Mine Development Drilling Program For 1980 At The Peace River Canyon Coal Property British Columbia

C.L. # 3407-3444

April 22, 1981

Cinnabar Peak Mines Ltd.,
10549 110th Street,
Edmonton, Alberta
T5H 3C6

Attention: Mr. E. Lipsett,
Managing Director

Dear Mr. Lipsett,

Re: Mine Development Drilling Program for 1980 at the Peace River Canyon Coal Property, British Columbia

Attached to this letter report are the results of further laboratory test work completed at Loring Laboratories, Calgary, on selected case samples of coal which were taken during the 1980 drilling program.

These data represent the completion of the program and this letter report the conclusion of the documentation of the work we initially detailed in my 2 volume report of February 6, 1981 to Cinnabar Peak Mines Ltd.

The Laboratory data includes moisture ash sulphur and FSI data on selected individual float product samples (+1.40 and cumulative 1.5).

To complete the documentation of the project, I have attached original sepias (in rolled form), for all figures, maps and selections as included in the February report.

Six copies of the letter report are enclosed for your convenience.

I trust that you will find this data satisfactory.

Yours sincerely,

L. Nichols

L. Nichols

L.C.G. NICHOLS CONSULTING LTD.
BOX 14, SITE 38, RR #4, SHERWOOD PARK, ALBERTA T8A 3K4 (403) 467-1870

April 22, 1981

Loring Laboratories Ltd.
629 Beaverdam Rd. N.E.
Calgary, Alberta.
T2K 4W2
Attn: Mr. Anders

Dear Mr. Anders:

Re: Cinnabar Peak Mines Ltd. - Coal Analyses

This letter on behalf of my client, authorizes you to proceed with follow-up assay work on the drill core samples at your laboratory, as soon as possible.
Please note that there was a discrepancy in the core sample numbers and these should be changed to read as follows:
Sample number: 276'11½"-284'6"A should read: 276'11½"-278'
276'11½"-284'6"B should read: 278'284'6"
Assays are requested for sulphur and ash on the individual float samples as follows:

80-1										
278'-284'6"	Ash	and	Sulphur	on	the	1.4	and	1.5	flt.	samples
420'½"-422'	"	"	"	"	"	"	"	"	"	"
526'8"-529'	"	"	"	"	"	"	"	"	"	"
80-3										
53'8"-56"	"	"	"	"	"	"	"	"	"	"
80-4										
491'10½"-494'1½"	"	"	"	"	"	"	"	"	"	"
80-5										
148'11½-153'2"	"	"	"	"	"	"	"	"	"	"
157'-160'1"	"	"	"	"	"	"	"	"	"	"
364'3"-366'4"	"	"	"	"	"	"	"	"	"	"
496'3"-499'9½"	"	"	"	"	"	"	"	"	"	"
409'2"-411'6"	"	"	"	"	"	"	"	"	"	"
80-6										
410'3½"-416'½"	"	"	"	"	"	"	"	"	"	"
462'10½"-466'4½"	"	"	"	"	"	"	"	"	"	"
372'5½"-374'11"	"	"	"	"	"	"	"	"	"	"
56'½"-58'10"	"	"	"	"	"	"	"	"	"	"

Total of 28 ash and 28 sulphur analyses.

L.C.G. NICHOLS CONSULTING LTD.
BOX 14, SITE 38, RR #4, SHERWOOD PARK, ALBERTA T8A 3K4 (403) 467-1870

In addition, an F.S.I. analysis of each of the above samples should be run on a physically combined sample of the float products for a total of 14 analyses.

Yours sincerely,

L. Nichols

L.C.G. NICHOLS CONSULTING LTD.

cc: E. Lipsett, Director
Cinnabar Peak Mines Ltd.
P. Appleby

L.C.G. NICHOLS CONSULTING LTD. 20994

ATTN: L. Nichols CERTIFICATE of COAL TESTING Page # 1 DATE February 10, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		RECD % H_2O	% H_2O	% VOL MATTER	% ASH	% FIXED CARBON	% S	BTU/LB.	F S
278'-284'6"	80-1	+1.40 Flt			Air Dried		.68		3.51		.63		
					Dry Basis		-		3.53		.63		
		Cumulative 1.50 Flt			Air Dried		.79		3.55		.62		5½
					Dry Basis		-		3.58		.62		
420'½"-422'	80-1	+1.40 Flt			Air Dried		.59		4.41		1.22		
					Dry Basis		-		4.44		1.23		
		Cumulative 1.50 Flt			Air Dried		.71		5.05		1.22		7½
					Dry Basis		-		5.09		1.23		
526'8"-529'	80-1	+1.40 Flt			Air Dried		.64		3.42		.76		
					Dry Basis		-		3.44		.76		
		Cumulative 1.50 Flt			Air Dried		.77		4.22		.71		1½
					Dry Basis		-		4.25		.72		
53'8"-56'	80-3	+1.40 Flt			Air Dried		.96		3.29		.95		
					Dry Basis		-		3.32		.96		
		Cumulative 1.50 Flt			Air Dried		.79		4.18		.89		1½
					Dry Basis		-		4.21		.90		
491'10½"-494' 1½"	80-4	+1.40 Flt			Air Dried		.74		6.31		.76		
					Dry Basis		-		6.36		.77		

