

SM-Princeton North
81C12A

COMINCO LTD.

EXPLORATION
NTS: 92H 7,8,9 & 10

WESTERN DISTRICT

CONFIDENTIAL
OPEN FILE

DIAMOND DRILLING REPORT

PRINCETON COAL PROPERTY

COAL LICENCES 5217, 5219

TO 5238 INCL., 5240, AND 5243

KAMLOOPS, YALE, AND SIMILKAMEEN

DIVISIONS OF YALE LAND DISTRICT

49°28' to 49°34' North Latitude

120°26' to 120°34' West Longitude

OWNER AND OPERATOR: Cominco Ltd.

WORK PERFORMED

March 23 to 26, and May 6 to June 2, 1981

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

00 195

JULY 1981

R.J. NICHOLSON

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION.	1
II. SUMMARY	1
III. PROPERTY.	1
IV. LOCATION.	1
V. HISTORY	2
VI. 1981 DIAMOND DRILLING	2
VII. CONCLUSIONS	2

* * *

ATTACHMENTS

Plate 1 - Index Map	1:50,000
Plate 2 - Drill Hole Location Map	1:20,000
Diamond Drill Logs - Holes PC-1 to PC-7, inclusive	
Geophysical Logs - Holes PC-1, PC-2, and PC-4	

* * *

APPENDICES

Appendix A - Statement of Expenditures
Appendix B - Statement
Appendix C - Statement of Qualifications
Appendix D - Princeton Coal Licences

DIAMOND DRILLING REPORT

PRINCETON COAL PROPERTY

I. INTRODUCTION

A short program of diamond drilling was carried out in 1981, to test two areas of the property for the presence of coal within the northern Princeton sedimentary basin.

II. SUMMARY

Seven HQ holes were diamond drilled in May, 1981, totalling 537.36 meters (1763.0 feet). It was possible to log only three of the drill holes, to produce a gamma log of these holes.

III. PROPERTY

A total of 23 Coal Licences are currently held in the area by Cominco Ltd., as follows:

- a) North Group - Licence No's. 5217, 5219 to 5225 inclusive. Eight licences with total area 1687.54 hectares.
- b) South Group - Licence No's. 5227 to 5238, inclusive, 5240, and 5243. Fourteen licences with total area 2704.06 hectares.
- c) Separate Licence - Licence No. 5226 of area 127.48 hectares.

All licences were issued August 6, 1979, with ownership 100% Cominco Ltd. Some cadastral data is tabulated in Appendix D.

IV. LOCATION

Latitude N: 49⁰28' to 49⁰34' Elevation: 700 to 1000 meters
Longitude W: 120⁰26' to 120⁰34' NTS: 92H 7, 8, 9 & 10

The coal licences lie from the Village Limits of Princeton to thirteen kilometers north of Princeton, with access via highways to Merritt and Osprey Lake, and numerous secondary and tertiary roads. An index map is attached.

V. HISTORY

Application was made in late 1977 for Coal Licences within the northern Princeton basin, on the basis of coaly material having been intersected in one hole diamond drilled earlier in that year. Twenty-eight Coal Licences totalling 5551.11 hectares were issued in August 6, 1979.

Fording Coal rotary drilled four holes on the property, under joint venture agreement, in 1980. Because of lack of encouragement, resulting mainly from choice of drill site location and from drilling difficulties, Fording opted out of the agreement. Five coal licences were abandoned in August 1980 due to insufficient work credit.

Diamond drilling was carried out in May, 1981, by Cominco Ltd. to test the immediate vicinity of the 1977 discovery hole within the South Group of coal licences, and also to test for indications of the same coal horizon within the North Group of licences.

VI. 1981 DIAMOND DRILLING

Seven HQ holes were diamond drilled under contract in May, 1981 for a total length of 537.36 meters (1763.0 feet). A skid-mounted Longyear 38 drill was employed. Drilling mud was used in all holes. Difficulty was experienced in penetrating overburden, with one hole abandoned before bedrock could be reached, because of groundwater flow. Further difficulty was experienced in another hole (PC-7), through rod breakage caused by abrasion, resulting in impossible recovery of the rod string. All drill hole collars were cemented, and surface restored upon completion of each hole.

All intersections containing coaly material were sampled, according to geological definition, with the entire interval length taken. Samples were subjected to proximate analysis through Loring Laboratories Ltd.

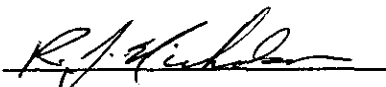
Diamond drill logs with results of analyses are attached. A drill hole location map is also attached.


A gamma log was obtained of all drill holes possible, using a Cominco owned Mt. Sopris 2500 logger under supervision of A.R. Scott, Geophysicist. Unfortunately, only three holes could be logged. These geophysical logs are attached.

VII. CONCLUSIONS

It is evident that some coal does exist within the northern Princeton Basin. However, the property is at too early an exploration state to estimate potential or to make an economic appraisal.

Future diamond drilling programs on the property might benefit from the use of NQ rather than HQ tools.

Report by: 
R.J. Nicholson
Project Geologist

Endorsed by: 
G. Harden, Manager
Western District
Exploration

Distribution:

Ministry of Energy, Mines and
Petroleum Resources (2)

Western District (1)

RJN (1)

RJN/vmk

APPENDIX A
STATEMENT OF EXPENDITURE
PRINCETON COAL PROPERTY

A. NORTH GROUP

Field Salaries

R.J. Nicholson - 9 days @ \$149.00/day	\$ 1,341.00	
P.D. Leriche - 8 days @ \$105.00/day	<u>840.00</u>	\$ 2,181.00

Diamond Drilling

Contract - 504 ft. @ \$43.34/ft.	21,840.28	
Coreboxes and Supplies	335.29	
Drill move assistance	<u>3,413.05</u>	25,588.62

Geophysical Logging

751.07

Coal Analyses

5 samples @ \$47.39/sample		236.91
----------------------------	--	--------

Transportation

Truck rental, fuel		770.82
--------------------	--	--------

Geological and Core Logging Supplies

81.91

Food and Accomodation

17 man-days @ \$40/day		677.92
------------------------	--	--------

Field Preparation, Report Preparation, Drafting

R.J. Nicholson - 5 days @ \$137.00/day	685.00	
P.D. Leriche - 5 days @ \$90.00/day	<u>450.00</u>	<u>1,135.00</u>

Total Expenditure North Group

\$31,423.25

B. SOUTH GROUP

Field Salaries

R.J. Nicholson - 21 days @ \$149.00/day	\$ 3,129.00	
P.D. Leriche - 20 days @ \$105.00/day	<u>2,100.00</u>	\$ 5,229.00

Diamond Drilling

Contract - 1,259 ft. @ \$43.34/ft.	54,557.35	
Core Boxes and Supplies	502.94	
Drill move assistance	<u>4,668.99</u>	59,729.28

2.

<u>Geophysical Logging</u>		1,502.15
<u>Coal Analyses</u>		
44 samples @ \$47.39/sample		2,084.84
<u>Transportation</u>		
Truck rental, fuel		1,156.22
<u>Geological and Core Logging Supplies</u>		81.91
<u>Food and Accomodation</u>		
41 man-days @ \$40.00/day		1,635.00
<u>Field Preparation, Report Preparation, Drafting</u>		
R.J. Nicholson - 6 days @ \$137.00/day	822.00	
P.D. Leriche - 6 days @ \$90.00/day	540.00	1,362.00
Total Expenditure South Group		<u>\$ 72,780.40</u>
Total North and South Group Expenditure		<u><u>\$104,203.65</u></u>

Diamond Drilling Contractor: Olympic Drilling & Consulting Ltd.

Core Storage: The diamond drill core is temporarily stored in Princeton pending examination by Mineral Resources Branch.

Signed:



R.J. Nicholson
Project Geologist

Dated:

July 23, 1981

RJN/vmk

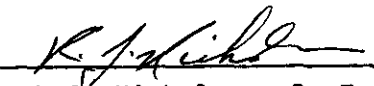
APPENDIX B

IN THE MATTER OF THE B.C. COAL ACT AND IN THE MATTER OF DIAMOND DRILLING PROGRAM CARRIED OUT ON COAL LICENCES LOCATED IN THE KAMLOOPS, YALE, AND SIMILKAMEEN DIVISIONS OF THE YALE LAND DISTRICT OF THE PROVINCE OF BRITISH COLUMBIA MORE PARTICULARLY N.T.S. 92H, 7, 8, 9 & 10.

S T A T E M E N T

I, ROBERT JOHN NICHOLSON OF THE DISTRICT OF NORTH VANCOUVER IN THE PROVINCE OF BRITISH COLUMBIA, HEREBY CERTIFY:

1. THAT I am employed as a Project Geologist by Cominco Ltd. and as such the drilling program was carried out under my field supervision;
2. THAT annexed hereto and marked as Appendix "A" to this statement is a true copy of expenditures incurred on a diamond drilling program carried out on coal licences held by Cominco Ltd. in the Princeton area known as the "Princeton Coal Property";
3. AND THAT the said expenditures were incurred between the twenty-third day of March and the second day of June 1981, for the purpose of coal exploration on the above noted coal licences.

Signed: 

R.J. Nicholson, P. Eng.

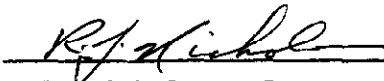
APPENDIX C

STATEMENT OF QUALIFICATIONS

I, ROBERT JOHN NICHOLSON, OF THE DISTRICT OF NORTH VANCOUVER, BRITISH COLUMBIA, DO HEREBY CERTIFY:

1. THAT I am a Graduate in Geological Engineering of the University of British Columbia and have been granted the degree of Bachelor of Applied Science in 1953.
2. THAT since 1954 I have been employed by Cominco Ltd. and have been engaged in various aspects of mine geology and exploration.
3. THAT I am a member of the Association of the Professional Engineers of the Province of British Columbia with Certificate of Registration No. 7167.

Dated this 23rd day of July, 1981
at Vancouver, British Columbia.


R.J. Nicholson, P.Eng.

