	0.28	0.28			Carbonaceous claystone: Frequent coaly bands.	0.28
	318.58	318.90	0.32	0.32			Core Loss	
						318.90		
							Box No. 91	
	318.90	319.22	0.32	0.32			As above	0.32
	319.22	320.38	1.66	1.63			Mudstone: Dark grey, phases of medium grey siltstone.	1.66
	320.88	321.07	0.19	0.19			Sandstone: Light grey, medium grained, unit is very crossbedded with abundant plant rootlets	0.19
	321.07	321.81	0.74	0.73			Mudstone: As above	0.74
							Box No. 92	
	321.81	321.97	0.16	0.16			Mudstone: As above	0.16
						321.95		
	321.97	322.12	0.15	0.15				0.15
	322.12	322.14	0.02	0.02			**Coal:** Stony	0.02
	322.14	322.17	0.03	0.03			Carbonaceous claystone	0.03
	322.17	322.23	0.06.				Coal: Dull	0.06
	322.23	322.29	0.06				Dull & bright	0.06
	322.29	322.31	0.02				Dull	0.02
	322.31	322.34	0.03				Bony	0.03
	322.34	322.40	0.06				Dull & bright	0.06
	322.40	322.47	0.07				Bright banded	0.07
	322.47	322.51	0.04				Dull & bright	0.04
	322.51	322.79	0.28				Core Loss	
	322.79	323.83	1.04	1.02			Sandstone: Light grey, medium to coarse grained, occasional chert pebbles.	1.04

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

E NO: 79.2
'E BEGUN:
'E FINISHED:

TOTAL DEPTH:
HOLE ANGLE:
LONG:

BEARING:
ELEV. COLLAR:
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
	323.83	324.86	1.03	1.01			Conglomerate: Pebbles of black and grey chert in a fine grained sandstone matrix, unit is we.11 sorted with pebbles ranging from 1 mm to 15 mm;	1.03
							Box No. 93	
	324.86	325.00	0.14	0.14		325.00	Conglomerate: As above, phases of coarse grained sandstone.	0.14
	325.00	327.47	2.47	2.43				2.47
							UoxNo.94	
	327.47	327.50	0.03	'0.03			Core Loss	
	327.50	328.03	0.53	0.52		328.05	As above	0.53
	328.03	328.86	0.83	0.82				0.83
	$28.86	328.94	0.08	0.08			Sandstone: Light grey, medium grained, massive, occasionaconglomeratic enses;	0.08
	328.94	330.04	1.10	1.08		328.96		1.10
							Box No. 95	
	130.04	330.91	0.87	0.86		331.10	As above	0.87
	130.91	333.oi	2.10	2.07				2.10
							Box No. 96	
						334.15	Occasional bands of medium grey siltstone.	1.07
	334.08	335.88	1.80	1.77				1.80
	333.01	334.08	1.07	1.05			As above:	

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

LE NO: 19.2
TE BEGUN:
TE FINISHED:
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TOTAL DEPTH:
HOLE ANGLE:
LONG:

GEARING:
ELEV. COLLAR :
LOGGED BY:

U.T.M.
COAL LICENSE:
CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKEF	DESCRIPTION	RECOVERY m. Rec.
							Box No. 97	
	335.88	337.1.7	1.29	1.27			As above	1.29
						337.20		
	337.17	338.76	1.59	1.57				1.59
							Box No. 98	
	338.76	338.90	0.14	0.14			As above! Sharp basal contact	0.14
	338.90	339.00	0.10	0.10			Mudstone:' Dark grey, competent.	0.10
	339.00	339.18	0.18	0.18			Coal: Dull banded	0.18
	339.18	339.31	0.13	0.13			Dull	0.13
	339.31.	339.33	0.02	0.02			Dull & bright	0.02
	339.33	339.51	0.18	0.18			Bright banded	0.18
	339.51	339.56	0.05	0.05	205		Carbonaceous claystone	0.05
	339.56	339.58	0.02	0.02			Coal: Bright	0.02
	339.58	339.65	0.07	0.07			Dull	0.07
	339.65	339.68	0.03	0.03			Bright	0.03
	339.68	339.96	0.28	0.28	206		Carbonaceous claystone	0.28
	339.96	340.03	0.07	0.07			Coal: Dull & bright	0.07
	340.03	340.18	0.15	0.15			Bright banded	0.15
						340.24		
	340.18	340.35	0.17	0.17	207		Coal: Dull banded	0.17
	340.35	340.66	0.31	0.31			Bright	0.31
	340.66	340.69	0.03	0.03			Bony	0.03
	340.69'	340.70	0.01	0.01			Core Loss	
	340.70	341.54	0.84	0.83			Mudstone: Dark gray with phases of medium grey siltstone.	0.84