D. [illegible]

L.C.G. NICHOLS CONSULTING LTD.

ATTN: L. Nichols

[illegible] LABORATORIES LTD.

CERTIFICATE of COAL TESTING

L.C. 20994

DATE February 10, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VOL MATTER	% ASH	% FIXED CARBON	% S	BTU LB.	F.S.I.	
		Cumulative 1.50 Flt			Air Dried		.69		7.36		.73		2½	
					Dry Basis		–		7.41		.74			
148'11½"-153'2"	80-5	+1.40 Flt			Air Dried		.96		6.18		.65			
					Dry Basis		–		6.24		.66			
		Cumulative 1.50 Flt			Air Dried		.80		7.52		.62		2	
					Dry Basis		–		7.58		.62			
157'-160'1"	80-5	+1.40 Flt			Air Dried		1.00		3.70		.60			
					Dry Basis		–		3.74		.61			
		Cumulative 1.50 Flt			Air Dried		.86		4.01		.62		5	
					Dry Basis		–		4.04		.63			
364'3"-366'4"	80-5	+1.40 Flt			Air Dried		.81		3.06		.82			
					Dry Basis		–		3.08		.83			
		Cumulative 1.50 Flt			Air Dried		.79		3.10		.80		1½	
					Dry Basis		–		3.12		.81			
496'3"-499'9½"	80-5	+1.40 Flt			Air Dried		.92		4.72		.65			
					Dry Basis		–		4.76		.66			
		Cumulative 1.50 Flt			Air Dried		.86		5.50		.63		2	
					Dry Basis		–		5.55		.64			

D. Ewles

L.C.G. NICHOLS CONSULTING LTD.

ATTN: L. Nichols

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

LAB NO. 20994

DATE February 10, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VOL MATTER	% ASH	% FIXED CARBON	% S	BTU / LB.	F.S.I.	
409'2"-411'6"	80-5	+1.40 Flt			Air Dried		.91		3.19		.75			
					Dry Basis		–		3.22		.76			
		Cumulative 1.50 Flt			Air Dried		.91		3.22		.72		1½	
					Dry Basis		–		3.25		.73			
410'3½"-416'½"	80-6	+1.40 Flt			Air Dried		.89		2.14		.78			
					Dry Basis		–		2.16		.79			
		Cumulative 1.50 Flt			Air Dried		.81		2.23		.77		2½	
					Dry Basis		–		2.25		.78			
462'10½"-466' 4½"	80-6	+1.40 Flt			Air Dried		.82		3.30		.74			
					Dry Basis		–		3.33		.75			
		Cumulative 1.50 Flt			Air Dried		.74		3.67		.71		1½	
					Dry Basis		–		3.70		.72			
372'5½"-374' 11½"	80-6	+1.40 Flt			Air Dried		.94		2.42		.86			
					Dry Basis		–		2.44		.87			
		Cumulative 1.50 Flt.			Air Dried		.74		2.61		.83		2	
					Dry Basis		–		2.63		.84			
56'½"-58'10"	80-6	+1.40 Flt			Air Dried		.70		7.00		1.06			
					Dry Basis		–		7.05		1.07			

D Eales

L.C.G. NICHOLS CONSULTING LTD.

ATTN: L. Nichols

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO. 20994

DATE February 10, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY			REC'D % H_2O	% H_2O	% VOL MATTER	% ASH	% FIXED CARBON	% S	BTU LB.	F.S.I.	
			SINK	FLOAT										
		Cumulative 1.50 Flt			Air Dried		.76		7.26		1.07		9	
					Dry Basis		-		7.32		1.08			

To: CINNABAR PEAK MINES,
11650 - 156th Street,
Edmonton, Alberta

ATTN: Mr. Lipsett

File No. 21780
Date July 13, 1981
Samples Coal

575

Certificate of ASSAY of
LORING LABORATORIES LTD.