APPENDIX D

PRINCETON COAL LICENCES

<u>LICENCE NO.</u>	<u>DISTRICT LOT NUMBERS</u>	<u>AREA(HA)</u>	<u>LAND DISTRICT</u>
5217	2421, 2415, 4741	259.00	Kamloops Div. Yale L.D.
5219	2416, 4734, 941	213.27	KDYD
5220	1510, 1511	259.00	KDYD
5221	3343, 3342, 2422	178.06	KDYD
5222	1508, 1507	194.25	KDYD
5223	1039	129.50	KDYD
5224	1514, 1155	259.00	KDYD
5225	Part 1402, Part 1509, 971	195.46	KDYD
5226	1185	127.48	KDYD
5227	1198	259.00	KDYD
5228	966, 1195, 1194	259.00	KDYD
5229	2420, 2135	163.53	KDYD
5230	3778, Part 3350	131.89	KDYD
5231	3351	253.33	KDYD
5232	1156, 1157, 1049	229.62	KDYD
5233	1520, 2136	207.44	KDYD
5234	2551, 1193, 2552	194.25	KDYD
5235	2137, 952	257.85	KDYD
5236	969	131.12	KDYD
5237	958, 959	144.88	KDYD
5238	513, 144, Part 276	200.20	Yale Div. Yale L.D.
5240	1006, 1004, 396	172.40	YDYD
5243	1823	99.55	Similkameen Div. Yale L.D.
23 licences		4,519.08 Hectares	

Scale

Colour Plot
& Dips

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-1	
Commenced	May 12, 1981	Location	DL 1194	Tests at	Nil	Hor. Comp.
Completed	May 15, 1981	Core Size	HQ	Corr. Dip		Vert. Comp.
Co-ordinates				True Brg.		Logged by P. Leriche
Objective	To test the presence of coal strata.			% Recov.	73.2%	Date May 14, 1981

Claim Coal License # 5228
T Brg.
Collar Dip -90°
Elev. approx. 2240'
Length 247'
Hole No. PC-1
Sheet 1 of 10

Footage From	To	Description	Sample No.	Length	Analysis
0	32.0	Overburden			
32.0	35.0	Mudstone - medium gray-brown, core is broken and soft. Becomes sandy approaching contact with underlying sandstone. Contains abundant organic material.			
35.0	47.0	Sandstone - Light gray, medium gray, subrounded grains of mainly quartz. Core is mostly intact, but breaks easily. Thin, bituminous lamellae occur regularly from approx. 45-47 ft. Bedding is 90° to core axis. Organic material also occurs from 35-37.			
47.0	50.0	Claystone - Dark gray, fine grained. Contains many fossil plant imprints and dark colour is probably due to large amount of organic matter.			
50.0	52.0	Claystone - Dark gray, core is very soft and breaks easily. Contains fossil plant imprints. Is possibly a weathered arkosic sandstone.			
52.0	71.0	Sandstone - Large sandstone unit with variations within.			
		52.0- 55.0 - Dark gray, fine grained, consisting of quartz, minor biotite and about 50% black organic matter. Fossil plants are numerous.			
		55.0- 57.0 - Light-medium gray, fine grained, mainly quartz with lesser organic matter. Fossil plant imprints still occur.			
		57.0- 67.0 Only 0.5 ft. out of 10 ft. recovered. Core broken into small pieces. Light to medium gray, medium gray consisting mainly of quartz with minor organic matter.			

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-1	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	PC-1	Sheet	2 of 10
Commenced		Location		Tests at		Hor. Comp.								
Completed		Core Size		Corr. Dip		Vert. Comp.								
Co-ordinates		True Brg.		Logged by										
Objective		% Recov.		Date										
Footage	Description	Sample No.	Length	Analysis										
From To														
52.0 71.0	67.0- 71.0 - Light gray, coarse grained, mainly quartz with organic matter gradually increasing. Thin bituminous lamellae, 90° to core axis, start at about 68.3 ft. and are regular until 71 ft. These constitute approx. 30% of rock.													
(cont'd.)														
71.0 75.0	Claystone - Medium gray, fine grained, thinly bedded claystone interbedded with dark fossiliferous matter. Grain size gradually increases.													
75.0 98.0	Sandstone - Poor recovery. Only about 4 ft. of core in interval. Light gray, coarse grained, consisting mainly of quartz (90%). Minor organic laminations occur around 87.0 and 97.0 ft.													
98.0 100.0	Siltstone - Dark gray. Contains numerous fossil plants.													
100.0 111.0	Sandstone - Unit with local variations.													
	100.0-103.0 - Light-medium gray, medium grained, mostly quartz. Many fossil plants forming thin layers of organic matter, 90° to core axis.													
	103.0-109.0 - Light gray, coarse grained. From 107.0-109.0 grain size is up to 3 mm in diameter. Consists of 95% quartz with minor amphiboles(?), biotite and iron oxide minerals. Thin organic layers are common.													
	109.0-111.0 - Medium gray, fine grained, grading into underlying siltstone. Contains minor bituminous lenses.													
111.0 114.0	Siltstone - Medium gray, containing a minor bituminous content. Grades into underlying sandstone.													

Scale

Colour Print
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-1	Claim		T Brg.		Collar Dip		Elev.		Length		Hole No.	PC-1	Sheet	3 of 10	
Commenced		Location		Tests at		Hor. Comp.														
Completed		Core Size		Corr. Dip		Vert. Comp.														
Co-ordinates		True Brg.		Logged by																
Objective		% Recov.		Date																
Footage From	To	Description	Sample No.	Length Dry Basis	Ash %	Carbon %	S %	BTU												
114.0	120.0	Sandstone - Light gray, fine-coarse grained, consisting mostly of quartz. Interval begins fine-grained, but increases to coarse grained by 117.0 ft. Grain size decreases to fine-grained and colour darkens approaching lower contact with coal. Contact is sharp.																		
120.0	123.0	Coal - Black, in blocky pieces which are quite muddy - SAMPLE # 100401.	100401	3.0	37.13	33.45	.95	7,879												
123.0	127.0	Coal - Black, broken into small pieces, but is fairly pure. Amber blebs are present - SAMPLE # 100402.	100402	4.0	27.81	38.59	.88	9,180												
127.0	135.5	127.0-131.0 - Coal - Black, dull, contaminated with mud. 131.0-134.0 - Muddy Coal - Dark gray, high mud component. Amber blebs, 2-3 mm in diameter, occur at 132.0 ft. 134.0-135.5 - Claystone - Light gray, containing many fossil plants. Contact with underlying coal is abrupt - SAMPLE # 100403.	100403	8.5	58.04	15.76	.42	3,630												
135.5	139.0	135.5-136.0 - Coal - Dull, black, fairly pure. Amber blebs are present. 136.0-136.5 - Claystone - Light gray-green with many fossil plant imprints and organic matter. One inch bentonite layer at 136.0 ft. 136.5-139.0 - Coal - Dull, black, blocky. Becomes slightly muddy nearing contact with underlying mudstone - SAMPLE # 100404.	100404	3.5	36.46	33.99	2.49	7,872												
139.0	142.0	139.0-140.0 - Mudstone - Medium gray, fossils and bituminous lenses occur within.																		

Scale

Colour Plot
& Dip

Drill Hole Record



Property		Princeton Coal	District		Western	Hole No.		PC-1								
Commenced		Location		Tests at		Hor. Comp.										
Completed		Core Size		Corr. Dip		Vert. Comp.										
Co-ordinates		True Brg.		Logged by												
Objective		% Recov.		Date												
Footage		Description		Sample No. Dry		Length Basis		Analysis		Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-1	Sheet 4 of 10
From	To			Ash %	Carbon %	S %	BTU									
139.0	142.0	139.0-140.0 - Coal thinly laminated.														
(cont'd.)		140.0-142.0 - Claystone - Medium gray core is intact, but breaks easily. Contains plant matter and several bituminous intervals. Lower contact with coal is sharp.														
		Once inch of coal at 140.5 and 141.0 ft. -														
		SAMPLE # 100405.		100405	3.0	88.63	3.91	.09	810							
142.0	143.7	Coal - Black, shiny due to some vitrain present. Core is broken into blocky pieces.														
		SAMPLE # 100406.		100406	1.7	24.97	41.23	1.71	9,410							
143.7	145.2	143.7-144.5 - Coal - Black, dull and muddy. Good coal from 144.1 - 144.5 ft.														
		144.5-145.2 - Muddy Coal - Mudstone and coal thinly interlaminated with each other in approximately equal proportions -														
		SAMPLE # 100407.		100407	1.5	50.76	24.27	2.10	6,048							
145.2	147.1	Coal - Black, mostly in small pieces and pure -														
		SAMPLE # 100408.		100408	1.9	19.74	44.90	3.68	10,100							
147.1	151.5	147.1-148.0 - Mudstone - Dark gray and very bituminous. Faint interlaminations with bituminous material.														
		148.0-151.1 - Coal - Shiny black core breaks conchoidally along shiny surfaces. A transparent yellow material (probably amber) is crystallized in small areas along this length. Also, an interlaminated, white material with crystal growth parallel to core areas as at 149.0-149.2 ft.														
		151.0-151.5 - Claystone - Light gray-green. Contains abundant fossil matter as well as bituminous lenses -														
		SAMPLE # 100409.		100409	4.4	51.51	24.66	1.07	6,092							

6,092

211-0437

Scale

Colour Plot
& Oils

Drill Hole Record



Property		Princeton Coal	District	Western	Hole No.	PC-1					Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	PC-1	Sheet	5 of 10
Commenced		Location		Tests at		Hor. Comp.													
Completed		Core Size		Corr. Dip		Vert. Comp.													
Co-ordinates		True Brg.		Logged by															
Objective		% Recov.		Date															
Footage		Description		Sample No. Dry	Length Basis	Analysis													
From	To					Ash %	Carbon %	S %	BTU										
151.5	155.0	Coal - Dull black, blocky - SAMPLE # 100410.		100410	3.5	29.28	39.20	.40	8,868										
155.0	155.7	Claystone - Light green-gray containing abundant organic material, some of which is coal lenses.																	
155.7	156.2	Sandstone - Light gray, coarse-grained (2-3 mm), consisting mainly of quartz with some Fe-oxide minerals - One inch of coal at 155.8 ft.																	
156.2	160.5	156.2-156.5 - Claystone - Medium gray, contains abundant plant matter.																	
		156.5-158.5 - Muddy Coal - Blocky pieces very high in mudstone.																	
		158.5-159.0 - Coal - Shiny black, contains amber blebs, 2-3 mm in diameter.																	
		159.0-159.8 - Mudstone - Brown with abundant organic matter and coal partings.																	
		159.8-160.5 - Coal - Shiny black, breaks conchoidally -																	
		SAMPLE # 100411		100411	4.3	49.40	26.38	.65	6,172										
160.5	167.5	160.5-163.2 - Claystone - Medium green-gray containing many small plant fossil imprints. Organic matter and coal partings are common.																	
		163.2-164.0 - Coal - Dull black and fairly friable. Contains a large amount of clay.																	
		164.0-167.5 - Claystone - Medium gray. A lot of organic matter is contained including a small coal interval from 165.0 - 165.2 ft. At 167.0 ft. core becomes a dark green colour and grades into underlying coal -																	
		SAMPLE # 100412		100412	7.0	80.16	7.73	.44	1,893										
167.5	173.0	167.5-168.5 - Coal - Dull black with high clay and sand content.																	
		168.5-169.5 - Coal - Very hard coal which breaks conchoidally along shiny vitreous surfaces.																	