LE NO: 79.2
TE BEGUN: TOTAL DEPTH: BEARING: U.T.M.
TE FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
T: LONG: LOGGED BY: CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
							Box No. 99	
	341.54	342.99	1.45	1.43		343.29	As above: Occasional coaly lenses.	1.45
	342.99	344.39	1.40	1.38				1.40
							Box No. 100	
	344.39	346.08	1.69	1.66		346.34	Siltstone: Medium grey with frequent phases of light grey, very fine grained sandstone, unit is highly crossbedded.	i.69
	346.08	347.14	1.06	1.04				1.06
							Box No. 101	
	347.14	349.17	2.03	2.00		349.39	As above	2.03
	349.17	350.07	0.90	0.89				0.90
							Box No. 102	
	350.07	352.24	2.17	2.14		352.44	As above	2.17
	352.24	352.92	0.68	0.67				0.68
							Box No. 103	
	352.92	355.27	2.35	2.31		355.44	As above	2.35
	355.27	355.80	0.53	0.52				0.53
							Box No. 104	
	355.80	356.51	0.71	0.70			As above: Gradational contact at base, joint plane 20" to CA - no infilling.	0.71

LE NO: 79.2
TE BEGUN: TOTAL DEPTH: BEARING: U.T.M.
TE FINISHED: HOLE ANGLE: ELEV. COLLAR: COAL LICENSE:
: LONG: LOGGED BY: CORE SIZE:

.A.	UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
0"	356.51	352.31	1.80	1.77			Sandstone: Light gray, fine grained, crossbedded with phases of medium grey siltstone.	1.80
						358.54		
	358.31	358.63	0.32	0.32			Mudstone: Dark grey with occasional thin interbeds of medium gray siltstone.	0.32
							Box No. 105	
	358.63	361.35	2.72	2.68			As above	2.72
						361.59		
	361.35	361.47	0.12	0.12				0.12
							Box No. 106	
	361.47	362.54	1.07	1.05			As above	1.07
	jG2.54	363.91	1.37	1.35			Claystone: Dark gray. core highly shattered;	1.37
						364.40		
							Box No. 107	
	163.91	365.90	1.99	1.96			As above	1.99
	165.90	366.14	0.24				Coal.: Dull	I.24
	166.14	366.16	0.02				Dull & bright	3.02
	166.16	366.19	0.03				Bright banded	1.03
	166.19	366:21	0.02				Dull & bright	1.02
	166.21	366.33	0.12		208		Dull banded	0.12
	i66.33	366.36	0.03				Dull & bright	0.03
	166.36	166.37	0.01				Bright	0.01
	'66.37	3GG.43	0.0G				Dull banded	0.06
	66.43	366.45	0.02				Bright	0.02
	66.45	366.50	0.05				Dull	0.05

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

NO: 79.2

BEGUN: TOTAL DEPTH: : SEARING: U.T.M.

FINISHED: HOLE ANGLE: ELEV, COLLAR: COAL LICENSE:

LONG: LOGGED BY: CORE SIZE:

UNIT From	UNIT TO	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION	RECOVERY m. Rec.
366.50	366.53	0.03				Carbonaceous claystone	0.03
366.53	366.56	0.03.				Coal: Dull	0.03
366.56	366.61	0.05				Dull & bright	0.05
						Box No. 108	
366.61	366.64	0.02				Coal: Dull	0.02
366.63	366.69	0.06				Dull banded	0.06
366.69	366.85	0.16			3'67.39	Dull & bright	0.16
366.85	367.06	0.21				Dull;	0.21
367.06	367.23	0.17				Dull banded	0 17
367.23	367 27	0.04				Dull & bright - core highly broken	0.04
36'7 27	367.38	0.11				Bright banded.	0.11
367.38	367.40	0.02		208		Bony	0.02
367.40	367.42	0.02				Dull & bright	0.02
367.42	367.57	0.15				Dull' banded	0.15
367.57	367.69	0.12				Dull	0.12
367.69	367.82	0.13				Dull & bright	0.13
367.82	367.89	0.07				Dull banded	0.07
367.89	367.91	0.02				Bright	0.02
367.91	368.02	0.11				Dull	0.11
368.02	368.24	0.22				Dull & bright	0.22
368.24	368.32	0.08				Dull banded	0.08
368.32	368.33	0.01				Bony	0.01
368.33	368.37	0.04				Bright banded	0.04
368.37	368.39	0.02				'Dull & bright	0.02
368 39	368 41	0.02				Bright	0.02
360.41	368.43	0.02				Dull & bright	0.02
368.43	368.45	0.02				Bright	0.02
368.45	368.78	'0.33	0.32			Dull & bright	0.33

DIAMOND DRILL CORE LOG

ROBERTSON RESEARCH CANADA LTD.

