PR - Peace River Canyon 80/1B

1980 PROPERTY EVALUATION

PEACE RIVER CANYON COAL PROPERTY

NORTH EASTERN BRITISH COLUMBIA

576

CINNABAR PEAK MINES LTD.

pf Peace River Canyon
80/1B

1980 PROPERTY EVALUATION

PEACE RIVER CANYON COAL PROPERTY

NORTH EASTERN BRITISH COLUMBIA

COAL LICENCES 3407-3444

Geographic Coordinates
(Approximate Centre of Property)
55° 56'N
122° 8'W
NTS Sheets 93-O/16E and 94-B/1E

by

P.J. Appleby, B.Sc., P.Eng.
and
E. Lipsett, B.Sc., P.Geoph.

February 16, 1981

CINNABAR PEAK MINES LTD.
EDMONTON, ALBERTA

TABLE OF CONTENTS

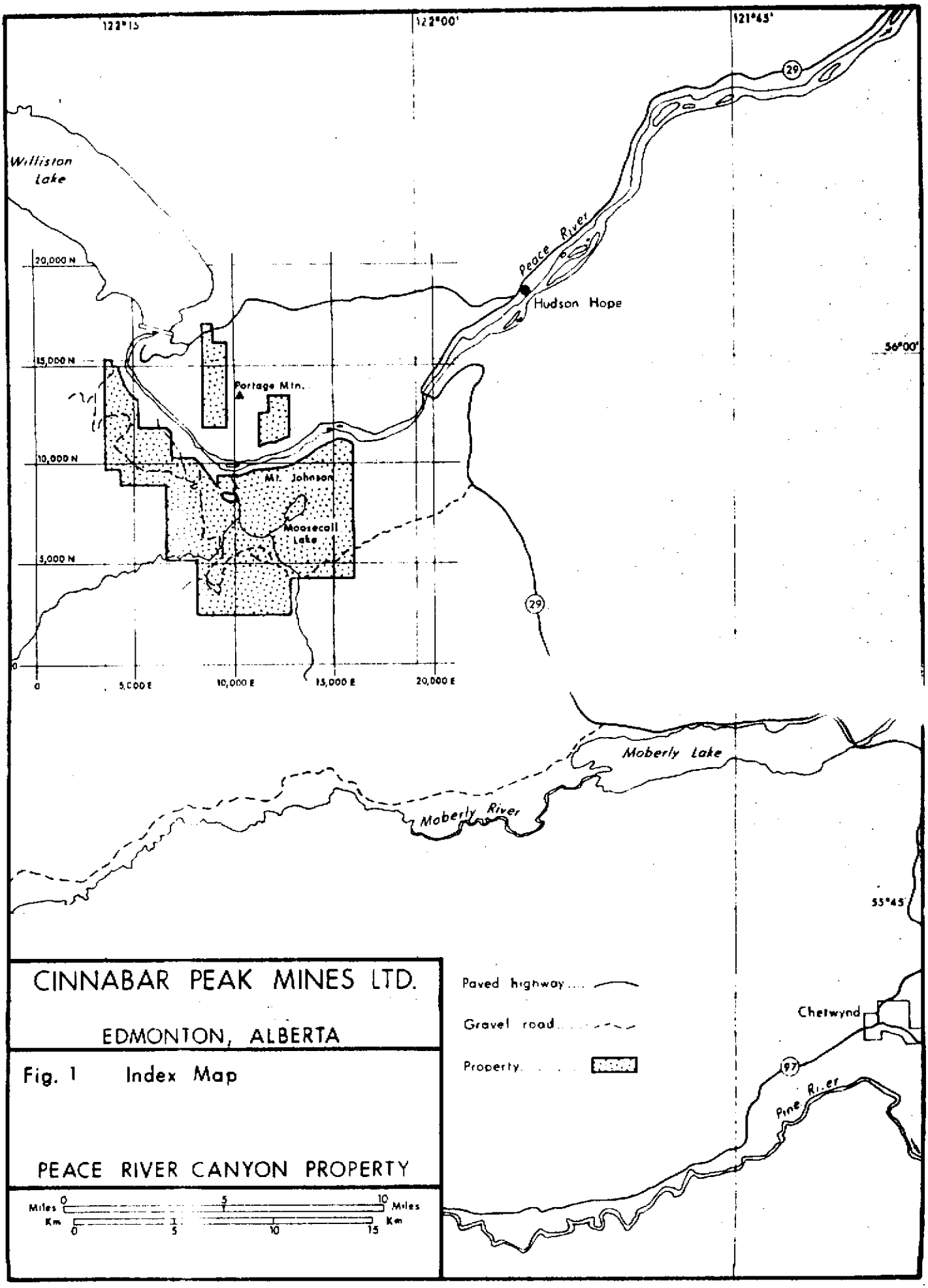
LIST OF ILLUSTRATIONS

SECTION 1.0 INTRODUCTION

In the summer of 1980 Cinnabar Peak Mines Ltd. continued a more detailed investigation of its Peace River Canyon coal property which began in early June and ended in late November. The work consisted of diamond drilling, sampling, geological and geophysical work. Together with the results from previous drilling programs and surface geophysical work, this 1980 program has been used to evaluate specific areas of the property, with the objective of determining their suitability for mining.

These areas are on the south west flank of Johnson Mountain for a possible surface mine and to the west of Coalbed Creek and Johnson Creek for underground mining.

Mine areas have been given in metric units and imperial units, but because all drill hole results are in imperial units, these units have been retained in this report.


122°15'
122°00'
121°45'
56°00'
55°45'
Williston Lake
Peace River
Hudson Hope
29
20,000 N
15,000 N
10,000 N
5,000 N
0
Portage Mtn.
Mt. Johnson
Moosecall Lake
5,000 E
10,000 E
15,000 E
20,000 E
Moberly Lake
Moberly River
Chetwynd
97
Pine River
CINNABAR PEAK MINES LTD.
EDMONTON, ALBERTA
Fig. 1 Index Map
PEACE RIVER CANYON PROPERTY
Paved highway
Gravel road
Property
Miles 0 5 10 Miles
Km 0 5 10 15 Km

SECTION 2.0 SUMMARY AND RECOMMENDATIONS

2.1 Summary

A geophysical survey consisting of 10.3 line km. (6.4 line miles) was conducted across the property. The seismic survey provided coverage through continuous reflection techniques which establishes a structural analysis when coordinated with the surface and sub-surface data as previously reported. (See references). Geophysical data was obtained at 220 foot intervals along the traverse which provided a total of 304 reflection profiles.