SAMPLE No.			
TROJAN SEAM	80-1	87'4¼" - 93'5½"	only
			Ratio *
TITAN SEAM	80-1	248'11" - 253'3½"	76.125
	80-4	207'10" - 212'10½"	81.675
	80-5	148'11½" - 153'2"	68.680
	80-6	98'2" - 103'8"	89.100
			315.580
FALL SEAM	80-1	276'11½" - 284'6" (B)	120.365
	80-4	217'½" - 225'5"	144.720
	80-5	157'0" - 160'1"	48.470
	80-6	117'7" - 123'2"	95.810
			409.365
GETHING SEAM	80-1	493'5½" - 495'3½"	28.820
	80-4	428'2" - 432'4"	74.000
	80-5	364'3" - 366'4"	33.000
	80-6	325'9½" - 328'2"	40.755
			176.575
LITTLE SEAM	80-3	53'8" - 56'0"	37.520
	80-4	491'10½" - 494'1½"	37.260
	80-5	438'4" - 440'2"	29.700
	80-6	399'9" - 401'11½"	36.040
			140.520
MOGUL SEAM	80-3	60'1" - 66'3½"	111.005
	80-4	497'2½" - 500'3"	47.815
	80-5	444'1½" - 448'½"	64.390
	80-6	410'3½" - 416'½"	100.740
			323.950

* Ratio indicates length x S.G.

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.
Pulps Retained one month unless specific arrangements made in advance.

D. Enders
Assayer

To: CINNABAR PEAK MINES,
11650 - 156th Street,
Edmonton, Alberta

ATTN: Mr. Lipsett

File No. 21780
Date July 13, 1981
Samples Coal

Certificate of ASSAY
LORING LABORATORIES LTD.

SAMPLE No.	Specific Gravity
"Coal Analysis" "Air Dried Basis"	
80-1	
87'4½"-93'5½"	1.42
248'11"-253'3½"	1.45
276'11½"-284'6" (B)	1.33
493'5½"-495'3½"	1.31
80-3	
53'8"-56'0"	1.34
60'1"-66'3½"	1.49
80-4	
207'10"-212'10½"	1.35
217'½"-225'5"	1.44
428'2"-432'4"	1.48
49110½"-494'1½"	1.38
497'2½"-500'3"	1.31
80-5	
148'11½"-153'2"	1.36
157'0"-160'1"	1.31

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.
Pulps Retained one month unless specific arrangements made in advance.

D. Eades

Assayer

To: CINNABAR PEAK MINES,
11650 - 156th Street,
Edmonton, Alberta

ATTN: Mr. Lipsett

File No. 21780
Date July 13, 1981
Samples Coal

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	Specific Gravity
80-5 Cont'd	
364'3"-366'4"	1.32
438'4"-440'2"	1.35
444'1½"-448'½"	1.37
80-6	
98'2"-103'8"	1.35
117'7"-123'2"	1.43
325'9½"-328'2"	1.43
399'9"-401'11½"	1.36
410'3½"-416'½"	1.46

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.
Pulps Retained one month unless specific arrangements made in advance.

D. Eades

Assayer

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	
80-5 ✓	438'4" - 440'2" (133.6m - 134.2m	Raw Coal			As Received	4.40	-	21.53	7.55	66.42	.61	13,248		
					Air Dried	-	0.84	22.35	7.84	68.97	.64	13,755		
					Dry Basis	-	-	23.52	7.90	69.48	.64	13,858		
80-1 ✓	493'5½" - 495'3½" 150.4m - 151.0m Gething	Raw Coal			As Received	1.91	-	20.74	6.66	70.69	.69	13,950		
					Air Dried	-	0.75	20.98	6.74	71.53	.69	14,115		
					Dry Basis	-	-	21.14	6.79	72.07	.70	14,222		
80-4 ✓	497'2½" - 500'3" 151.5m - 152.5m Mogul	Raw Coal			As Received	3.86	-	19.80	5.50	70.84	.64	13,615		
					Air Dried	-	0.87	20.41	5.67	73.05	.66	14,039		
					Dry Basis	-	-	20.59	5.72	73.69	.67	14,162		

D. Lobb

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	Screen Analysis % (By Weight)
Trojan Seam		Comp Head			Air Dried		1.06	23.14	20.88	54.92	.55	11,657		
					Dry Basis		-	23.39	21.10	55.51	.56	11,782		
		+28 Mesh												87.03
		1.45 Flt	-	72.44										
		+1.45 Sink	27.56	-										
		-28 Mesh												12.97
		Clean Coal Comp			Air Dried		1.34	23.52	9.65	65.49	.56	13,400		
					Dry Basis		-	23.84	9.78	66.38	.57	13,582		