NO: 79.2
BEGUN:
FINISHED:
TOTAL DEPTH,
HOLE ANGLE:
LONG:
BEARING:
ELEV.
COLLAR:
LOGGED BY:
U.T.M.
COAL LICENSE:
CORE SIZE:

UNIT From	UNIT To	UNIT THICKNESS Thick	UNIT THICKNESS True	SAMPLE NUMBER	MARKER	DESCRIPTION.	RECOVERY m. Rec.
368.78	368.8:	0.05	208			Coal: stony	0.05
368.83	368.95	0.12				Bright	0.12
368.95	368.98	0.03				Dull & bright - core highly grdund	0.03
368.98	369.15	0.17				Core Loss	
					369.11		
						TOTAL DEPTH 369.15 m	

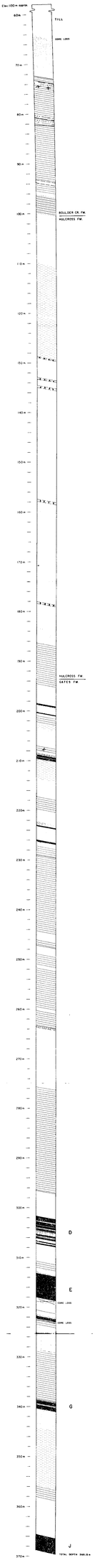
APPENDIX III

Electric Logs

1. 79-1 Gamma Ray-Neutron 1:200
2. 79-2 Gamma Ray-Neutron 1:200
3. 79-2' Focussed Beam Log 1:200
   (with seam sections at 1:40)
4. 79-2 Sidewall Densilog - Caliper 1:200

N.T.S. 93 P 3
DWG No. WO.80-6

WOLVERINE PROJECT
D.D.H. 79-2 - STRATIGRAPHY



MUDSTONE / CLAYSTONE / SHALE

CARBONACEOUS MUDSTONE / CLAYSTONE / SHALE

SANDSTONE

SILTSTONE

INTERBEDDED MUDSTONE / SANDSTONE

CONGLOMERATE

COAL

BENTONITE

PLANT ROOTLETS

SHARP CONTACT

515

HOLE DATA

LOCATION: 55° 02' 25" N
121° 07' 35" W

LICENCE No. 3922

CORE SIZE: NQ WIRELINE

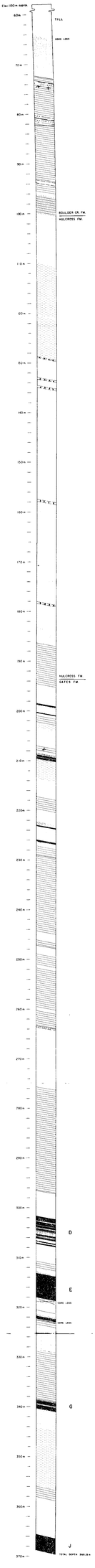
DATE DRILLED: OCT 25 TO NOV 7 1979

PR-Dia-Dept-WOLVERINE 79-2-1A

PRINCE RUPERT EXPLORATION CO. LTD.			
WOLVERINE PROJECT D.D.H. 79-2 STRATIGRAPHY PEACE RIVER DISTRICT, BRITISH COLUMBIA			
VERTICAL SCALE 1 cm = 1 m			
DATE 81-JAN-29 DRWN. MCCLU CHKD. MCCLU DATE 80-JUN-30	CAD.	REVISED	N.T.S. No. 93 P 3 DWG. No. 114-80 DWN. No. WO.80-6

N.T.S. 93 P 3
DWG No. WO.80-6

WOLVERINE PROJECT
D.D.H. 79-2 - STRATIGRAPHY



MUDSTONE / CLAYSTONE / SHALE

CARBONACEOUS MUDSTONE / CLAYSTONE / SHALE

SANDSTONE

SILTSTONE

INTERBEDDED MUDSTONE / SANDSTONE

CONGLOMERATE

COAL

BENTONITE

PLANT ROOTLETS

SHARP CONTACT

515

HOLE DATA

LOCATION: 55° 02' 25" N
121° 07' 35" W

LICENCE No. 3922

CORE SIZE: NQ WIRELINE

DATE DRILLED: OCT 25 TO NOV 7 1979

PR-Dia-Dept-WOLVERINE 79-2-1A

PRINCE RUPERT EXPLORATION CO. LTD.			
WOLVERINE PROJECT D.D.H. 79-2 STRATIGRAPHY PEACE RIVER DISTRICT, BRITISH COLUMBIA			
VERTICAL SCALE 1 cm = 1 m			
DATE 81-JAN-29 DRWN. MCCLU CHKD. MCCLU DATE 80-JUN-30	CAD.	REVISED	N.T.S. No. 93 P 3 DWG. No. 114-80 DWN. No. WO.80-6