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-1
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.
					PC-1
					Sheet
					6 of 10

Footage From	To	Description	Sample No.	Dry	Length Basis	Analysis					
						Ash	Carbon	S	BTU		
167.5	173.0	169.5-171.5 - Coal - Dull black coal, relatively uncontaminated.									
(cont'd.)		171.5-173.0 - Coal - Hard, intact coal with high vitrain content - SAMPLE # 100413	100413		5.5	46.34	26.83	.78	6,201		
		SAMPLE # 100413									
173.0	179.0	173.0-177.1 - Coal - Dull, black, soft core with large quantity of clay within.									
		177.1-178.0 - Claystone - Light medium gray, very soft. Has a high proportion of bituminous matter.									
		178.0-179.0 - Siltstone - Medium gray-brown. Contains abundant fossil plants as well as coal laminations -									
		SAMPLE # 100414	100414		6.0	67.19	15.78	.69	3,710		
179.0	182.0	179.0-180.0 - Coal - Black good coal with vitrain partings.									
		180.0-182.0 - Claystone - Brown very soft. Cleaves easily along planes of weakness 90° to core axis. Coal laminations up to 2 cm wide are common, but decreases towards lower contact with sandstone -									
		SAMPLE # 100415	100415		3.0	62.07	19.45	.31	4,147		
182.0	183.5	Sandstone - Medium gray, fine grained. Core is soft and breaks easily along planes 90° to core axis. Grades into underlying claystone. Organic content is minor.									
183.5	187.0	Claystone - Gray-green, carves easily with knife, but becomes harder with depth.									
187.0	188.0	Grit - Dark brown matrix (80%) with subrounded quartz clasts (20%) up to 4 mm in diameter, but averaging 2 mm in diameter. Several bituminous lenses are contained within.									

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-1	Claim		T Brg.		Collar Dip		Elev.		Length		Hole No.	PC-1	Sheet	7 of 10
Commenced		Location		Tests at		Hor. Comp.													
Completed		Core Size		Corr. Dip		Vert. Comp.													
Co-ordinates		True Brg.		Logged by															
Objective		% Recov.		Date															
Footage		Description	Sample No. Dry		Length Basis	Analysis													
From	To					Ash	Carbon	S	BTU										
188.0	194.0	Claystone - Green, core is intact and fairly brittle. Fossil plant imprints are present, but are very minor.				%	%	%											
194.0	196.4	Grit - Dark brown matrix (15%) with subrounded quartz clasts (85%) averaging 3-4 mm in diameter. Quartz clasts range up to 2 cm wide.																	
196.4	207.0	Claystone - Unit contains local variations.																	
		<u>196.4-198.0</u> - Medium green with small stem pieces and minor bituminous in-fillings in no particular orientation.																	
		<u>198.0-205.0</u> - Dark green. Unit initially contains small blebs (1-2 mm) of a dark green mineral, but they gradually diminish.																	
		<u>205.0-207.0</u> - Dark green-black. Has a high organic content with several coal partings around 205.5.																	
207.0	207.6	Siltstone - Medium gray. Contains high proportion of organic matter. Also is high in clay minerals.																	
207.6	216.5	Claystone - Medium green-dark green. Minor fossil plants are throughout. At 214.0 ft. core becomes almost black due to higher organic content. Contact is gradational with underlying sandstone.																	
		<u>213.4-214.7</u> - SAMPLE # 100416			100416	8.9	75.46	10.35	.41	2,797									

Scale

Colour Plot
& Dip

Drill Hole Record



Property		District	Hole No.		Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-1	Sheet 8 of 10	
Princeton Coal		Western	PC-1									
Commenced	Location		Tests at	Hor. Comp.								
Completed	Core Size		Corr. Dip	Vert. Comp.								
Co-ordinates	True Brg.		Logged by									
Objective	% Recov.		Date									
Footage From	To	Description			Sample No.	Length Basis	Analysis					
216.5	218.0	Sandstone - Dark brown, consisting mainly of medium grained impure quartz grains with minor amphiboles.					Ash	Carbon	S	BTU		
218.0	237.0	Claystone - Large unit with the following variations:										
		218.0-224.5 - Medium green-gray, relatively free of fossils. Contains small dark green blebs of probably decomposed amphiboles.										
		224.5-226.0 - Dark green with no presence of amphibole blebs.										
		226.0-235.0 - Lighter green-gray colour with round amphibole blebs present again. Core is soft and crumbly.										
		235.0-237.0 - Claystone becomes dark, harder and sandier approaching lower contact with underlying grit unit.										
237.0	239.5	Grit - Medium gray matrix (80%) with small quartz clasts (20%), approximately 2-3 mm in size. Fossil plants and bituminous lenses are common. Bedding at 238.0 ft. approximately 70° to core axis.										
239.5	241.0	Sandstone/Coal - Medium gray, sandstone thinly interbedded with coal. Coal is heavily contaminated with ash -										
		SAMPLE # 100417			100417	1.5	79.88	7.39	1.50	2.361		
241.0	245.5	Sandstone - Light to medium gray, fine grained, core is intact and indurated. Unit begins dark and bituminous, but grads into a light gray sandstone with abundant fossil plant imprints. Bedding is approximately 90° to core axis.										

Scale
Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-1				
Commenced		Location		Tests at		Hor. Comp.			
Completed		Core Size		Corr. Dip		Vert. Comp.			
Co-ordinates				True Brg.		Logged by			
Objective				% Recov.		Date			

Footage From	To	Description	Sample No. Dry	Length Basis	Analysis			
					Ash %	Carbon %	S %	BTU
245.5	246.4	Mudstone - Dark gray, almost black because of high organic content. Coal is present with amber crystals contained within. This unit could almost be described as a muddy coal -						
		SAMPLE # 100418.	100418	0.9	76.98	10.94	.60	2,904
246.4	247.0	Claystone - Medium gray containing minor fossil plant matter.						
		END OF HOLE - DDH PC-1						

Sheet
9 of 10

Hole No.
PC-1

Scale

Colour Plot
& Dips

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-1

Commenced _____ Location _____ Tests at _____ Hor. Comp. _____

Completed _____ Core Size _____ Corr. Dip _____ Vert. Comp. _____

Co-ordinates _____ True Brg. _____ Logged by _____

Objective _____ % Recov. _____ Date _____

Claim _____
 T Brg. _____
 Collar Dip _____
 Elev. _____
 Length _____
 Hole No. PC-1
 Sheet 10 of 10

Footage		Description	Sample No.	Length	Analysis				
From	To								
		Runs (ft)							
		Shorts (ft)							
		0 - 32							
		32 - 37							
		37 - 47							
		47 - 57							
		57 - 67							
		67 - 77							
		77 - 87							
		87 - 97							
		97 - 107							
		107 - 117							
		117 - 127							
		127 - 137							
		137 - 147							
		147 - 157							
		157 - 167							
		167 - 177							
		177 - 187							
		189 - 197							
		197 - 207							
		207 - 217							
		217 - 247							

% Recovery = $\frac{215 - 59.8}{215} \times 100\% = 72.2\%$

Total Runs = 215 ft. Total Shorts 59.8 ft.

Scale
Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-2	
Commenced	May 15, 1981	Location	D.L. 2136	Tests at	Nil	
Completed	May 18, 1981	Core Size	H.Q.	Corr. Dip	Vert. Comp.	
Co-ordinates		True Brg.		Logged by	P. Leriche	
Objective	To test the presence of coal strata.		% Recov.	72.0	Date	May 17, 18, 1981

Claim Coal License # 5229
T Brg.
Collar Dip -90°
Elev. approx. 2240'
Length 297'
Hole No. PC-2
Sheet 1 of 9

Footage From	To	Description	Sample No.	Length	Analysis
0	90.0	Overburden. Hit several large boulders which were thought to be bedrock. They were cored and discovered to be overburden.			
90.0	107.0	Mud - Medium gray, very soft, wet, and poorly consolidated. Recovery over this interval is very poor.			
107.0	108.0	Muddy Coal - Black, broken into small pieces and very muddy. Pebbles of quartz and feldspar are very common. Lower contact is sharp, probably due to missing core from poor recovery.			
108.0	118.0	Sand - Brown, arkosic, loose sand. At 118 ft. is a small 2 inch piece of a volcanic, probably a coarse grained andesite. Outside of core is rusty from 117.0 - 118.0 ft. Up to 118.0 ft. is likely still overburden.			
118.0	129.3	Grit - Shows the following local variations.			
		118.0-122.5 - Medium gray, consisting of 35% brownish muddy matrix, 63% subrounded quartz pebbles, 1 - 4 mm in diameter and 2 % coal pieces irregularly shaped and spaced.			
		122.5-126.5 - Dark brown, matrix has more organic matter and is approx. 50% of the interval. Quartz clasts are subrounded, 1 - 4 mm in diameter and constitute about 45%. Coaly pieces and lenses (5%) are more numerous.			
		126.5-129.3 - Brown-gray. Rounded quartz pebbles up to 6 mm wide constitute 65-80% becoming more abundant towards lower contact. Brown muddy matrix and minor coal pieces			

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-2
Commenced	Location		Tests at	Hor. Comp.	
Completed	Core Size		Corr. Dip	Vert. Comp.	
Co-ordinates			True Brg.	Logged by	
Objective			% Recov.	Date	

Footage From	To	Description	Sample No.	Length Dry	Length Basis	Analysis			
						Ash	Carbon	S	BTU
118.0	129.3	126.5-129.3 - make up the remainder. Lower contact is very sharp.							
		(cont'd.)							
129.3	135.0	Claystone/Sandstone - Interbedded medium gray claystone, with light gray, fine grained sandstone. Sandstone is dominantly quartz with minor biotite and feldspar.							
135.0	137.5	Mudstone - Dark gray, soft, slightly silty, with a small organic content.							
137.5	149.5	Claystone - Medium gray-green. From 137.5 - 138.0 is a white clay with several 1 cm bands of coal. Core then becomes the greenish colour with small pieces of plant matter within.							
149.5	159.5	Recovery is very poor. Only 2 ft. of core for this 10 ft. interval.							
		149.5-151.0(?) - Coal - Dull black, slightly contaminated with mud.							
		151.0-157.0(?) - Siltstone - Dark brown with a high organic content.							
		157.0-157.5(?) - Coal - Dull black slightly contaminated.							
		157.5-159.5(?) - Mudstone - Brown-black, crumbly, with a large amount of organic material. The lower 2 inches is gritty with quartz pebbles up to 5 mm wide.							
		SAMPLE # 100419	100419	10.0		85.48	5.34	.76	1.408
159.5	165.0	Breccia - Brown-green. Mainly brown matrix with green and gray angular clay pieces up to 3 cm wide within. Bituminous pieces are common. Grades into clay nearing lower contact.							

Claim:

T Brg.

Collar Dip

Elev.