D. Ebbs

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY			REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	Screen Analysis % (By Weight)
			SINK	FLOAT										
Titan Seam		Comp Head			Air Dried		1.07	23.46	13.24	62.23	.80	13,003		
					Dry Basis		-	23.71	13.38	62.91	.81	13,144		
		+28 Mesh												87.34
		1.45 Flt	-	82.84										
		+1.45 Sink	17.16	-										
		-28 Mesh												12.66
		Clean Coal Comp			Air Dried		1.21	23.68	7.66	67.45	.73	13,899		
					Dry Basis		-	23.97	7.75	68.28	.74	14,069		

D. E. Lord

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY			REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU / LB.	F.S.I.	Screen Analysis % (By Weight)
			SINK	FLOAT										
Falls Seam		Comp Head			Air Dried		0.93	24.95	13.08	61.04	.58	12,693		
					Dry Basis		-	25.18	13.20	61.62	.59	12,812		
		+28 Mesh												89.50
		1.45 Flt	-	76.46										
		+1.45 Sink	23.54	-										
		-28 Mesh												10.50
		Clean Coal Comp			Air Dried		1.20	25.41	4.65	68.74	.61	14,304		
					Dry Basis		-	25.72	4.71	69.57	.62	14,478		

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	Screen Analysis % (By Weight)
Gething Seam		Comp Head			Air Dried		0.66	22.38	15.25	61.71	1.10	12,601		
					Dry Basis		-	22.53	15.35	62.12	1.11	12,685		
		+28 Mesh												92.77
		1.45 Flt	-	78.27										
		+1.45 Sink	21.72	-										
		-28 Mesh												7.23
		Clean Coal Comp			Air Dried		0.98	22.63	4.92	71.47	.83	14,343		
					Dry Basis		-	22.85	4.97	72.18	.84	14,485		

D. Lobb

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY			REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	Screen Analysis % (By Weight)
			SINK	FLOAT										
Little Seam		Comp Head			Air Dried		0.84	21.67	9.73	67.76	.82	13,579		
					Dry Basis		-	21.85	9.81	68.34	.83	13,694		
		+28 Mesh												89.80
		1.45 Flt	-	86.75										
		+1.45 Sink	13.25	-										
		-28 Mesh												10.20
		Clean Coal Comp			Air Dried		1.04	22.21	5.39	71.36	.76	14,298		
					Dry Basis		-	22.44	5.45	72.11	.77	14,448		

D. [signature]

CINNABAR PEAK MINES

ATTN: Mr. Lipsett

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

FILE NO.: 21780

DATE: July 13, 1981

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU / LB.	F.S.I.	Screen Analysis % (By Weight)
Mogul Seam		Comp Head			Air Dried		0.78	25.43	13.96	59.83	.74	12,242		
					Dry Basis		-	25.63	14.07	60.30	.75	12,338		
		+28 Mesh												89.71
		1.45 Flt	-	75.31										
		+1.45 Sink	24.69	-										
		-28 Mesh												10.29
		Clean Coal Comp			Air Dried		0.99	21.84	4.65	72.52	.78	14,358		
					Dry Basis		-	22.06	4.70	73.24	.79	14,502		
		* Ash Fusion, Ash Analysis, Ultimates to Follow.												

D. Endes

To: CINNABAR PEAK MINES,
11650 - 156th Street,
Edmonton, Alberta

ATTN: Mr. Lipsett

File No. 21780
Date July 13, 1981
Samples Clean Coal Comps

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	H.G.I.
"Hardgrove Grindability Index"	
Trojan Seam	61
Titan Seam	66
Falls Seam	65
Gething Seam	63
Little Seam	64
Mogul Seam	65

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

D. Eveleigh

Assayer

575

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	SEAM					
	Trojan	Titan	Fall	Gething	Little	Mogul
"Analysis of Ash" %						
SiO2	57.02	49.93	37.47	46.96	53.24	24.90
Al2O3	24.17	30.54	19.24	16.88	13.29	10.64
TiO2	.49	.74	.73	.71	.71	.20
FeO3	9.20	7.31	18.88	10.15	19.16	24.31
CaO	1.43	1.61	7.08	13.99	3.22	11.89
MgO	.54	1.08	1.93	.99	1.24	6.13
Na2O	.60	1.52	1.39	1.46	.86	1.24
K2O	.49	.67	.35	.52	.66	.30
P2O5	2.71	3.28	2.76	.28	1.11	1.41
SO3	1.49	1.64	7.95	6.04	4.36	16.97
Undetermined	- 1.86	- 1.68	- 2.22	- 2.02	- 2.15	- 1.01