The reflection data was processed and computer enhanced for interpretation. An evaluation of the data, integrated with the geological information has provided guidelines for a further drilling program on the property and specifically has provided a good structural analysis for mine planning in the west Johnson Mountain area projected for an underground mine operation.

The geophysical data has defined a sequence of mildly dipping strata east of the Gates Ridge. The significance of this data should be investigated by a drill program to fully evaluate the coal potential in this area.

The diamond drill holes of the 1980 exploration season on the south west flank of Mount Johnson confirm all previous drilling results and geophysical work in the area.

Seam intersection thicknesses are all in agreement with previous work, except the Falls Seam which appears to thicken somewhat.

The quality of the seams is medium volatile bituminous, except samples taken from seam intersections between the Gething seam and the Little Mogul, which are low volatile on an Ash Free Dry basis.

Tonnages measured and indicated are very similar to previous estimates. The stripping ratios are economic for the surface mineable area, because of the high quality of the coal, and should improve if the thinner seam sections can be mined economically.

Evaluation of the potential underground mine area is not complete at this stage, but sufficient information is now available to demonstrate that the Trojan Seam is suitable for mechanized Longwall retreat mining, due to the seam thickness, coal quality, and seam conditions.

The seams underlying the Trojan have not been evaluated because of limited drill hole data.

2.2 Recommendations

Further limited work is recommended in the area of the designated open pit and dump areas, on the south and south west flank of Mount Johnson.

This work should include:

1) Drilling a 200 ft. deep D.D. Hole in Area "C" approximately 2000' due North of D.D.H. 80-1. The target would be the Falls Seam.

2) Drilling a series of 3 D.D. Holes in Areas "B" and "D" combined, to determine the depths of the Gething and lower seams. The location would be at about the 2500 ft. elevation with the holes to intersect the seams at right angles. Hole depths to the Gething seam would be in the order of 100-150 ft.

3) At least 2 shallow rotary holes to check sub-surface conditions in the proposed waste dump area to the south-east of Area "A".

   Suggested locations are:

   1500 ft. S.E. of 73-6;
   1500 ft. N.E. of 73-6;
   Depth: < 200'

4) Further diamond drilling and seismic geophysical work in Area "E" to allow a more accurate evaluation of the area. At least 4 D.D. Holes would be required to depths of +1700 ft. Target would be the Falls Seam. Three seismic lines running N.E.-S.W. would also be required with a

total length of 4.5 kms. This would be a major project which should be postponed until the open pit mine is in production.

5) With the confirmation of the Gething formation dips and depths in the area of Johnson Creek, mine planning for an underground operation may be undertaken with an integration of drill hole data already available.

6) A drill program of one or two holes is recommended east of the Gates Ridge to identify the nature and coal potential of the mildly dipping strata identified by the geophysical data.

SECTION 3.0 GEOPHYSICAL SURVEY

The seismic survey was conducted as a dip oriented east to west line on the logging access road over licences 3413, 3414, 3415, 3408, 3409, and 3410.

The traverse totalled 10.3 line km. (6.4 line miles) and was carried out by the Petty-Ray Geophysical Co. of Calgary, Alberta. Processing of the data was undertaken by Werner Exploration Consultants Ltd. of Calgary, Alberta with the interpretation and general supervision of Geoquest Consultants Ltd. of Edmonton, Alberta.

The seismic spread configuration consisted of 48 stations with geophone groupings at 220 feet. Geophones arrays were in-lined groups of 10.

The Vibroseis technique was used as the energy source located at the mid-point of the 48 stations. This provided a split spread layout of 24 stations on each side of the vibrator array. The vibrator array used a 4 vibrator in-line configuration at a spacing of 440 feet using an energy spectrum of 12-48 Hz.

Each station on the traverse was occupied by the vibrator array resulting in some 304 reflection profiles being obtained during the course of this survey.

The multifold technique described previously (see references) and used in this survey provided a 1200% common depth point stack.

SECTION 4.0 GEOPHYSICAL-GEOLOGICAL STRUCTURE INTEGRATION

4.1 Seismic Reflection Analysis

A seismic reflection record section was produced for line P-6 (Fig. 2)

These data, as presented, have been corrected for surface topographic effects, weathering and overburden low velocity effects, as well as seismic ray path variations to achieve the 1200% stack.

Each trace represents the computer processed and final summation of 12 field recordings.

The record section is presented in a vertical time mode with 0.00 seconds representing the reference surface of 2650 feet above sea level.

The corrected data was processed through computer enhancement techniques and presented as a conventially displayed section. (Fig. 3)

4.2 Seismic Reflection Interpretation

Interpretation of line P-6 is presented in Figure 4.

Reflection continuity has been evaluated and reflection dip segments are identified, plotted, and include faulting and disturbed zones.

The data has been integrated with borehole data and surface geological data obtained previously (see references).

4.3 Geological Structure Analysis

Cross-sections (Fig. 5,6) include the geophysical data from line P-5 (see references) and line P-6 (Fig. 4).

Dip projections, displacement of the Gething Formation through a system of faults and fractures, and integrated with the surface and sub-surface geological data have provided a reliable base for the planning of Surface Mine Unit No. 1 and Underground Mine Unit No. 1.

5.0 RESERVE AREAS AND CALCULATION METHODOLOGY

5.1 Reserve Areas

The areas under investigation and evaluation have been divided into five (5) distinct sections to allow full use of available information, and the geological settings.

These areas are shown in Figure 7. Those areas to the east of Coalbed Creek are designated as suitable for open pit mining and area "E" to the west of Coalbed Creek is judged to be an area suitable for underground mining.

The measured areas are:

A	58 Hectares	(144 acres)
B	27 Hectares	(66 acres)
C	30 Hectares	(74 acres)
D	25 Hectares	(62 acres)
E	1300 Hectares	(3215 acres)

Total for open pit	-	140 Hectares	(346 acres)
Total for underground	-	1300 Hectares	(3215 acres)

5.2 Calculation Methods

Determination of the reserves in Area "A" is based on four 1980 diamond drill holes (80-1, 80-3, 80-5, 80-6) and one 1973 D.D.H. (73-5). Three other D.D.H. near the area were used as secondary controls, (73-6, 72-3, and 80-4).

Cross sections were constructed between all holes to test seam continuity and identification. The positions of the lower seams not encountered in 80-1, 73-5 and 80-5 were projected onto the cross sections from 80-6 and 80-3 data.

The major seams in the area: Trojan, Titan, Falls, Gething, Castle Point and Milligan, are all identifiable, but significant thicknesses of coal are found between the Trojan and Titan, between the Falls and Gething, and between the Gething and Little Mogul. The positions of these unnamed seams are variable, and the thickness of each one also varies. To allow evaluation of these thin, but mineable lenses, they are combined together in the calculations into a composite seam, the position of which reflects the maximum individual lense depth.