Length

Hole No.
PC-2Sheet
2 of 9

Scale

Colour Plat
& Dips

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-2	Claim		T Brg.		Collar Dip		Elev.		Length		Hole No.	PC-2	Sheet	3 of 9
Commenced		Location		Tests at		Hor. Comp.													
Completed		Core Size		Corr. Dip		Vert. Comp.													
Co-ordinates		True Brg.		Logged by															
Objective		% Recov.		Date															
Footage From	To	Description	Sample No.	Length	Analysis														
165.0	178.5	Sandstone - Light-medium gray, arkosic with feldspars altering to clays. Quartz and biotite constitute about 15%. From 168.0-172.5 is light green subrounded clay pieces up to 2 cm wide constituting approx. 20%. This also occurs from 177.5 -178.5.																	
178.5	181.7	Siltstone - Medium gray. Minerals within are breaking down to clays. Several claystone partings occur at 178.5 - 179.0, 180.7 - 181.0. Biotite pieces constitute about 2%.																	
181.7	182.4	Sandstone - Medium gray, fine grain, breaking down into gray clay minerals with minor biotite pieces.																	
182.4	187.7	Claystone - Medium gray. Initially light green pieces of clay (up to 4 mm) within dark clay. At 184 clay is pure and soft. Small coal pieces increase in density nearing 187.7 and clay becomes more silty.																	
187.7	188.7	Sandstone - Light gray, medium gray, consisting of feldspar, quartz, minor biotite and coal pieces. Lower contact with mudstone shows sandstone and mudstone interweaving with one another.																	
188.7	189.2	Mudstone - Dark gray, high organic content, and a 1 cm coal layer at lower contact.																	
189.2	190.2	Claystone - Medium gray with minor biotite pieces. Lower contact with coal is very sharp.																	
190.2	194.8	190.2-191.7 - Coal - Begins slightly muddy, but is in general good quality. Breaks																	

Scale

Colour Plot
& Dips

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-2	Claim		T Brg.		Collar Dip		Elev.		Length		Hole No.	PC-2	Sheet	4 of 9
Commenced		Location		Tests at		Hor. Comp.													
Completed		Core Size		Corr. Dip		Vert. Comp.													
Co-ordinates		True Brg.		Logged by															
Objective		% Recov.		Date															
Footage	Description		Sample No.	Length Basis	Analysis														
From	To		Dry		Ash %	Carbon %	S %	BTU											
190.2	194.8	190.2-191.7 - Conchoidally along shiny surfaces.																	
(cont'd.)		191.7-192.7 - Coal - Dull black and very sandy.																	
		192.7-194.8 - Coal - Dull black and muddy. Gradational contact with lower mudstone.																	
		SAMPLE # 100420	100420	4.6	70.22	14.06	.83	3,524											
194.8	198.2	Mudstone - Initially is light gray and intact, but from 195.8 - 198.2 core is a dark gray with coaly areas from 197.0 - 197.7.																	
		196.2 - 197.8 SAMPLE # 100421	100421	3.4	75.97	10.50	1.73	2,454											
198.2	199.5	Siltstone - Medium gray, gradually becoming more sandy. Largely consists of minerals altering to clay and biotite pieces.																	
199.5	207.0	Sandstone - Medium gray, fine-medium grained, consisting mainly of feldspar, with some quartz, minor biotite and pyrite. From 206.6 - 207.7 is gritty with quartz pebbles 3 - 4 mm in diameter in a white clay matrix.																	
207.0	207.6	Siltstone - Dark gray, sandy, with abundant fine grained disseminated pyrite.																	
207.6	212.1	Grit - Approx. 80% - 90% pebbles in a medium green clay matrix. Pebbles consist mostly of sub-angular, quartz 2 - 4 mm wide with common biotite pieces as well as disseminated pyrite.																	
		Lower contact with siltstone is gradational.																	

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-2
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Footage		Description	Sample No.	Length	Analysis				
From	To				Claim	T Brg.	Collar Dip	Elev.	Length
212.1	212.6	Siltstone - Dark gray and light brown siltstone, thinly interbedded with each other.							
212.6	218.5	Sandstone - Medium gray, fine-medium grained, consisting approx. of 80% feldspar (slightly altered), 15% quartz, 5% biotite with common disseminated pyrite. Crossbedding is observed at 214.0. Bedding is 80°-90° from core axis. A small organic content is present throughout the interval. From 217.5 - 218.5 is sandstone/claystone thinly interbedded in an undulating form.							
218.5	220.0	Siltstone - Initially medium gray, but becomes darker and sandier as interval progresses.							
220.0	227.5	Sandstone - Crossbedded unit with 70% quartz (1-2 mm), 20% feldspars and 10% biotite, pyrite and others. Very slight alteration to clays.							
227.5	233.4	Siltstone - Medium gray, showing several faint interbeds of sandstone. Alteration to clays is seen throughout. A sharp contact zone between medium gray siltstone and a dark gray siltstone runs vertical approx. up the middle of the core.							
233.4	235.0	Sandstone/Siltstone - Interbedded light gray fine grained sandstone with medium gray siltstone in approx. equal proportions.							
235.0	237.8	Siltstone - Light gray core is broken, but very hard. Grades into underlying sandstone.							

Sheet 5 of 9

Hole No.
PC-2

Scale

Colour Plot
& Dip

Drill Hole Record



Property		Princeton Coal	District		Western	Hole No.		PC-2	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-2	Sheet 6 of 9	
Commenced		Location		Tests at		Hor. Comp.										
Completed		Core Size		Corr. Dip		Vert. Comp.										
Co-ordinates		True Brg.		Logged by												
Objective		% Recov.		Date												
Footage From	To	Description				Sample No.	Length	Analysis								
237.8	241.6	Sandstone - Light grey, fine-grained consisting mostly of feldspars with quartz and biotite. Bituminous infillings and pieces are common.														
241.6	250.4	Siltstone - Brown-gray dirty siltstone up to 247.0. From 247.0-248.0 is thin wavy interbedded siltstone coal. The remainder is medium gray siltstone with 5% - 10% biotite flecks within.														
250.4	251.0	Sandstone - Light gray, fine-grained consisting of feldspar altering to clays, quartz and biotite.														
251.0	259.7	Claystone - Medium gray. Still contains biotite. Probably an altered sandstone.														
259.7	260.3	Sandstone - Medium gray, medium grained with 60% quartz, 30% feldspar and 10% biotite.														
260.3	262.6	Claystone - Medium gray, soft. At 261.3 is a thin band of quartz. A one inch coal layer is seen from 262.5 - 262.6.														
262.6	264.1	Siltstone - Medium gray, fairly hard. Several angular pieces of coal approx. 1 cm. is seen at 263.9.														
264.1	265.5	Claystone - Medium gray soft with biotite pieces still visible.														
265.5	267.7	Siltstone - Medium gray brown containing abundant organic matter, fossil plant imprints and several bituminous lenses.														

Scale

Colour Plot
& Dip

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-2

Commenced Location Tests at Hor. Comp.

Completed Core Size Corr. Dip Vert. Comp.

Co-ordinates True Brg. Logged by

Objective % Recov. Date

Footage From	To	Description	Sample No.	Length Basis	Analysis			
					Ash %	Carbon %	S %	BTU/lb
267.7	270.2	Sandstone - Medium gray, fine-grained, cannot discern mineralogy. Contains stem matter which is more of a brown colour.						
270.2	270.7	Coal - Dull black, broken and good quality. SAMPLE # 100425	100425	0.5	Sample lost in shipment			
270.7	279.5	Siltstone - Up to 277.5 is light-medium containing abundant fossil stem imprints. At 277.5 core abruptly becomes more bituminous and darker. A small coal layer is seen at 279.4. 277.0 - 279.5 SAMPLE # 100422	100422	8.8	85.74	5.14	.14	1,440
279.5	284.0	Claystone - Green, gray, small coal pieces and lenses are quite common. Contact is abrupt with underlying coal.						
284.0	289.0	284.0-285.0 - Muddy Coal - Dull black, several laminations of vitrain, but very muddy. 285.0-288.0 - Mudstone - Dark gray with abundant organic matter and fossil plant imprints. 288.0-289.0 - Muddy Coal - Dull black, poor quality coal with several good coal partings. SAMPLE # 100423	100423	5.0	87.90	4.69	.14	961
289.0	294.0	Mudstone - Almost black, very organic with many of the undulating coal laminations all the way through. SAMPLE # 100424	100424	5.0	91.99	1.17	.07	669

 Claim
 T Brg.
 Collar Dip
 Elev.
 Length
 Hole No. PC-2
 Sheet 7 of 9

Scale

Colour Plot
& Dip

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-2

Commenced _____ Location _____ Tests at _____ Hor. Comp. _____

Completed _____ Core Size _____ Corr. Dip _____ Vert. Comp. _____

Co-ordinates _____ True Brg. _____ Logged by _____

Objective _____ % Recov. _____ Date _____

Claim

T Brg.

Collar Dip

Elev.

Length

Hole No.
PC-2

Sheet

8 of 9

Footage From	To	Description	Sample No.	Length	Analysis					
294.0	295.2	Grit - Approx. 80% pebbles consisting of mainly quartz with some coal in a clay matrix.								
295.2	297.0	Siltstone - Medium gray with many fossil plants. Core becomes more muddy and bituminous near the end.								
		END OF DDH PC-2								

Scale . . .

Colour Plot
& Dips

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-2

Commenced _____ Location _____ Tests at _____ Hor. Comp. _____

Completed _____ Core Size _____ Corr. Dip _____ Vert. Comp. _____

Co-ordinates _____ True Brg. _____ Logged by _____

Objective _____ % Recov. _____ Date _____

Footage From	To	Description	Runs (ft)	Shorts (ft)	Sample No.	Length	Analysis								
							Claim	T. Brg.	Collar Dip	Elev.	Length				
			0 - 90	Overburden											
			90 - 97	5.3											
			97 - 107	7.7											
			107 - 117	8.1											
			117 - 127	0.0	% Recovery = $\frac{207 - 58.0}{207} \times 100 = 72.0\%$										
			127 - 137	6.2											
			137 - 147	5.3											
			147 - 157	8.4											
			157 - 167	7.7											
			167 - 177	0.8											
			177 - 187	0.0											
			187 - 197	0.0											
			197 - 207	2.5											
			207 - 217	0.0											
			217 - 227	0.0											
			227 - 237	1.0											
			237 - 247	0.7											
			247 - 257	2.7											
			257 - 267	1.0											
			267 - 277	0.6											
			277 - 287	0.0											
			287 - 297	0.0											

Total Runs = 207 ft. Total Shorts 58.0 ft.

Hole No. PC-2
 Sheet 9 of 9

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-3	Claim Coal License #5229
Commenced	May 19, 1981	Location	C.L. 2136	Tests at	Nil	Hor. Comp.
Completed	May 20, 1981	Core Size	H.Q.	Corr. Dip		Vert. Comp.
Co-ordinates		True Brg.		Logged by	P. Leriche	Collar Dip -90°
Objective	To test the presence of coal strata.	% Recov.	83.5%	Date	May 21, 22, 1981	Elev. approx. 2250'
						Length 257'
						Hole No. PC-3
						Sheet 1 of 9

Footage From	To	Description	Sample No.	Dry	Length Basis	Analysis				
						Ash	Carbon	S	BTU	
0	77.0	Overburden								
77.0	78.1	Claystone - Medium gray, soft.								
78.1	79.7	Siltstone - Dark gray, almost black with some organic material.								
79.7	80.7	Sandstone - Medium gray, fine grained, arkosic with feldspars altering to clays. Lower contact is gradational with siltstone.								
80.7	82.0	Siltstone - Medium gray with abundant clay minerals.								
82.0	82.9	Sandstone - Medium gray, medium grained (1 mm), consisting mainly of quartz, feldspar with minor biotite.								
82.9	89.0	82.9- 87.2 - Mudstone - Dark gray-black with abundant organic material. Thin coal partings occur from 82.9 - 83.4 and 86.5 - 87.2. Amber blebs are present in coal rich portions.								
		87.2- 88.5 - Muddy Coal - Dull black muddy with common amber blebs.								
		88.5- 89.0 - Coal - Dull, black, broken and good quality.								
		SAMPLE # 100426	100426		6.1	80.46	8.42	.70	2,199	
89.0	90.4	Mudstone - Medium gray, slightly silty. Initially contains some organic material, but fades out.								