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: CINNABAR PEAK MINES
11650 - 156 Street
Edmonton, Alberta

Attn: Mr. Lipsett

File No. 21780-1
Date August 13, 1981
Samples Coal

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	% H_2O	% C	% H	% N	% Ash	% S	% O(diff)
"Ultimate Analysis"							
"Air Dried"							
Trojan	1.34	76.33	4.67	1.21	9.65	.56	6.24
Titan	1.21	78.90	5.05	1.15	7.66	.73	5.30
Fall	1.20	81.75	4.80	1.28	4.65	.61	5.71
Gething	.98	82.91	4.55	1.04	4.92	.83	4.77
Little	1.04	82.15	4.57	1.01	5.39	.76	5.08
Mogul	.99	82.83	4.47	1.01	4.65	.78	5.27

*Hydrogen value includes hydrogen from H_2O

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Jack Brown

Assayer

To: CINNABAR PEAK MINES
11650 - 156 Street
Edmonton, Alberta

Attn: Mr. Lipsett

File No. 21780-1
Date August 13, 1981
Samples Coal Ash

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	"REDUCING ATMOSPHERE" I.D.(F°)	H=W(F°)	H=½W(F°)	Fluid (F°)
"Ash Fusion Analysis"				
Trojan	2470	2576	2601	2648
Titan	2624	+2650	+2650	+2650
Fall	2145	2176	2206	2251
Gething	2143	2178	2201	2303
Little	2032	2060	2087	2165
Mogul	2066	2102	2138	2152
	"OXIDIZING ATMOSPHERE" I.D.(F°)	H=W(F°)	H=½W(F°)	Fluid (F°)
Trojan	2605	+2650	+2650	+2650
Titan	2646	+2650	+2650	+2650
Fall	2300	2416	2429	2448
Gething	2284	2344	2367	2411
Little	2271	2469	2508	2582
Mogul	2270	2326	2348	2425

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

P R. Peace River Canyon 80 (.1#

OPEN FILE

CINNABAR PEAK MINES LTD.

MINE DEVELOPMENT DRILLING PROGRAM

1980

PEACE RIVER CANYON COAL PROPERTY

GEOLOGICAL BRANCH Volume 1 of 2
ASSESSMENT REPORT

00 575

Licences: 3407 to 3444
Land District: Peace River
NTS: 93-0/16
Latitude: 55°55'N
Longtitude: 122°05'W
Owner/Operator: Cinnabar Peak Mines Ltd.
Consultant: L.C.G. Nichols Consulting Ltd.
Authors: John Ricker & L.C.G. Nichols,P.Eng.,P.Geol
Date of Field Work: October - November 1980
Submission Date: February 1981

CONFIDENTIAL

L.C.G. NICHOLS CONSULTING LTD.
BOX 14, SITE 38, RR #4, SHERWOOD PARK, ALBERTA T8A 3K4 (403) 467-1870

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1.0 INTRODUCTION

1.1 Location and Access

The license area is located on the eastern edge of the Rocky Mountain Foothills at the Peace River Canyon - ten to eighteen km WSW of Hudson's Hope. Licenses on the south side of the Peace River are located near Aylard, Moosebar, Johnson and Coal-bed Creeks. (See Figure 1). They are accessible from the Hudson's Hope - Chetwynd Highway via Johnson Creek Road. Leases on the north side of Peace River are located on the slopes of Portage Mountain and are accessible from the highway to W.A.C. Bennett Dam.