The cross sections have been used to calculate the waste quantities between the upper seams and the surface and between each individual seam or composite seam.

Coal quantities were calculated by obtaining average seam thickness from the drill hole logs and multiplying by the area of the seam. The Trojan seam does not cover the whole area, as it subcrops north east of the line 80-1 to 73-5, and the Titan and Falls seams are absent in a small area in the east.

A confidence factor was established for Area "A" by using seismic line #P-5 to compare with the 80-1 to 80-6 cross section. Almost total agreement exists with calculated dips. The average direction of full dip is S52°W with a value of 12° (21%). It should be noted however, that D.D.H. locations and collar elevations are only approximate at this time, and more precise values will be calculated with survey results.

The Titan-Falls sequence was established as a reliable datum for the projecting of the lower seams onto the 80-1 to 80-6 cross section.

Observed seam sections were not corrected for dip, nor were the areas corrected for dip. These errors cancelled each other out.

Calculations for Area "B" are complicated by the increasing upward dip of the coal measured towards the north east. Measured dips at the outcrop areas indicate dips of up to 45°.

To allow for this change in inclination, cross sections were drawn. Showing a gradual increase in dip, and waste areas between seams and the upper seam and the surface measured by planimetering between each 100 ft. increase in elevation.

Plan areas of each seam were also measured which allowed the calculation of individual seam quantities and the stripping ratios for every 100' increase in elevation. Composite stripping ratios could then be calculated.

This methodology while accurate within reasonable limits, was deemed to be the appropriate way to establish coal and waste quantities. Additional sub-surface control will improve the accuracy as required.

Areas "C" and "D" are the north west extensions of Areas "A" and "B" respectively. The geological sequence established for Areas "A" and "B" was projected into these areas, and calculations made on available data. The boundaries, except for the N.E. out-

crops, are quite arbitrary. The apparent consistency of Area "A" gives validity to this method.

Reserve Area "E" has five (5) D.D. holes within its boundaries (72-1, 76-5, 76-4, 72-2 and 73-4A). D.D.H. 80-1 was used to establish strike lines together with 73-4A and 76-5. The seismic line P-6 along the gravel access road crossing Area "E", gave dip values in the Burnt Trail Creek area, and D.D.H. 76-4 gave information as to the dips encountered there.

Calculations showed that a disturbance occurs running N40°W slightly to the south west of D.D.H. 73-4A. The seismic line P-6 confirms, but the position of this disturbance is not easily plottable because the seismic line is paralleling the disturbance where the line crosses it.

This disturbance could be a fault with a calculated displacement of about 600 ft. southwest.

The effect of this fault on the reserves of Area "E" is minimal at this stage.

The only mineable seam in the area which has been intersected in all drill holes is the Trojan. The Superior seam is very thin and therefore is not evaluated. The Titan and Falls seams are present but not enough intersections have occurred in the drill holes to allow evaluation. It would appear at this stage that they are both too thin for economic underground mining.

5.3 Assay Requirements

Previous work in the areas, including assays of D.D. hole samples, has given a reliable basis for further evaluation. Assays of the lower seams in Area "A" were not available, but indications from samples in other areas such as D.D.H. 76-5 suggest that ash content, B.T.U. values, and fixed carbon percentage would indicate high quality thermal coal, but with F.S.I. lower than that of the Trojan seam.

Some of the thinner coals between the identified seams have been sampled for assay work, as all mineable coal will be retrieved, and if suitable, blended with the major seams in the area.

It should be pointed out at this stage, that the characteristics of a blend of two or more coal seams is not necessarily equivalent to a weighted average of the characteristics of the component coals.

SECTION 6.0 RESULTS

6.1 Measured Reserves for Surface Mining

AREA "A"

Seam Name	Thickness in Inches	Area in Millions Ft.^{2}	Tonnage Thousands of (short tons)
Trojan	96	3.6	1,220
Seams between Trojan and Titan	60	4.9	1,040
Titan	66	6.2	1,450
Falls	82	6.2	1,800
Seams between Gething and Falls	42	6.2	0.920
Gething	25	6.2	0.550
Seams between Gething and Little Mogul	45	6.2	0.980
Little Mogul	27	6.2	0.590
Mogul	72	6.2	1,580
Castle Point	36	6.2	0.790
Milligan	33	6.2	0.720

TOTAL TONNAGE = 11.64 Million Short Tons

AREA "B"

Seam Name	True Thickness in Inches	Tonnage in Thousands of short tons
Titan	62	90
Falls	84	120
Seams between Falls and Gething	42	150
Gething	30	200
Seams between Gething and Little Mogul	45	370
Little Mogul	27	240
Mogul	72	650
Castle Point	36	360
Milligan	33	340

TOTAL TONNAGE = 2.52 Million Short Tons

6.2 Indicated Reserves for Surface Mining

AREA "C"

Seam Name	Thickness in Inches	Area in Millions $Ft.^2$	Tonnage in Thousands of Short Tons
Trojan	96	1.04	350
Seams between Trojan and Titan	44	2.45	370
Titan	60	3.25	690
Falls	82	3.25	940
Seams between Falls and Gething	42	3.25	480
Gething	25	3.25	280
Seams between Gething and Little Mogul	45	3.25	510
Little Mogul	27	3.25	300
Mogul	72	3.25	820
Castle Point	36	3.25	410
Milligan	33	3.25	370

TOTAL TONNAGE = 5.52 Million Short Tons

AREA "D"

Seam Name	True Thickness in Inches	Tonnage in Thousands of Short Tons
Titan	62	70
Falls	84	90
Seams between Falls and Gething	42	160
Gething	30	150
Seams between Gething and Little Mogul	45	280
Little Mogul	27	200
Mogul	72	520
Castle Point	36	340
Milligan	33	320

TOTAL TONNAGE = 2.13 Million Short Tons

6.3 Measured Reserves for Underground Mining

The Area "E" on Map #1 has 3 D.D. holes within its boundaries, (76-5, 76-4 and 73-4A) with 72-1, 80-1, 72-3, which are just outside the boundaries used to assist in the evaluation.

The only mineable seam encountered in all D.D. holes is the Trojan. It varies in coal thickness between 5'4" and 10'-0" giving a non weighted average of 7'5" within the reserve area, and between 3'7" and 10'-0" outside the reserve area for an average of 7'2".

A thickness of 7' is therefore taken as representative of the area, with the thicker section in the southeast end of the area and the thinner section to the northwest.

Over the area of 3215 acres, the reserves amount to 41,600,000 short tons.