Scale

Colour Plot
& Dip

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-3

Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Footage From	To	Description	Sample No. Dry	Length Basis	Analysis			
					Ash %	Carbon %	S %	BTU
90.4	101.5	Claystone - Medium gray-green. Dark green blotches up to 4 cm wide appear throughout. Core is sandy from 97.0 - 101.5.						
101.5	107.0	Siltstone - Dark gray showing coal partings at 102.3 and 103.5. Coal pieces are very common within the coal. Quartz grains 1 - 2 mm are in core from 102.5 - 104.0 SAMPLE # 100427.	100427	5.5	90.94	3.43	.30	685
107.0	109.8	107.0-108.8 - Mudstone - Brown, muddy and soft. Fairly high organic content. Grades into a siltstone. 108.8-109.8 - Siltstone - Brown, contains fossil plant imprints as well as a high organic content. SAMPLE # 100428	100428	2.8	95.67	0.94	.25	120
109.8	113.0	Muddy Coal - Brown-black, high contaminated coal. Clay parting is from 111.4 - 111.7. SAMPLE # 100429	100429	3.2	84.07	6.88	.67	1,657
113.0	115.2	Siltstone - Medium gray. Coal pieces are common and erratically spread throughout.						
115.2	117.1	115.2-115.9 - Muddy Coal - Black, highly contaminated with several mudstone partings. 115.9-116.3 - Claystone - Medium gray-green, possibly bentonite. Coaly pieces and fossil plants constitute about 50%.						

Claim

T Brg.

Collar Dip

Elev.

Length

Hole No.

PC-3

Sheet

2 of 9

Scale

Colour Plot
& Dips

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-3	Claim		T Brg.		Collar Dip		Elev.		Length		Hole No.	PC-3	Sheet	3 of 9
Commenced		Location		Tests at		Hor. Comp.		Vert. Comp.		Logged by		Data							
Completed		Core Size		Corr. Dip		% Recov.													
Co-ordinates		True Brg.		Objective															
Footage	Description		Sample No.	Length	Analysis														
From	To		Dry	Basis	Ash %	Carbon %	S %	BTI											
115.2	117.1	116.3-116.6 - Sandstone - Brown, arkosic and organic.																	
(cont'd.)		116.6-117.1 - Siltstone - Dark gray with abundant bituminous material. A one inch coal layer is at 117.0.																	
		SAMPLE # 100430	100430	1.9	82.80	8.01	.47	1,778											
117.1	117.6	Mudstone - Light gray with minor fossils.																	
117.6	121.1	Claystone - Medium gray, slightly silty. Coalified fossil plant imprints are throughout.																	
121.1	136.0	Sandstone - Medium gray, homogenous unit consisting mainly of feldspars which are heavily altered to clays. Biotite is a small constituent throughout.																	
136.0	142.9	Claystone - Medium gray. Becomes progressively more sandy approaching contact with underlying sandstone.																	
142.9	143.7	Sandstone - Medium gray, fine-medium grained consisting of 60% white feldspar, 40% quartz and minor biotite.																	
143.7	148.7	143.7-144.5 - Siltstone - Dark gray, very high organic content. Coaly material increases gradationally.																	
		144.5-145.0 - Coal - Dull black and fairly pure. Translucent amber pieces occur throughout.																	

Scale

Colour Plot
& Oils

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-3
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Footage From	To	Description	Sample No. Dry	Length Basis	Analysis				
					Ash %	Carbon %	S %	BTU	
143.7	148.7	145.0-146.7 - Siltstone - Brown, organic, with abundant coal pieces. Amber is seen with coal							
		(cont'd.) 146.7-147.4 - Coal - Dull black, becoming more silty after 147.0.							
		147.4-148.7 - Siltstone/Coal - Predominantly brown siltstone with many thin coal partings. Amber is throughout.							
		SAMPLE # 100431	100431	5.0	69.46	15.46	.84	3.749	
148.7	150.4	Mudstone - Medium gray. Minor fossil plants from 148.7 - 149.2. Core is intact and breaks conchoidally along smooth surfaces.							
150.4	152.0	Siltstone/Coal - Mainly gray siltstone warily interbedded with thin coal laminations. SAMPLE # 100432	100432	1.6	79.66	9.94	1.43	2.270	
152.0	153.0	Sandy Siltstone - Medium gray, slightly organic and becoming progressively more sandy.							
153.0	154.0	Sandstone - Light gray, fine-grained. Fossil plant imprints are contained as well as a bituminous parting at 154.9.							
154.0	157.6	Siltstone - Medium gray, slightly sandy throughout. From 157.0 - 157.2 is organic.							
157.6	165.3	Sandstone - Medium gray, fine-medium grained. Consists mainly of feldspar with some quartz. Bedding is 80° with respect to core axis.							

 Hole No. PC-3
 Sheet 4 of 9

SCALE

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-3							
Commenced		Location		Tests at		Hor. Comp.						
Completed		Core Size		Corr. Dip		Vert. Comp.						
Co-ordinates		True Brg.		Logged by								
Objective		% Recov.		Date								
Footage From	To	Description	Sample No.	Length	Analysis	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	Sheet
165.3	170.3	Grit - Medium gray consisting of 90% quartz pieces, 3-4 mm in diameter (up to 6 mm) in a brown muddy matrix (10%). From 168.4 - 168.9 core is sandstone with bedding approx. 80° to core axis.									PC-3	5 of 9
170.3	171.3	Sandstone - Medium gray, fine-grained consisting mostly of feldspar.										
171.3	172.7	Siltstone - Medium gray-brown becoming more sandy towards lower contact. Organic material is at 171.8.										
172.7	184.2	Sandstone - Medium gray, fine-medium grained consisting approx. of 60% feldspar (small alteration to clays), 35% quartz and 5% combined biotite, pyrite and siltstone pebbles. From 173.5-174.0 is gritty with quartz pebbles up to 4 mm. Faint bedding is approximately 80° to core axis.										
184.2	188.4	Siltstone - Light-medium gray. Three thin calcite(?) veins are 90° to core axis at 184.2 - 184.5. Core grads into underlying mudstone.										
188.4	191.7	Mudstone - Light gray, breaks concoidally along smooth surfaces. Is locally silty.										
191.7	193.4	Siltstone - Medium gray, grads into underlying sandstone.										
193.4	197.2	Sandstone - Medium gray, fine grained, mostly feldspars altering to clays. At 195.5 core becomes a darker gray.										

Scale

Colour Plot
& Dip

Drill Hole Record



Property		Princeton Coal	District		Western	Hole No.		PC-3			
Commenced		Location		Tests at		Hor. Comp.					
Completed		Core Size		Corr. Dip		Vert. Comp.					
Co-ordinates				True Brg.		Logged by					
Objective				% Recov.		Date					
Footage		Description				Sample No.	Length	Analysis			
From	To										
197.2	201.2	Siltstone - Medium gray, grades into underlying siltstone.									
201.2	209.4	Sandstone - Medium gray, fine grained consisting mainly of feldspars altering to clays with minor biotite. Core locally has bituminous pieces in it.									
209.4	217.0	Siltstone - Medium gray showing the following local variations.									
		209.4-210.0 - Light gray muddy siltstone.									
		210.0-213.0 - Thinly interbedded medium gray siltstone with a dark gray more organic siltstone. Bedding is approx. 80° to core axis.									
		From 212.4 - 213.0 bedding is highly irregular with brecciated pieces between beds.									
		213.0-216.7 - Medium gray, gradationally becoming more organic.									
		216.7-217.0 - Dark gray, organic siltstone. Amber blebs are present. Core is sandier.									
217.0	224.6	Sandstone - Medium gray, fine grained consisting mainly of feldspars (altered) with 5% biotite throughout. From 221.6 - 224.1 core is gritty showing clay pieces up to 1 cm in diameter. At 224.1 core is still gritty, but clasts are quartz.									
224.6	226.5	Siltstone - Medium gray, fairly clay rich throughout. From 225.1 - 225.7 is broken and bituminous. Thin bituminous infillings and fossil plants occur throughout.									
226.5	234.4	Sandstone - Light gray, fine-grained, clean quartz sandstone. Consists of 80%-90% quartz, 5% biotite, and 5%-15% feldspars. Fossil plants do occur, but they are brown and still show some									

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-3	Claim		T Brg.		Collar Dip		Elev.		Length		Hole No.	PC-3	Sheet	7 of 9
Commenced		Location		Tests at		Hor. Comp.													
Completed		Core Size		Corr. Dip		Vert. Comp.													
Co-ordinates		True Brg.		Logged by															
Objective		% Recov.		Date															
Footage	Description		Sample No.	Length	Analysis														
From	To		Dry	Basis	Ash %	Carbon %	S %	BTU											
226.5	234.4	original texture.																	
		(cont'd.)																	
234.4	236.8	Mudstone - Brown, core cleaves easily. Upper contact is marked by a 3 cm coal parting. Interval is full of black fossil plant matter. Lower contact with siltstone is gradational.																	
236.8	239.9	Siltstone - Medium gray, full of small thin fossil plant imprints. Thin coal partings are seen from 239.6 - 239.9.																	
239.9	240.4	Sandstone - Light gray, fine-grained, clean, predominately quartz, lower contact is sharp.																	
240.4	247.0	240.4-241.7 - Mudstone - Dark gray, highly organic with a coal parting from 241.5-241.7.																	
		241.7-245.5 - Claystone - Medium gray. Thin coal partings and small pieces do occur regularly, but do not constitute much.																	
		245.5-247.0 - Mudstone - Dark gray, core is broken into lumps and is very organic.																	
		SAMPLE # 100433	100433	6.6	92.42	2.40	.03	272											
247.0	250.5	Siltstone - Dark gray, highly bituminous. Thin coal parting occur throughout with a major one from 247.5 - 248.0																	
		SAMPLE # 100434	100434	3.5	89.25	3.73	.09	565											

Scale
Colour Plot
& Dies

Drill Hole Record



Property		Princeton Coal	District	Western	Hole No.	PC-3	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	PC-3	Sheet	B of 9
Commenced		Location	Tests at		Hor. Comp.										
Completed		Core Size	Corr. Dip		Vert. Comp.										
Co-ordinates		True Brg.		Logged by											
Objective		% Recov.		Date											
Footage		Description	Sample No. Dry	Length Basis	Analysis										
From	To				Ash %	Carbon %	S %	BTU							
250.5	256.3	Siltstone - Dark gray, organic. Has thin wavy inter laminations of coal throughout. Coal is especially dense from 254.4 - 255.1.													
		SAMPLE # 100435	100435	5.8	89.15	2.05	.10	481							
256.3	257.0	Grit - Medium gray. Dominantly quartz, coal and siltstone pieces in a silty matrix.													
		END OF HOLE DDH PC-3													

Scale

Colour Plot
& Dips

Drill Hole Record



Property Princeton Coal

District Western

Hole No. PC-3

Commenced

Location

Tests at

Hor. Comp.

Completed

Core Size

Corr. Dip

Vert. Comp.

Co-ordinates

True Brg.

Logged by

Objective

% Recov.

Date

Claim

T Brg.

Collar Dip

Elev.