1.2 Summary of Drilling Program

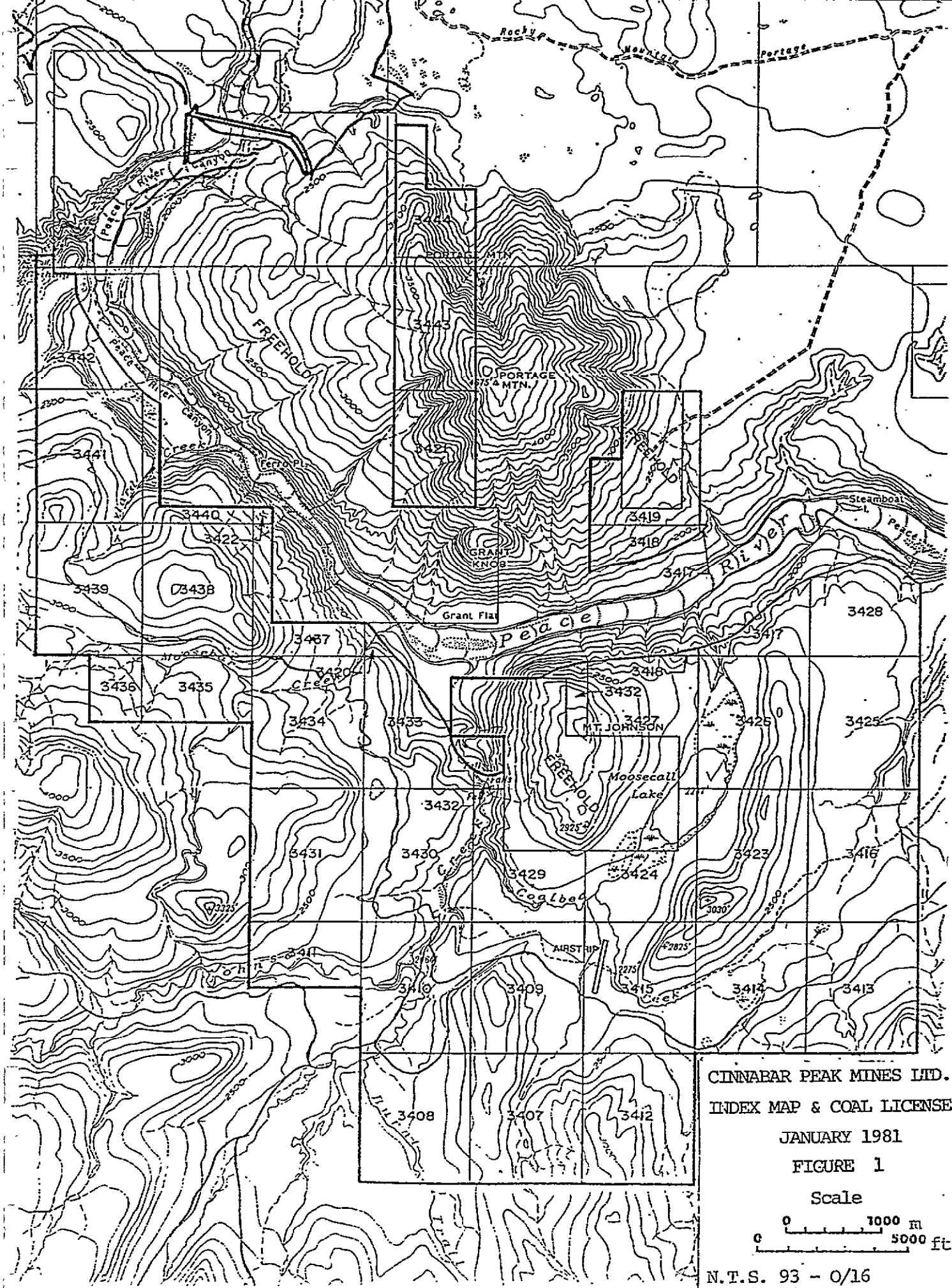
The 1980 drilling program included six Diamond drill core holes for a total of 3225.5 ft (983m). NQ-size core was logged and sampled for coal. Geophysical tests were completed in five of six drill holes. Logs included: caliper, resistivity, density, self-potential, gamma ray, and neutron.

1.3 Summary of Geological Mapping

Outcrops and road cuts were cleared with a D-8 dozer along the Ring Road in two areas (see MAP 1) for a total distance of approximately 670m (ca 2200ft). These outcrops and exposures were subsequently mapped in detail (see Section 2.0 and MAP 1 (back pocket).

The work was carried out as follows:

Geological mapping	- Licenses 3427, 3429, Freehold
Drilling	- DDH 80-1, 80-4, 80-5 on License 3429
	- DDH 80-3 on License 3424
	- DDH 80-2 on License 3427
	- DDH 80-6 on Freehold
Rock cuts along road	- Freehold



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INDEX MAP & COAL LICENSES

JANUARY 1981

FIGURE 1

Scale

0 1000 m

0 5000 ft

N.T.S. 93 - O/16

1:50000

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1.4 Summary of Logging Program

All but one hole (DDH 80-2) were geophysically logged (see Section 5.0).

2.0 GEOLOGICAL PROGRAM

2.1 Scope

Geological work included logging drill core from the six drill holes, and constructing stratigraphic sections (Appendix A & C). Stratigraphic Sections were also constructed from field observations at Coalbed Creek and along rock cuts created during road construction along the "Ring Road" (Appendix A & C). Outcrops were visited and mapped at other points on the access trails and the data are plotted on MAP 1 (in plastic pocket at end of report).