At this stage, the western limit of Area "E" is the 2000' overburden isopach of the Trojan seam, and the eastern limit is the subcrop of the Moosebar-Gething contact.

The other seams encountered within the area by D.D. hole #76-5 are:

Titan	-	3'2"
Falls	-	4'0"
Gething	-	4.2"

These seams may thicken towards the southeast as D.D.H. #80-1 would indicate, but at this stage they are not counted in reserve calculations.

6.4 Stripping Ratios and Composite Stripping Ratios for Surface Mining Areas

AREA "A"

Seam Name	Seam Thickness in Inches	Overburden Thickness in Feet	Tons of Coal	Total Tons of Coal	Individual Stripping Ratio	Composite Stripping Ratio	Overburden YDS^3	Total O/B YDS^3
Trojan	96	100	1,220,000	1,220,000	12.5	-	13,290,000	13,290,000
Seams between Trojan and Titan	60	70	1,040,000	2,260,000	14.0	13.2	12,688,000	25,978,000
Titan	66	85	1,450,000	3,710,000	15.5	14.1	19,586,000	45,564,000
Falls	82	11	1,800,000	5,510,000	1.6	10.0	2,510,000	48,074,000
Seams between Falls and Gething	42	170	920,000	6,430,000	48.6	15.5	38,965,000	87,039,000
Gething	25	31	550,000	6,980,000	14.9	15.5	7,142,000	94,181,000
Seams between Little Mogul and Gething	45	41	980,000	7,960,000	10.9	14.9	9,334,000	103,515,000
Little Mogul	27	20	590,000	8,550,000	8.9	14.5	4,570,000	108,085,000
Mogul	72	5	1,580,000	10,130,000	0.8	12.4	1,146,000	109,231,000
Castle Point	36	48	790,000	10,920,000	16.0	12.6	11,015,000	120,246,000
Milligan	33	20	720,000	11,640,000	7.3	12.3	4,580,000	124,826,000

NOTE: ALL STRIPPING RATIOS ARE ON A VOLUME/VOLUME BASIS

AREA "B" 2400'-2500' ELEVATION

Seam Name	Individual Stripping Ratio	Composite Stripping Ratio	Short Tons of Coal	Total Tons of Coal	Overburden in YDS^3	Cumulative Overburden in YDS^3
Titan	13.9	-	90,000	90,000	1,042,000	1,042,000
Falls	1.3	6.7	120,000	210,000	131,000	1,173,000
Seams between Falls and Gething	44.5	18.4	87,000	297,000	3,374,000	4,547,000
Gething	11.6	16.6	81,000	378,000	819,000	5,366,000
Seams between Gething and Little Mogul	11.2	15.3	124,000	502,000	1,191,000	6,557,000
Little Mogul	12.0	14.9	72,000	574,000	763,000	7,320,000
Mogul	1.0	11.3	195,000	769,000	170,000	7,490,000
Castle Point	15.8	12.1	95,000	864,000	1,533,000	9,023,000
Milligan	6.9	11.6	90,000	954,000	535,000	9,558,000
		11.6	954,000		9,558,000	

AREA "B" 2500'-2600'

Seam Name	Individual Stripping Ratio	Composite Stripping Ratio	Short Tons of Coal	Total Tons of Coal	Overburden in YDS^3	Cumulative Overburden in YDS^3
Above Gething	32.6	-	49,000	49,000	1,392,000	1,392,000
Gething	11.6	21.2	58,000	107,000	586,000	1,978,000
Below Gething	11.3	16.4	100,000	207,000	985,000	2,963,000
Little Mogul	12.0	15.4	60,000	267,000	627,000	3,590,000
Mogul	1.0	10.0	163,000	430,000	140,000	3,730,000
Castle Point	15.8	10.9	80,000	510,000	1,102,000	4,832,000
Milligan	6.9	10.4	74,000	584,000	439,000	5,271,000
		10.4	585,000		5,271,000	

AREA "B" 2600'-2700'

Seam Name	Individual Stripping Ratio	Composite Stripping Ratio	Short Tons of Coal	Total Tons of Coal	Overburden in YDS^3	Cumulative Overburden in YDS^3
Above Gething	8.5	-	14,000	14,000	111,000	111,000
Gething	10.1	9.6	33,000	47,000	299,000	410,000
Below Gething	9.7	9.7	102,000	149,000	862,000	1,272,000
Little Mogul	10.6	9.9	60,000	209,000	564,000	1,836,000
Mogul	0.6	5.9	164,000	373,000	86,000	1,922,000
Castle Point	16.0	7.7	80,000	453,000	1,143,000	3,065,000
Milligan	6.9	7.6	76,000	529,000	451,000	3,516,000
		7.6	529,000		3,516,000	

AREA "B" 2700'-2800'

Seam Name	Individual Stripping Ratio	Composite Stripping Ratio	Short Tons of Coal	Total Tons of Coal	Overburden in YDS^3	Cumulative Overburden in YDS^3
Gething	9.2	-	22,000	22,000	176,000	176,000
Below Gething	11.2	10.4	34,000	56,000	332,000	508,000
Little Mogul	12.0	10.9	28,000	84,000	293,000	801,000
Mogul	0.6	6.1	75,000	159,000	39,000	840,000
Castle Point	10.3	7.3	64,000	223,000	575,000	1,415,000
Milligan	6.9	7.2	58,000	281,000	349,000	1,764,000
		7.2	281,000		1,764,000	

AREA "B" 2800'-2900'

Seam Name	Individual Stripping Ratio	Composite Stripping Ratio	Short Tons of Coal	Total Tons of Coal	Overburden in YDS^3	Cumulative Overburden in YDS^3
Gething	7.0	-	6,000	6,000	37,000	37,000
Below Gething	11.2	9.7	10,000	16,000	98,000	135,000
Little Mogul	11.8	10.9	20,000	36,000	206,000	341,000
Mogul	0.6	4.8	53,000	89,000	28,000	369,000
Castle Point	12.0	7.0	41,000	130,000	429,000	798,000
Milligan	6.9	7.0	42,000	172,000	253,000	1,051,000
		7.0	172,000		1,051,000	