Length

Hole No.
PC-3Sheet
9 of 9

Footage From	To	Description	Runs (ft)	Shorts (ft)	Sample No.	Length	Analysis
			0 - 77	Overburden			
			77 - 87	1.6			
			87 - 97	0.3			
			97 - 107	2.3			
			107 - 117	0.0			
			117 - 127	1.3			
			127 - 137	0.0			
			137 - 147	0.3			
			147 - 157	0.5			
			157 - 167	0.3			
			167 - 177	0.4			
			177 - 187	0.5			
			187 - 197	0.6			
			197 - 202	0.0			
			202 - 212	0.8			
			212 - 217	0.9			
			217 - 227	0.0			
			227 - 237	1.9			
			237 - 247	0.0			
			247 - 257	0.0			
Total Runs = 180 ft.			Total Shorts = 11.7 ft.				

$$\% \text{ Recovery} = \frac{180 - 11.7}{180} \times 100 = 83.5\%$$

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-4	
Commenced	May 21, 1981	Location	D.L. 2416	Tests at	Nil	
Completed	May 23, 1981	Core Size	HQ	Corr. Dip		
Co-ordinates		True Brg.		Logged by	P. Leriche	
Objective	To test the presence of coal strata.		% Recov.	90.4%	Date	May 24, 1981

Claim Coal License #5219

T Brg.

Collar Dip
-90°Elev.
approx. 2475'Length
327'Hole No.
PC-4Sheet
1 of 7

Footage From	To	Description	Sample No.	Length	Analysis
0	101.0	Overburden			
101.0	101.5	Volcanics - Several volcanic rock pieces and intrusive pieces. Probably still in overburden.			
101.5	184.2	Sandstone - Light gray, medium-grained, clean, quartz sandstone. Consists of 80% - 90% quartz, 5% - 15% feldspar and 5% biotite. Also contains some sedimentary rock pieces. Core is intact and well indurated.			
		Five thin coal laminations are at 105.0 - 105.5. At 110.0 ft. core becomes coarse grained with quartz grains averaging 2 - 3 mm in diameter, but up to 1 cm wide. Disseminated pyrite is very common.			
		From 119.5 - 120.2 sandstone is fine grained, medium gray with very thin organic lamellae.			
		120.2-126.0 - Coarse grained, as above.			
		125.0-126.0 - Contains thin organic interbeds.			
		126.0-169.8 - Same as above. Silty interbeds from 154.5 - 155.0, 158.2 - 158.8. Bituminous infillings at 156.0.			
		169.8-175.3 - Coarse grained sandstone, thinly interbedded with medium gray, medium grained sandstone. Minor thin organic interbeds are also present. Bedding is commonly faulted, with faults running approx. 30° to core axis. Displacement is up to 2 cm.			
		175.3-183.0 - Same as above. Minor thin, irregular bituminous infillings appear along bedding			

Scale

Colour Plot
& Dips

Drill Hole Record



Property		Princeton Coal	District	Western	Hole No.	PC-4	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	PC-4	Sheet	2 of 7
Commenced	Location	Tests at	Hor. Comp.												
Completed	Core Size	Corr. Dip	Vert. Comp.												
Co-ordinates	True Brg.	Logged by													
Objective	% Recov.	Date													
Footage From	To	Description	Sample No.	Length Basis	Ash %	Carbon %	S %	BTU							
101.5	184.2	175.3-183.0 - planes. Bedding is approx. 85° to core axis.													
(cont'd.)		183.0-184.2 - Same as above, only becoming finer grained approaching contact with underlying siltstone.													
184.2	189.5	Siltstone - Medium gray. Irregular bituminous infillings appear at 187.0 and 188.5													
189.5	191.2	Sandstone - Light gray, medium grained, same mineralogy as 101.5 - 184.2. Coal pieces are abundant. They are highly irregular in thickness and discontinuous.	100436	1.7	94.40	1.41	.08	301							
		SAMPLE # 100436.													
191.2	192.0	Sandstone - Same as above only no coal pieces.													
192.0	198.0	Siltstone - Medium gray. Contains some very well preserved fossil leafs. From 195.3 - 195.7 is a highly organic clay interval.													
198.0	201.3	Mudstone - Medium gray, contains minor fossil plant imprints. Becomes more silty approaching lower contact.													
201.3	203.8	Siltstone - Medium gray. Slickensides at 202.0 and 203.0 are approximately 60° to core axis.													
203.8	207.4	Claystone - Medium green, pure claystone. Siltstone interval from 206.0 - 206.4.													

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-4
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Footage From	To	Description	Sample No.	Length	Analysis					
					Claim	T Brg.	Collar Dip	Elev.	Length	
207.4	210.2	Sandstone/Siltstone - Interbedded light gray, fine-grained sandstone with medium gray siltstone. Organic material is also interbedded from 209.0 - 209.5.								
210.2	216.0	Silty Sandstone - Medium gray, fine-grained. Core is mostly broken into small pieces. From 214.0 - 215.0 is bituminous. A 1 cm clay parting appears at 215.0.								
216.0	226.0	Sandstone - Light gray, coarse-grained, same as 101.5 - 184.2. Planar surfaces (probably joints) at 217.0 and 218.0 are 60° to core axis. From 225.0 - 226.0 core is lumpy and muddy.								
226.0	236.0	Claystone - Medium gray, soft, poorly compacted.								
236.0	240.7	Sandstone - Medium gray, medium grained, mostly quartz with some feldspar and biotite. Thin bituminous laminations appears from 236.0 - 238.5.								
240.7	246.5	Siltstone/Sandstone - Medium, gray, sandy siltstone interbedded with medium gray, medium grained sandstone. Bedding is approximately 90° to core axis. Minor bituminous infillings along bedding planes.								
246.5	249.2	Siltstone - Medium gray. Two slickensides at 248.7 are 30° to core axis.								
249.2	251.2	Mudstone - Medium gray showing several well preserved fossil leaves.								

 Hole No. PC-4
 Sheet 3 of 7

Scale

Colour Plot
& Dip

Drill Hole Record



Property		Princeton Coal	District		Western	Hole No.		PC-4	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-4	Sheet 4 of 7
Commenced		Location		Tests at		Hor. Comp.									
Completed		Core Size		Corr. Dip		Vert. Comp.									
Co-ordinates		True Brg.		Logged by		Date									
Objective		% Recov.													
Footage From	To	Description				Sample No.	Length	Analysis							
251.2	257.0	Siltstone - Medium gray with minor fossil plant imprints. At 252.2 - 252.7 is sandstone with siltstone pods and several bituminous infillings. A planar surface at 255.5 is 30° to core axis.													
257.0	259.5	Sandstone/Siltstone - Mostly medium gray, medium grained sandstone interbedded with medium gray siltstone. Core contains small bituminous infillings.													
259.5	267.0	Siltstone/Sandstone - Mostly medium gray siltstone interbedded with medium gray, medium-grained sandstone.													
267.0	290.5	Sandstone - Light gray, medium grained quartz sandstone. At 274.7 is an angular 2 cm piece of a volcanic rock piece, which is hematitic. Sandstone becomes coarse grained by 279.0. From 278.0 - 278.3 is a siltstone 288.0 - 290.5. Sandstone interbedded with a medium gray, fine-grained cross-bedded sandstone. End of interval is marked by a 2 cm coal parting.													
290.5	291.5	Sandstone/Siltstone - Interbedded brown-gray, gritty sandstone with medium gray siltstone. Bedding is faulted 2 cm, along faults 30° to core axis.													
291.5	292.7	Breccia - Approx. 85% angular volcanic rock fragments in a sandy matrix. Rock fragments range from 1 mm to 4 cm in length. They are of 2 types: 1) Reddish hematite fragments; and 2) Blue-green fragment possibly a dacite or dacite tuff.													

Scale

Colour Print
& Clips

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-4		
Commenced		Location		Tests at		Hor. Comp.	
Completed		Core Size		Corr. Dip		Vert. Comp.	
Co-ordinates		True Brg.		Logged by			
Objective		% Recov.		Date			
Footage	Description	Sample No.	Length	Analysis			
From	To						
292.7	295.4						
Sandstone - Light gray, fine-medium grained sandstone. A few angular volcanic fragments are contained.							
295.4	306.0						
Breccia - Approximately 95% angular volcanic rock fragments with range from 1 mm to 15 cm in length. Rock fragments are mostly light blue with some hematitic fragments. The matrix (5%) is both sandy and calcareous.							
306.0	307.0						
Siltstone - Brown							
307.0	307.6						
Mud - Brown, very soft.							
307.6	311.1						
Sandstone - Medium gray, fine-grained, mostly quartz with some feldspars altered to clays.							
311.7	316.0						
Siltstone - Medium gray, clay rich siltstone. Volcanic rock fragments of various sizes appear at 309.0 and 313.7.							
316.0	317.0						
Sandstone - Brown, fine-grained, composed mainly of quartz and white feldspar.							
317.0	318.0						
Siltstone - Medium gray, core is mostly broken.							
318.0	322.5						
Breccia - Initially silty matrix constitutes approx. 80%, but at 320.0 rock fragments constitutes 95%. Matrix after 320.0 is calcite. Angular rock fragments of 3 types: 1) Light blue dacite							

Scale

Colour Plot
& Dip

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-4

Commenced Location Tests at Hor. Comp.
Completed Core Size Corr. Dip Vert. Comp.
Co-ordinates True Brg. Logged by
Objective % Recov. Date

Footage		Description	Sample No.	Length	Analysis						
From	To				Claim	T Brg.	Collar Dip	Elev.	Length		
318.0	322.5	fragments up to 4 cm long; 2) Hematitic fragments less than 1 cm wide; and 5) Siltstone fragments which have been broken and reincorporated into the breccia.									
		(cont'd.)									
322.5	327.0	Siltstone - Medium gray, clayish siltstone. A large slickenside surface at 324.5 is 5° from core axis. Calcite is present along very thin cracks.									
		END OF HOLE DDH PC-4									

Sheet 6 of 7
Hole No. PC-4

Scale
Colour Plot
& Dips

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-4
 Commenced _____ Location _____ Tests at _____ Hor. Comp. _____
 Completed _____ Core Size _____ Corr. Dip _____ Vert. Comp. _____
 Co-ordinates _____ True Brg. _____ Logged by _____
 Objective _____ % Recov. _____ Date _____

Claim _____
 T Brg. _____
 Collar Dip _____
 Elev. _____
 Length _____
 Hole No. PC-4
 Sheet 7 of 7

Footage From	To	Description	Runs (ft)	Shorts (ft)	Sample No.	Length	Analysis
			0 - 101	Overburden			
			101 - 107	1.4			
			107 - 117	0.0			
			117 - 127	0.5			
			127 - 137	0.4			
			137 - 147	0.8			
			145 - 157	0.5			
			157 - 167	0.5			
			167 - 177	0.6			
			177 - 187	0.2			
			187 - 197	0.6			
			197 - 207	0.5			
			207 - 215	0.5			
			215 - 225	3.0			
			225 - 236	7.3			
			236 - 246	0.4			
			246 - 257	1.8			
			257 - 267	1.4			
			267 - 277	0.8			
			277 - 287	0.4			
			287 - 327	0.0			
Total Runs =			226 ft.	Total Shorts =		21.6 ft.	