2.2 Stratigraphic Correlation of Coal

The results can be summarized in the following points:

1. The coal seams in the basal Gething Formation (i.e. those below the Mogul and Castle Point seams) are of non-econimic thicknesses or absent entirely, at DDH 80-2 east of Mr. Johnson, and at DDH 80-4 and DDH 80-3 (see MAP 1), between Coalbed Creek and Mt. Johnson.
2. Absence of shearing,major folding and drag folding indicate that the stratigraphic sequences are relatively undisturbed and that facies changes would be the major factor in determining the stratigraphic position and thickness of coal seams at drill hole locations between Mr. Johnson and Coalbed Creek.
3. Middle Gething coal seams were encountered in DDH 80-1, and DDH 80-3 through DDH 80-6 between Mt. Johnson and Coalbed Creek. Of the major seams in the middle Gething Formation, the Trojan, Little

Mogul and Mogul seams were identified in outcrop in earlier reports. The Trojan seam can be correlated from an outcrop at Coalbed Creek with the occurrence at DDH 80-1. The Little Mogul and Mogul seams outcrop correlates with the occurrence in DDH 80-3. The rest of the major seams are only tentatively identified based on relative stratigraphic distance from these two horizons. The major seams are tentatively given the names of the coal seams which occur in the region and are summarized briefly in Section 2.3.

4. All coal seams carry abundant partings. See Appendix A for detailed descriptions of seams.

2.3 Local Correlation of Coal Seams

Major coal seams can be consistently correlated statigraphically from drill hole to drill hole between Coalbed Creek and Mr. Johnson (see Appendix C). The major seams are summarized below in stratigraphic order:

The approximate thicknesses are given with reference only to 1980 drill hole logs and surface geological mapping. (See Appendix A).

Precise estimates await interpretation of both 1980 geological data and earlier drilling reports.

The Trojan seam totals about 6' thick at Coalbed Creek and DDH 80-1 and was not found, because of topographic conditions, at the other drill sites.

The Titan (?) seam varies from 4½' approximately to 5½' feet in thickness, though only 2½' are reported in DDH 80-5 with a 1½' missing interval.

The Falls (?) seam varies from 8½' to about 5½' (not counting missing intervals) and is thickest at DDH 80-4 and DDH 80-1.

The Gething (?) seam varies from just under 2' to about 2' to 3' and may be absent in the "Ring Road" Area.

The Little Mogul seam varies from about 2' to 3' and may be absent in the "Ring Road" Area.

The Mogul seam is approximately 6' thick on the flank of Mt. Johnson and appears to crop out on the "Ring Road" in sections at least 4' thick.

The Castle Point (?) seam shows a thickness variation between 3 to 3½'.

Drilling records indicate consistent occurrence of coal for a 2' - 2½' seam between the Gething(?) and Little Mogul seams at DDH 80-1, DDH 80-4, DDH 80-5 and DDH 80-6.

Other seams of locally equal or greater thickness exist especially between Trojan and Titan(?) seams and between the Falls(?) and the Gething(?) seams but drill records alone do not indicate consistent thickness and areal extent of coal.

It should be obvious that other thin coal seams probably exist within this drilled area. Due to

limited spatial extent, drilling density, and core loss, they have not been identified.

2.4 Peace River Canyon Property MAP 1

The property map is based on a tracing from a blue print of the 1976, 1"=1000', property map: "Peace River Canyon" property (south sheet). Drill hole positions from the 1980 (DDH 80-1) to (DDH 80-6) and earlier years are indicated.

Only the outcrops and road cuts mapped in 1980 are indicated, including the NW and SW"Ring Road" cuts and the Trojan Seam at Coalbed Creek. Coal seam thicknesses are indicated on the NW and SW"Ring Road" cuts only.

3.0 DRILLING PROGRAM

3.1 Objectives

The purpose of the development drilling program was:

1. To complete the composite stratigraphic column of the Gething Formation (Lower Cretaceous) down to the top of the Cadomin Formation.
2. To sample the coal seams in the middle Gething Formation at Mt. Johnson.
3. To determine coal quality.
4. To determine the ratio of overburden to coal immediately south of the Freehold area.

3.2 Execution of the Drilling Program

A single diamond drill rig utilizing wire line equipment, owned and operated by D.W. Coates Enterprises Ltd., was utilized during the period October 9, 1980 to October 31, 1980. A caterpillar tractor was used to provide access roads to the drill sites

and a water truck was employed to supply water to the drill rig. Water based muds were utilized and holes were cased through the overburden. This casing was left in place on the completion of the hole.