TOTALS: Coal —— 2,520,000 Tons

Overburden —— 21,160,000 Yds^3

Stripping Ratios —— 9.66:1 Volume/Volume Basis

or 8.42:1 Volume/S Ton of Coal Basis

6.5 Total Reserves with Assays

SEAM	AREA "A"	AREA "B"	AREA "C"	AREA "D"	AREA "E"	TOTALS
Trojan	1,220,000	-	350,000	-	41,600,000	43,170,000
Seams between Trojan and Titan	1,040,000	-	370,000	-	-	1,410,000
Titan	1,450,000	90,000	690,000	70,000	-	2,300,000
Falls	1,800,000	120,000	940,000	90,000	-	2,950,000
Seams between Gething and Falls	920,000	150,000	480,000	160,000	-	1,710,000
Gething	550,000	200,000	280,000	150,000	-	1,180,000
Seams between Gething and Little Mogul	980,000	370,000	510,000	280,000	-	2,140,000
Little Mogul	590,000	240,000	300,000	200,000	-	1,330,000
Mogul	1,580,000	650,000	820,000	520,000	-	3,570,000
Castle Point	790,000	360,000	410,000	340,000	-	1,900,000
Milligan	720,000	340,000	370,000	320,000	-	1,750,000
TOTALS	11,640,000	2,520,000	5,520,000	2,130,000	41,600,000	63,410,000

RESERVES SUITABLE FOR SURFACE MINING	MEASURED	14,160,000	SHORT TONS
	INDICATED	7,650,000	SHORT TONS
	TOTAL	21,810,000	SHORT TONS
RESERVES SUITABLE FOR UNDERGROUND MINING ..	MEASURED	41,600,000	SHORT TONS
	GRAND TOTAL	63,410,000	SHORT TONS

SECTION 7.0 CONCLUSIONS

1) As previously reported, (see references) the seismic data obtained through the 1200% stacking technique provides significant additional data to that obtained by previous exploration modes.

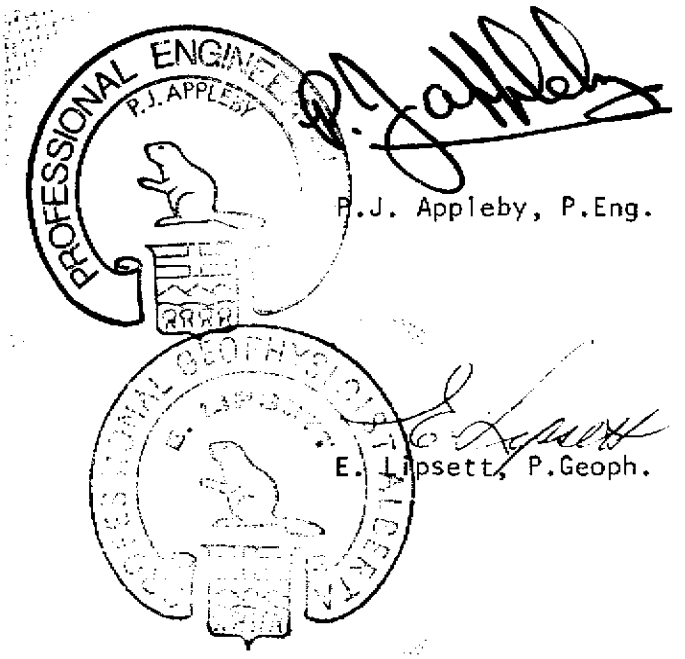
2) The data presented on line P-6 suggest an anomalous, mildly dipping sequence of sediments east of the Gates Ridge which, at relatively shallow depth may be defined as the Gething Formation. Drill data should be obtained to establish the nature of this sequence and the economic potential for coal in the area.

3) The 1980 exploration program has measured sufficient reserves to allow an open pit of approximately 2000 short tons per day of clean coal to be established.

4) The reserves are of high quality thermal coal which, with minimum cleaning, will produce a readily marketable product.

5) The mine may be established with minimum costs, using straight-forward mining methods, and produce coal within 12 months of commencement of on-site work.

Respectfully Submitted



P.J. Appleby, P.Eng.

E. Lipsett, P.Geoph.

February 16, 1981
Edmonton, Alberta

SECTION 8.0 REFERENCES

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SECTION 9.0 CERTIFICATE

I, Peter J. Appleby with business and residence addresses in Edmonton, Alberta do hereby certify that

1. I am a registered Professional Engineer in the Province of Alberta.

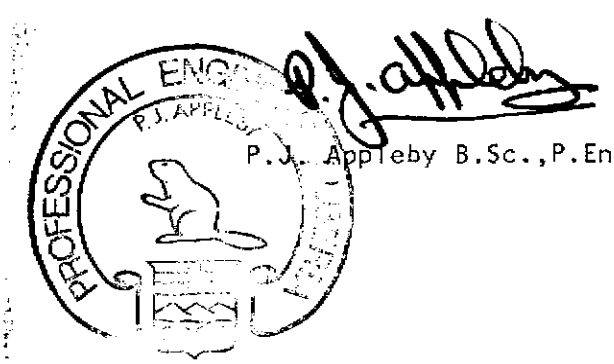
2. I am a graduate of Nottingham University, England (B.Sc. in 1955 in Mining Engineering).

3. I am a holder of First Class Certificates of Competency granted by i) The Province of British Columbia ii) the United Kingdom Ministry of Power to act as a manager of underground coal mines.