$$\% \text{ Recovery} = \frac{226 - 21.6}{226} \times 100 = 90.4\%$$

Scale
Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-5
Commenced	May 24, 1981	Location	D.L. 2416	Tests at	Nil
Completed	May 25, 1981	Core Size	H.Q.	Corr. Dip	
Co-ordinates		True Brg.		Logged by	P. Leriche
Objective	To test the presence of coal strata.			% Recov.	84.7%
				Date	May 26, 1981

Claim Coal License #5219
T Brg.
Collar Dip -90°
Elev. approx. 2553'
Length 177'
Hole No. PC-5
Sheet 1 of 6

Footage From	To	Description	Sample No.	Length	Analysis
0	25.0	Overburden			
25.0	42.8	Sandstone - Brown-gray, medium grained (1 mm) quartz sandstone. 25.0- 37.0 - Core is brown because of Fe-staining and crumbles easily when hit. 37.0- 42.8 - Sandstone is light gray, composed approx. of 85% quartz, 12% white feldspar and 3% biotite. Thin siltstone interbeds are 90° to core axis.			
42.8	44.3	Siltstone - Medium gray. Grads into sandstone.			
44.3	47.0	Sandstone - Medium gray, fine-grained, dominantly quartz.			
47.0	55.9	Siltstone - Medium gray, core is intact and brittle. A sandy interbed occurs from 49.0 - 49.3.			
55.9	56.5	Sandstone - Medium gray, fine-grained, quartzose.			
56.5	66.8	Siltstone - Medium gray, core is intact and brittle. Planar joints around 58.0 ft. are approx. 30° to core axis. Sandy interbeds approx. 80° from core axis are at 62.0 ft.			
66.8	78.0	Sandstone - Medium - dark gray, fine grained. Recovery over the 11 ft. interval is only 2 ft. Wavy thin laminations of bituminous material is frequent. At 77.5 is a fossil plant imprint which is brown and still shows some of the original wood texture.			

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-5
Commenced	Location		Tests at	Hor. Comp.	
Completed	Core Size		Corr. Dip	Vert. Comp.	
Co-ordinates	True Brg.		Logged by		
Objective	% Recov.		Date		

Footage From	To	Description	Sample No.	Dry	Length Basis	Analysis			
						Ash %	Carbon %	S %	BTI
78.0	78.4	Muddy Coal - Poor quality laminated coal and siltstone.							
78.4	79.1	Siltstone - Light gray, slightly siliceous with small brown plant imprints within it.							
79.1	79.4	Muddy Coal - Dull, brown black, organic mudstone with pieces of coal in it.							
79.4	96.0	Sandstone - Light gray, coarse grained (3 - 4 mm), almost a grit. Grains consist mostly of quartz, with some feldspar and pieces of siltstone. Small biotite grains are common throughout.							
96.0	97.0	Siltstone - Medium gray, slightly organic. Grads into sandstone.							
97.0	100.5	Sandstone - Light gray, medium grained, clean quartz sandstone. Minor feldspar and biotite. Thin organic laminations appear at 98.5 - 99.0.							
100.5	101.5	Siltstone - Light gray, gradually becoming more organic - approaching contact with coal.							
101.5	102.0	Coal - Dull black, initially is silty, but becomes fairly pure. SAMPLE # 100437	100437		0.5	86.47	5.83	.05	1.476
102.0	117.0	Sandstone - Light gray, coarse grained consisting of 70% quartz, 25% feldspars and 5% others. Feldspars are a light green, in large "blotches" and altering to clays slightly.							

Claim

T Brg.

Collar Dip

Elev.

Length

Hole No.
PC-5

Sheet 2 of

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-5
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Footage From	To	Description	Sample No.	Length Basis	Analysis			BTU
					Ash %	Carbon %	S %	
117.0	120.1	Grit - Medium gray quartz rich matrix (60%) with large fragments of mainly feldspars altering to clays.						
120.1	137.0	Sandstone - Large unit with the following local variations.						
		120.1-120.9 - Light gray, medium-grained, mainly quartz. Faint thin organic veinlets run throughout.						
		120.9-123.0 - Medium gray, coarse grained. Grains up to 4 mm in diameter of mostly quartz.						
		123.0-125.1 - Light gray, fine-grained. Bedding is wavy. Thin organic lamellae are throughout.						
		125.1-127.5 - Light gray, coarse-grained.						
		127.5-132.5 - Light gray, fine-grained, slightly altered. Thin, wavy, organic interbeds are common throughout. Bedding is faulted 5 mm at 132.0.						
		132.5-133.5 - Medium gray, medium grained, quartz rich.						
		133.5-137.0 - Medium gray, fine-grained, containing small plant matter and minor organic interbeds.						
137.0	141.5	Siltstone - Light gray, sandy, with minerals largely altered. Thin wavy organic interbeds are very regular. Contact with underlying coal is sharp.						
141.5	142.3	Coal - Dull black coal thinly interbedded with siltstone. SAMPLE # 100438	100438	0.8	79.46	8.98	.37	2,407

Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-5	Sheet 3 of 6
-------	--------	------------	-------	--------	------------------	-----------------

Scale

Colour Plot
& Dip

Drill Hole Record



Property		Princeton Coal	District	Western	Hole No.	PC-5	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	PC-5	Sheet	4 of 6		
Commenced		Location			Tests at		Hor. Comp.										
Completed		Core Size			Corr. Dip		Vert. Comp.										
Co-ordinates		True Brg.			Logged by												
Objective		% Recov.			Date												
Footage		Description										Sample No.	Length	Analysis			
From	To											Dry	Basis	Ash %	Carbon %	S %	BTU
142.3	145.8	Siltstone - Light gray, sandy. Contains very small veinlets of organics.															
145.8	147.8	145.8-146.1 - Coal - Bedded with siltstone.															
		146.1-147.8 - Siltstone - Dark gray, highly organic with abundant thin coal partings.															
		SAMPLE # 100439										100439	2.0	84.65	7.46	.72	1,442
147.8	150.5	Siltstone - Medium gray, locally sandy. Thin organic laminations are common. Contact with underlying coal is abrupt.															
150.5	150.9	Coal - Dull black and silty.															
		SAMPLE # 100440										100440	0.4	75.11	12.07	.18	2,920
150.9	154.5	Siltstone - Light - dark gray. From 152.0 - 153.0 is bituminous. Fossil plant imprints are common throughout.															
154.5	168.0	Sandstone - Light gray with the following variations.															
		154.5-157.5 - Medium gray, fine-grained with a high organic content. Crossbedding appears at 157.3.															
		157.5-168.0 - Light gray, medium-grained, mainly quartz. At 160.5 is a small coaly interval (2 inches). Contact with underlying siltstone is gradational.															

Scale
Colour Plot
& Dip

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-5

Commenced _____ Location _____ Tests at _____ Hor. Comp. _____

Completed _____ Core Size _____ Corr. Dip _____ Vert. Comp. _____

Co-ordinates _____ True Brg. _____ Logged by _____

Objective _____ % Recov. _____ Date _____

Footage From	To	Description	Sample No.	Length	Analysis	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	Sheet
168.0	171.7	Siltstone - Medium gray, sandy, wavy bedding. Contains thinly bedded organic material as well as small pods of organics.									PC-5	5 of 6
171.7	177.0	Sandstone - Light gray, coarse-grained, gritty. Grains consist of 70% quartz, 25% feldspar and 5% others. Coal material is common along bedding planes which are 90 ^o to core axis.										
		END OF DDH PC-5										

Scale

Colour Plot
& Dips

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-5
Commenced	Location		Tests at		Hor. Comp.
Completed	Core Size		Corr. Dip		Vert. Comp.
Co-ordinates			True Brg.		Logged by
Objective			% Recov.		Date

Footage From	To	Description	Runs (ft)	Shorts (ft)	Sample No.	Length	Analysis					
							Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-5
			0 - 25	Overburden								
			25 - 37	2.2								
			37 - 47	0.0								
			47 - 57	1.1								
			57 - 67	0.4								
			67 - 77	8.8	$\% \text{ Recovery} = \frac{152 - 23.2}{152} \times 100 = 84.7\%$							
			77 - 87	1.4								
			87 - 97	1.8								
			97 - 107	0.8								
			107 - 117	0.0								
			117 - 127	2.0								
			127 - 137	5.3								
			137 - 147	1.7								
			147 - 157	0.9								
			157 - 167	1.0								
			167 - 177	0.8								
Total Runs = 152 ft.			Total Shorts = 23.2 ft.									

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-6
Commenced	May 26, 1981	Location	D.L. 2136	Tests at	Nil
Completed	May 27, 1981	Core Size	H.Q.	Corr. Dip	Hor. Comp.
Co-ordinates		True Brg.			Logged by P. Leriche
Objective	To test the presence of coal strata.			% Recov.	0
				Date	May 27, 1981

Claim
Coa: License # 5229
T Brg.
Collar Dip -90°
Elev. approx. 2250'
Length 85'
Hole No. PC-6
Sheet 1 of 1

Footage		Description	Sample No.	Length	Analysis
From	To				
0	85.0	Overburden			
		DDH PC-6 - Abandoned.			

Scale

Colour Plot
& Dips

Drill Hole Record



Property	Princeton Coal		District	Western		Hole No.	PC-7	
Commenced	May 28, 1981		Location	D.L. 2136		Tests at	Nil	
Completed	June 1, 1981		Core Size	H.Q.		Corr. Dip	Vert. Comp.	
Co-ordinates			True Brg.			Logged by	P. Leriche	
Objective	To test the presence of coal strata.		% Recov.	55.9%		Date	May 30, 31, 1981	

Footage	Description	Sample No.	Length	Analysis
From To				
0 20.0	Overburden			
20.0 23.5	Mudstone - Medium gray, soft, with clay minerals present.			
23.5 27.0	Sandstone - Light gray, coarse grained, poorly consolidated. Consists mainly of quartz (75%) with approx. 20% feldspar and 5% biotite.			
27.0 30.0	Claystone - Medium gray, soft, and slightly silty.			
30.0 37.0	Sandstone - Medium gray, medium grained, dominantly quartz. Core is locally rusty. Very poor recovery.			
37.0 47.0	Grit - Quartz grit, subrounded, averaging 4 - 5 mm in diameter in a medium gray clay matrix. Core is loosely consolidated.			
47.0 49.0	Sandstone - Light gray, coarse grained (2 - 3 mm) and quartzose. Grains are weakly cemented together.			
49.0 61.0	Claystone - Medium gray, soft, locally sandy. Poor recovery over this interval.			
61.0 88.5	Sandstone - Large unit with the following variations. Poor recovery throughout. 61.0-77.0 - Medium gray, coarse grained. Subrounded quartz and feldspars grains (90%) in a			

Claim Coal License #5229

T Brg.