3.3. Results

All core was logged in a standard and systematic fashion. Results are documented in the detailed core logs found in Appendix A. These logs are in turn presented as stratigraphic composites in Appendix C.

4.0 ANALYSES OF COAL

Coal samples were shipped to Loring Laboratories, Calgary. Part of the collection was tested and assayed (results are in Appendix B). The remainder of the coal is in storage at Cinnabar Peak Mines Ltd.

4.1 Analyses of Raw Coal Samples

Selected samples of the thicker and higher quality coal seams were identified and analyzed on a "raw" or untreated basis. Results in terms of moisture, fixed carbon, sulphur, BTU content and F.S.I. properties were measured. These data are tabulated in Appendix B.

4.2 Float and Sink Analyses

Based on the results of the raw coal analyses, standard wash tests were completed on selected samples. These results are also listed in Appendix B. Coal quality data of the washed coal products are also listed in this Appendix.

5.0 GEOPHYSICAL LOGGING PROGRAM

5.1 Scope and Purpose

All holes, with the exception of DDH 80-2, were logged geophysically by Roke Oil Enterprises Ltd. A blockage in hole 80-2 prevented logging this hole.

Normal logging practices were followed in generating neutron, density, gamma, S.P., caliper, and resistivity logs. These logs were run primarily to evaluate coal seams and evaluate coal core recoveries. Local water tables are also indicated on these logs.

5.2 Results

Data, interpretation and discussion of the logs have been reported separately.

6.0 RECLAMATION OF DRILL SITES

Reclamation was in progress at the time of departure by one of the authors (Ricker), from the area. Reclamation was carried out with the advice and visits of the Provincial Inspector for Technical Reclamation from Ft. St.John.

Drill sites with dry sumpholes were reclaimed by burying slash in sumpholes, then refilling them with the sumphole overburden. The sites were then levelled to a natural contour. Grass seed was to be scattered on the surface. Efforts were made to pump out wet sumpholes by the drilling crew to be followed by reclamation as above.

7.0 CORE STORAGE

After consultation with the Provincial District Geologist, drill core was shipped direct to the Mines & Petroleum Resources storage facility at Charlie Lake (Ft. St. John).

Spacers were left in core boxes where coal samples were removed. Several boxes of core were accidentally destroyed by caterpillar tractor at DDH 80-6. This lost core is noted in the drill logs.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The original major objective of the field program--to identify a potential surface coal mine area with a minimum stripping ratio--was accomplished. As part of that objective the delineation and correlation of the major coal seams have also been attained. It is also apparent that thinner coal seams at varying stratigraphic locations are present and with suitable recovery techniques could be included with measurable reserves.

It is recommended that the next sequence of field work be centered on a systematic (grid) type, drilling program (core and rotary holes). Coupled with a backhoe trenching program along the coal outcrop area to better define the coal reserves and to provide adequate design parameters for ultimate pit design.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF ALBERTA
PERMIT NUMBER
P 2548
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AUTHOR AFFIDAVITS

I, Lee Nichols, hold a Bachelor of Science degree in Geological Engineering from Queen's University and a Master of Science degree in Geology and Civil Engineering from Syracuse University. I am a member in good standing of the Alberta Association of Professional Engineers, Geologists and Geophysicists of Alberta and I am a registered Professional Engineer and Professional Geologist with the Alberta Association of Professional Engineers, Geologists and Geophysicists of Alberta.

I, John Ricker, hold a Bachelor of Science degree from the University of British Columbia in Geology and Zoology.

APPENDIX A -

Drill Logs & Stratigraphic Logs

Abbreviations
Drill Core Logs DDH 80-1
Drill Core Logs DDH 80-2
Drill Core Logs DDH 80-3
Drill Core Logs DDH 80-4
Drill Core Logs DDH 80-5
Drill Core Logs DDH 80-6
Stratigraphic Logs Coalbed Creek
Stratigraphic Logs NW Ring Road
Stratigraphic Logs SW Ring Road

ABBREVIATIONS

mudst	-	mudstone
silst	-	siltstone
sh	-	shale
ss	-	sandstone
calc	-	calcareous
carb	-	carbonaceous
py	-	pyrite
xl	-	crystal
rk	-	rock
v.	-	very
v.f.	-	very fine grained
med.	-	medium grained
//	-	parallel
gy	-	grey
bl	-	black
dissem	-	disseminated
wx	-	weathered, weathering
△	-	station (outcrop geology)
ca.	-	approximate

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