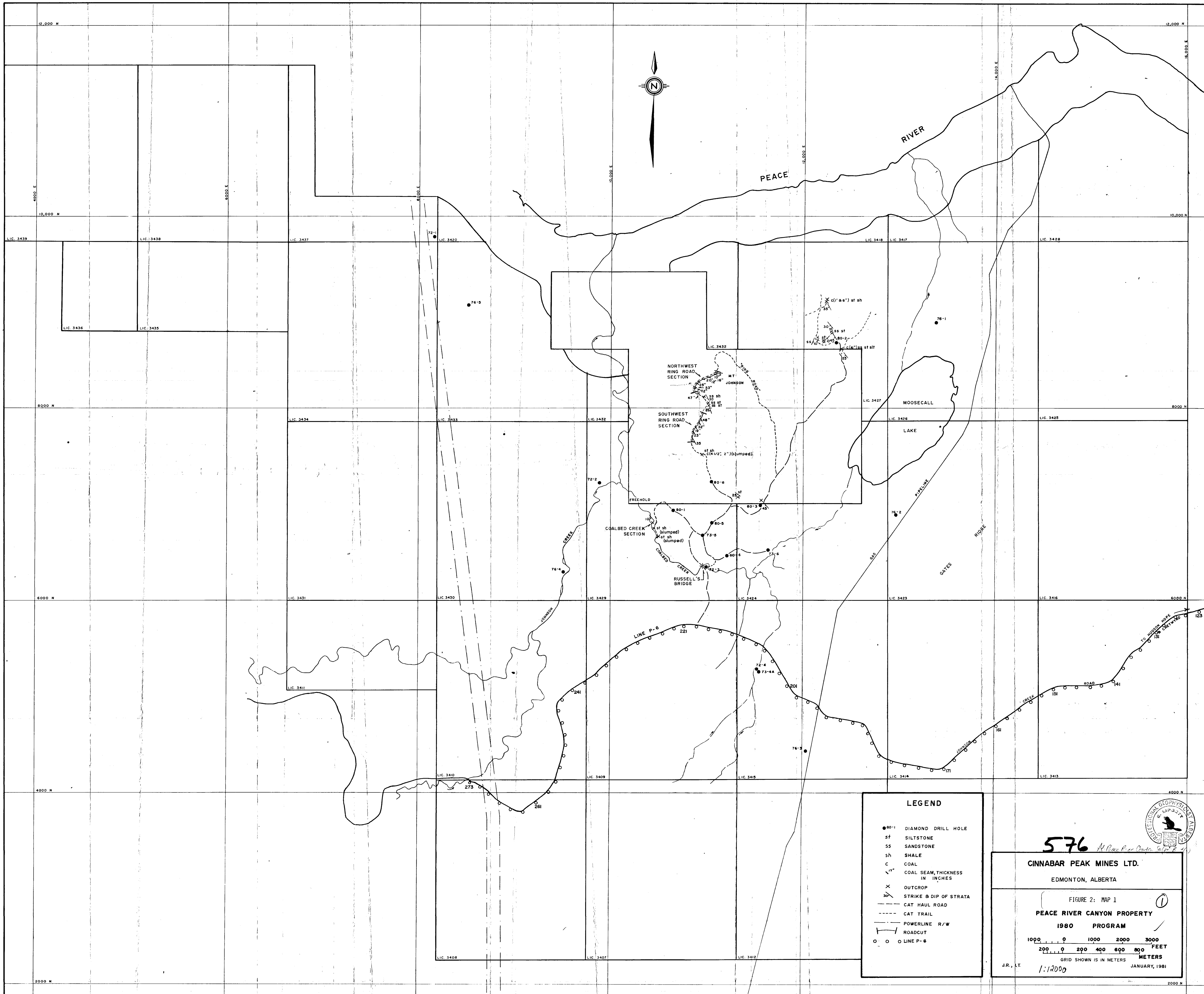
4. I have held posts as mine superintendent, and mine engineer, in the mining industry with the United Kingdom National Coal Board and in surface mine operations in West Africa, Pakistan and Cyprus and as underground mine manager in Western Canada.

5. I have worked as a consultant mining engineer to the coal industry.

6. I am presently engaged as a faculty member in the Earth Resources Section at the Northern Alberta Institute of Technology, Edmonton, and as a private consulting engineer.



P.J. Appleby B.Sc.,P.Eng.


PEACE RIVER
MOOSECALL LAKE
GATES RIDGE
GAS PIPELINE
JOHNSON CREEK
COALBED CREEK
MT JOHNSON
NORTHWEST RING ROAD SECTION
SOUTHWEST RING ROAD SECTION
COALBED CREEK SECTION
RUSSELL'S BRIDGE
FREEHOLD
LINE P-6
TO HUDSON HOPE
LEGEND
DIAMOND DRILL HOLE
st SILTSTONE
SS SANDSTONE
sh SHALE
c COAL
COAL SEAM, THICKNESS IN INCHES
OUTCROP
STRIKE & DIP OF STRATA
CAT HAUL ROAD
CAT TRAIL
POWERLINE R/W
ROADCUT
LINE P-6
576
CINNABAR PEAK MINES LTD.
EDMONTON, ALBERTA
FIGURE 2: MAP 1
PEACE RIVER CANYON PROPERTY
1980 PROGRAM
FEET
METERS
GRID SHOWN IS IN METERS
J.R., LT.
1:12000
JANUARY, 1981

ELEVATIONS

LINE DIRECTION

DIRECTION

LINE INTERSECTION

STATIONS PA-Peace River Canyon 80(2*) *(1)

576

Petty-Ray

CINNABAR PEAK MINES LTD.

LINE P-6

PEACE RIVER CANYON

INPUT REEL HEADER INFØRMATIØN

REEL NUMBER	536
NUMBER SAMPLE/TRACE	400
SAMPLE RATE IN MILLS	4.00

FIELD INFØRMATIØN

CREW	6850	STACK	1200%
METHØD	VIBRØSEIS	SPREAD	5830-770-990-6050, VIBS ØFFSET 110 FEET TØWARDS LEADING CRCS
		SØURCE	SWEEP 12-48 HZ FØUR VIBRATØRS
FILTERS	ØUT-62 NØTCH 60	INTERVAL	220 FT/STA 440 FT/VI
AMPLIFIERS	SUM-IT VII	PATTERN	INLINE
LENGTH	12000 MS		
RATE	4 MS	GEØPHØNES	MIN-MAX 10 GEØPHØNES/PATCH

PRØCESSING SEQUENCE

DEMUX	DEMULTIPLEX TØ PETTY-RAY FØRMAT
VIBCØR	CØRRELATE DATA WITH FIELD SWEEP
DECØN	TIME DØMAIN DECØNVØLUTIØN 64 PT ØPERATØR 3000 MS WINDØW
FILTER	ØRMSBY BANDPASS FILTER 64 PT 6-12-48-72 HZ
SØRT	TRACE CØLLECT INTØ DEPTH PØINT ØRDER AND APPLY STATICS BEFØRE NMØ TØ A 2500 FT DATUM PLANE
NMØ	APPLY NØRMAL MØVE-ØUT CØRRECTIØNS
ARSTAT	APPLY AUTØMATIC RESIDUAL STATICS
STACK	STACK CØRRECTED CØMMØN DEPTH PØINT TRACES
DECØN	TIME DØMAIN DECØN 50 PT ØPERATØR 32 MS LAG
STATIC	APPLY BULK STATICS BRINGING LINE TØ 2650 FT DATUM
FILTER	TIME VARYING ØRMSBY BANDPASS FILTER 65 PT ØPERATØR 0 - 1200 MS 7-14 48-72 HZ 1200 - 4000 MS 6-12 40-60 HZ

FIGURE 3

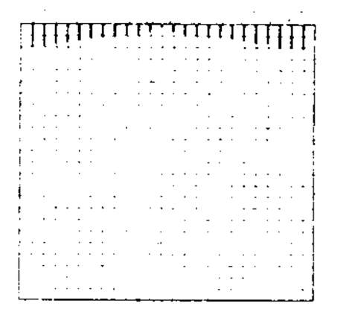
(2)

****** FILMING PARAMETERS ******

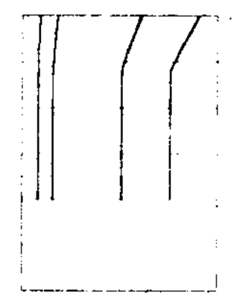
PERCENT GAIN	125
HØRIZØNTAL SCALE	6.000 TR/IN
VERTICAL SCALE	20.000 IN/SEC
FILMING DIRECTIØN	RTØL
PERCENT BAR	0
PØLARITY	BLACK=PØSITIVE
DATE FILMED	10/07/80

DATA PRØCESSED BY CØMMAND 6640

TRACE SUPPRESSIØN



T.V. FILTER



WEST

EAST

DDH 73-4A
offset
750'S

DDH 78-2
offset
1730'S

270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120

DIP SEGMENT

DIP SEGMENT

DIP SEGMENT

+1650'

+650'

-350'

-1350'

SEISMIC DEPTH IN FEET

0.20

0.40

0.60

0.80

SEISMIC DEPTH IN TIME (SEC)

A

B

C

D

NEAR FOR SCARP

A'

B'

C'

D'

576

PROFESSIONAL GEOPHYSICIST ALBERTA
B. LIPSETT

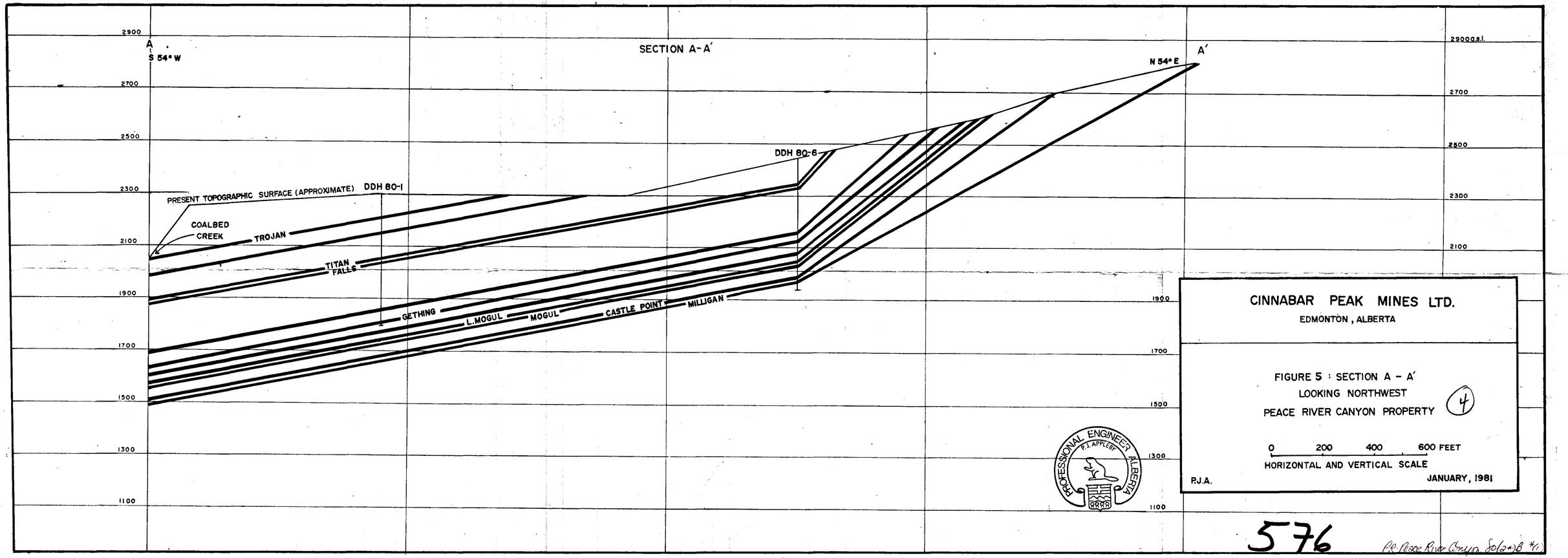
CINNABAR PEAK MINES LTD.
EDMONTON ALBERTA

LINE P-6
STRUCTURE SECTION
(GEOLOGICAL / SEISMIC) (3)
FIGURE 4

0' 1000' 2000'

E.L. JANUARY 1981

PR-Peace River Canyon 86-2-10 #(1)



CINNABAR PEAK MINES LTD.
EDMONTON, ALBERTA

FIGURE 5 : SECTION A – A'
LOOKING NORTHWEST
PEACE RIVER CANYON PROPERTY (4)

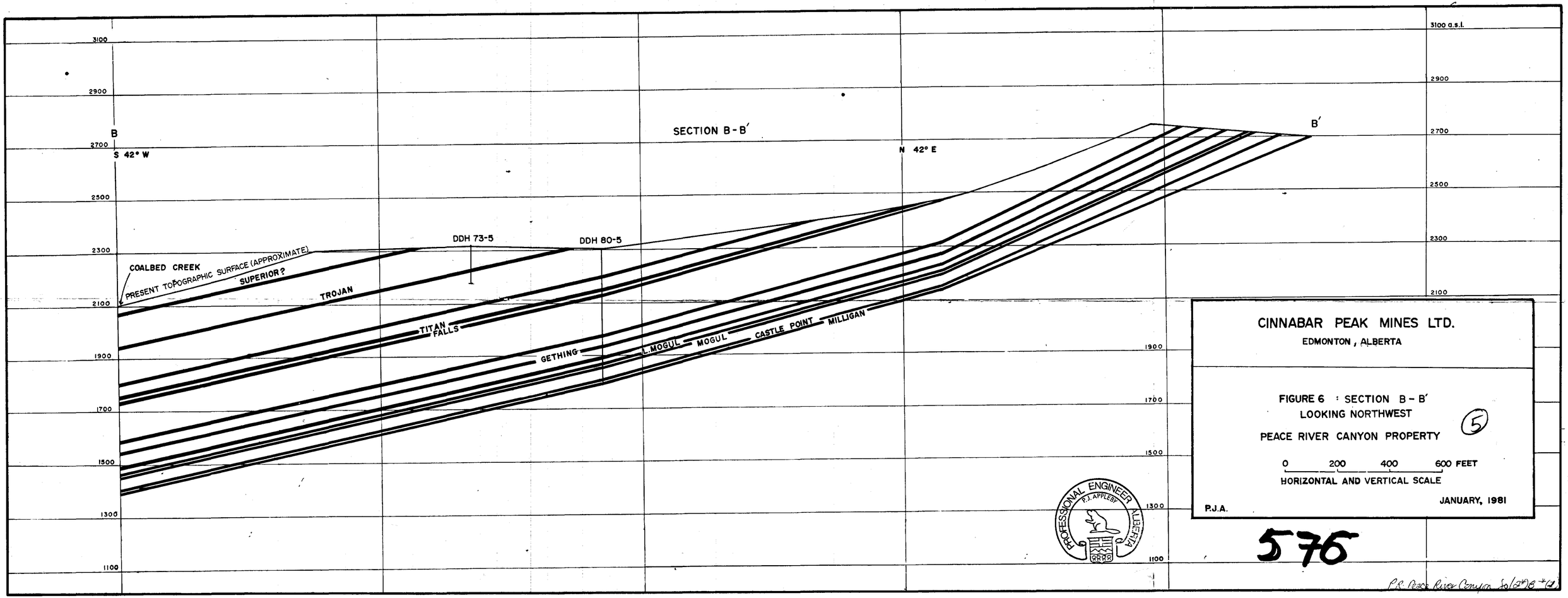
0 200 400 600 FEET
HORIZONTAL AND VERTICAL SCALE

P.J.A. JANUARY, 1981

PROFESSIONAL ENGINEER P.J. APPLEBY ALBERTA

576

P.R. Peace River Canyon 80-2+3B #1



CINNABAR PEAK MINES LTD.

EDMONTON, ALBERTA

FIGURE 6 : SECTION B - B'
LOOKING NORTHWEST

PEACE RIVER CANYON PROPERTY

(5)

0 200 400 600 FEET
HORIZONTAL AND VERTICAL SCALE

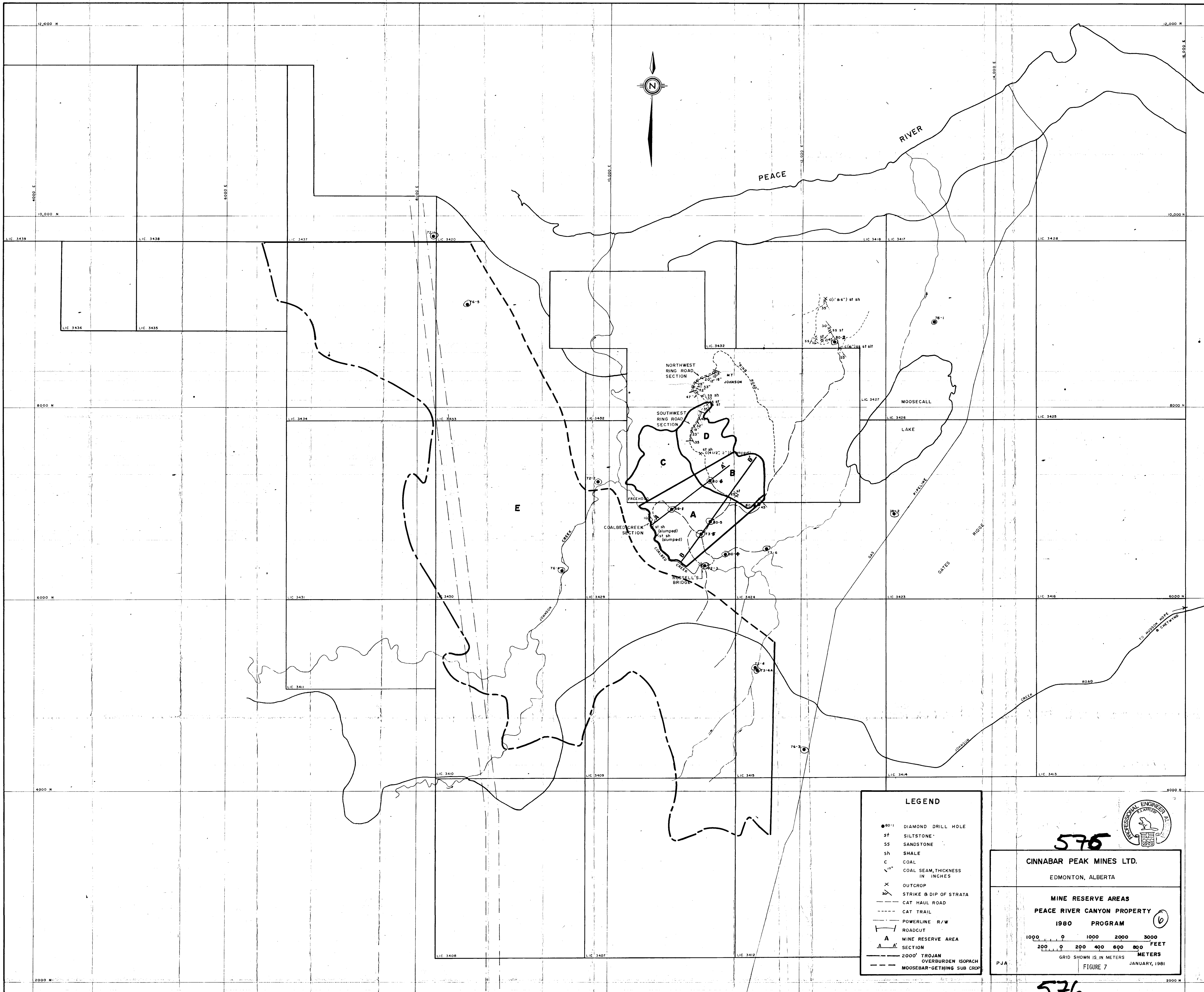
P.J.A.

JANUARY, 1981

PROFESSIONAL ENGINEER
P. J. APPLEBY
ALBERTA

576

P.R. Peace River Canyon 82/2E/8 #12


PEACE
RIVER
MOOSECALL
LAKE
GATES
RIDGE
GAS
PIPELINE
MT JOHNSON
NORTHWEST RING ROAD SECTION
SOUTHWEST RING ROAD SECTION
COALBED CREEK SECTION
ROSSELL'S BRIDGE
FREEHOLD
JOHNSON
CREEK
ROAD
TO HUDSON HOPE & CHETWYND
A
B
C
D
E
LEGEND
DIAMOND DRILL HOLE
SILTSTONE
SANDSTONE
SHALE
COAL
COAL SEAM, THICKNESS IN INCHES
OUTCROP
STRIKE & DIP OF STRATA
CAT HAUL ROAD
CAT TRAIL
POWERLINE R/W
ROADCUT
MINE RESERVE AREA
SECTION
2000' TROJAN OVERBURDEN ISOPACH
MOOSEBAR-GETHING SUB CROP
576
CINNABAR PEAK MINES LTD.
EDMONTON, ALBERTA
MINE RESERVE AREAS
PEACE RIVER CANYON PROPERTY
1980 PROGRAM
6
1000 0 1000 2000 3000 FEET
200 0 200 400 600 800 METERS
GRID SHOWN IS IN METERS
PJA
FIGURE 7
JANUARY, 1981
576