Collar Dip -90°

Elev. approx. 2450'

Length 373'

Hole No. PC-7
Sheet 1 of 9

Scale

Colour Plot
& Disc

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-7
Commenced		Location		Tests at	Hor. Comp.
Completed		Core Size		Corr. Dip	Vert. Comp.
Co-ordinates				True Brg.	Logged by
Objective				% Recov.	Date

Footage From	To	Description	Sample No.	Length	Analysis					
					Claim	T. Brg.	Collar Dip	Elev.	Length	
61.0	88.5	61.0-77.0 - clay matrix. Pyrite is very common.								
(cont'd.)		77.0-87.0 - Mainly medium gray clay with small quartz and biotite grains within.								
		87.0-88.5 - Fine-grained sandstone, slightly organic.								
88.5	90.0	Siltstone - Medium gray, soft and clay rich. A 2 inch sandstone interval is at 89.3.								
90.0	97.0	Sandstone - Initially is fine-medium grained, medium gray, quartz sandstone cemented together by clay.								
		92.0-95.0 - Coarse-grained sandstone, poorly consolidated and rusty.								
		95.0-97.0 - Medium gray, medium grained, with abundant clay between grains.								
97.0	105.0	Grit - Approx. 85% quartz grit up to 1.5 cm in diameter surrounded by a clay matrix (15%).								
105.0	107.5	Sandstone - Medium gray, coarse-grained, loosely consolidated. Clay is very common.								
107.5	123.0	Igneous Pieces - Only about 1 ft. recovery. Pieces of breccia, granite, andesite volcanics. Casing was sunk down to 105 ft. and boulders probably dropped down.								
123.0	125.0	Claystone - Medium gray-green. Poor recovery.								
125.0	143.5	Sandstone - Local variations. 125.0-130.0 - Medium gray, fine-grained. Biotite constitutes about 10-15%.								

Sheet
2 of 9Hole No.
PC-7

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal		District	Western		Hole No.	PC-7		Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-7	Sheet 3 of 9	
Commenced	Location		Tests at		Hor. Comp.											
Completed	Core Size		Corr. Dip		Vert. Comp.											
Co-ordinates			True Brg.		Logged by											
Objective			% Recov.		Date											
Footage From	To	Description					Sample No.	Length	Analysis							
125.0	143.5	<u>130.0-137.5</u> - Medium gray, coarse-grained. Mostly quartz grained which are poorly consolidated.														
(cont'd.)		<u>137.5-141.0</u> - Light gray, medium-grained, 80% quartz, 10% feldspar, 10% biotite. Core is in small blocks.														
		<u>141.0-143.5</u> - Initially has a small clay interval, but turns into a coarse-grained, well indurated sandstone.														
143.0	146.5	Siltstone - Medium gray, clay rich.														
146.5	210.0	Sandstone - Local variations, poor recovery throughout.														
		<u>146.5-157.0</u> - Medium gray, fine-grained, blockly.														
		<u>157.0-168.0</u> - Medium gray, medium-grained, mainly quartz surrounded by clay.														
		<u>168.0-188.0</u> - Medium gray, fine-medium grained, silty sandstone, with abundant clay minerals. Consists of 90% quartz with minor biotite and 10% clay. Thin organic interbeds appear at 187.0 which are approximately 90° to core axis.														
		<u>188.0-192.0</u> - Medium gray, medium-grained, consisting of 90% quartz with 10% feldspar and biotite.														
		<u>192.0-197.0</u> - Coarse-grained sandstone weakly held together by a muddy cement.														
		<u>197.0-198.0</u> - Approx. 75% brown mud with 25% quartz pieces.														
		<u>198.0-201.0</u> - Medium gray, fine-grained.														
		<u>201.0-210.0</u> - Light gray, coarse-grained, almost entirely quartz which is weakly cemented together.														

Scale

Colour Plot
& Oups

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-7	Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	Sheet
Commenced		Location		Tests at		Hor. Comp.						
Completed		Core Size		Corr. Dip		Vert. Comp.						
Co-ordinates		True Brg.		Logged by								
Objective		% Recov.		Date								
Footage	Description	Sample No. Dry	Length Basis	Analysis								
From	To			Ash %	Carbon %	S %	BTU					
210.0	212.5											
	Claystone - Dark gray, organic claystone. Coaly pieces and laminations are very common.											
	SAMPLE # 100441	100441	2.5	86.15	6.57	.33	1,444					
212.5	217.0											
	Sandstone - Medium gray, fine-grained, very clay rich and soft. Core is slightly organic.											
217.0	221.2											
	Sandstone - Dark gray, fine-grained, highly organic. Does have a minor amount of pure coal.											
	SAMPLE # 100442	100442	4.2	91.12	3.37	.32	667					
221.2	229.1											
	Sandstone - Medium gray. Interval begins very organic. Consists mainly clay pieces (80%), quartz and biotite (20%).											
229.1	233.8											
	Mudstone/Claystone - Dark gray mudstone and claystone interbedded. Core is broken along planes 90° to core axis.											
233.8	237.0											
	Mudstone - Dark gray, contains high amount of organic material. Core is shaly. From 255.0 - 237.0 core is broken into small pieces.											
	SAMPLE # 100443	100443	3.2	Sample lost in Shipmen								
237.0	240.1											
	Mudstone - Small organic mudstone pieces imbedded in brown mud.											
	SAMPLE # 100444	100444	3.1	94.01	2.27	.14	266					
240.1	247.5											
	Siltstone - Dull black, slightly shaly. Minor claystone layers around 246.0. SAMPLE # 100445.	100445	7.4	91.17	2.78	.16	687					

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal		District	Western		Hole No.	PC-7		Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-7	Sheet 5 of 9
Commenced	Location		Tests at		Hor. Comp.										
Completed	Core Size		Corr. Dip		Vert. Comp.										
Co-ordinates	True Brg.		Logged by												
Objective	% Recov.		Date												
Footage From	To	Description	Sample No.	Dry	Length Basis	Analysis									
						Ash	Carbon	S	BTU						
						%	%	%							
247.5	257.0	Siltstone - Dark gray, high organic content. Becomes shaly approaching 257.0. A small interval of grit is from 255.5 - 255.8.													
		SAMPLE # 100446	100446		9.5	92.63	2.59	.27	509						
257.0	266.0	Mudstone - Dark gray, shaly and highly organic. A coarse-grained sandstone extends from 258.5 - 259.2. Core is mostly broken. Coaly pieces are found within the debris.													
		SAMPLE # 100447.	100447		9.0	92.52	2.57	.50	599						
266.0	266.5	Sandstone - Light gray, medium-grained.													
266.5	278.7	Mudstone - Black, high organic content. Core is intact, but is cracked throughout.													
		SAMPLE # 100448.	100448		2.2	87.32	4.58	.25	1,089						
278.7	299.5	Sandstone - Large unit with local variations.													
		278.7-298.2 - Light gray coarse-grained, consisting mainly of quartz and approximately 5% biotite. Core is very poorly consolidated. Coal pieces are very common.													
		298.2-299.5 - Medium gray, medium-grained. Contains bituminous material and coal pieces.													
299.5	301.0	Siltstone - Brown, contains many fossil plant imprints. A coal interval 3 cm wide is seen at 299.9.													

Scale

Colour Plot
& Dip

Drill Hole Record



Property	Princeton Coal	District	Western	Hole No.	PC-7
Commenced	Location		Tests at	Hor. Comp.	
Completed	Core Size		Corr. Dip	Vert. Comp.	
Co-ordinates	True Brg.		Logged by		
Objective	% Recov.		Date		

Claim

T Brg.

Collar Dip

Elev.

Length

Hole No.
PC-7Sheet
6 of 9

Footage From	To	Description	Sample No. Dry	Length Basis	Analysis			
					Ash %	Carbon %	S %	BTI
301.0	304.0	Sandstone - Medium gray, fine-medium grained. Consists of quartz and biotite. Core contains thin organic lamellae which are 90° to core axis.						
304.0	306.0	Siltstone - Medium gray, core is broken. Core is bituminous and coaly.						
306.0	325.0	Sandstone - Light gray, coarse grained, poorly consolidated. Mostly quartz, with minor biotite and feldspars. A fine-grained green mineral (possibly an amphibole) occurs in small quantities.						
325.0	327.0	Sandstone - Dark gray, fine-medium grained, highly bituminous. Bituminous layers are 90° to core axis.						
		SAMPLE # 100449	100449	2.0	95.30	1.05	.06	318
327.0	328.7	Sandstone - Medium gray, fine-medium grained, bituminous, but not as much as above unit. A joint at 328.5 is 40° to core axis.						
328.7	333.0	Sandy Siltstone - Dark gray. From 328.7 - 331.0 siltstone has a high organic content. A joint at 330.6 is 40° to core axis. Core then becomes sandier with bituminous layers 90° to axis.						
		SAMPLE # 100450.	100450	4.3	91.25	2.75	.65	631
333.0	354.0	Sandstone - Shows local variations.						
		333.0-344.0 - Light gray, medium-coarse grained slightly bituminous throughout. Consists approx. of 70% quartz, 20% feldspar, 10% biotite.						

Scale

Colour Plot
& Dips

Drill Hole Record



Property		Princeton Coal	District	Western	Hole No.	PC-7					Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. PC-7	Sheet 7 of 9
Commenced		Location		Tests at		Hor. Comp.											
Completed		Core Size		Corr. Dip		Vert. Comp.											
Co-ordinates		True Brg.		Logged by													
Objective		% Recov.		Date													
Footage		Description				Sample No. Dry	Length Basis	Analysis									
From	To							Ash %	Carbon %	Sulfur %	BTU						
333.0	354.0	344.0-346.0 - Dark gray, fine-grained, bituminous															
		(cont'd.) 346.0-354.0 - light gray, medium to coarse-grained. Recovery is poor.															
354.0	355.5	Mudstone - From 354.0-354.4 is a shaly, coal. Coal is of good quality. A white powder is all through this coal. The remainder of the interval is an organic mudstone.															
		SAMPLE # 100501				100501	1.5	86.60	5.82	1.29	1,220						
355.5	367.0	Sandstone - Medium gray, medium-coarse grained. Up to 358.0 sandstone is poorly consolidated. Core is bituminous throughout.															
		END OF DDH PC-7															

Scale

Colour Plot
& Dips**Drill Hole Record**

Property	Princeton Coal	District	Western	Hole No.	PC-7
Commenced	Location			Tests at	Hor. Comp.
Completed	Core Size			Corr. Dip	Vert. Comp.
Co-ordinates	True Brg.			Logged by	
Objective	% Recov.			Date	

Footage		Description	Runs (ft)	Shorts (ft)	Sample No.	Length	Analysis							
From	To						Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	PC-7	
			0 - 20	Overburden										
			20 - 27	4.0										
			27 - 37	7.0										
			37 - 47	8.0										
			47 - 57	7.6										
			57 - 67	7.7										
			67 - 77	8.0										
			77 - 87	8.0										
			87 - 97	3.0										
			97 - 107	3.7										
			107 - 123	1.0										
			123 - 127	3.0										
			127 - 137	5.0										
			137 - 147	6.7										
			147 - 157	9.4										
			157 - 167	8.9										
			167 - 174	3.7										
			174 - 177	1.8										
			177 - 187	6.9										
			187 - 189	0.3										
			189 - 197	3.9										
			197 - 207	7.3										

(cont'd.)

Scale

Colour Print
& Dip

Drill Hole Record



Property Princeton Coal District Western Hole No. PC-7

Commenced Location Tests at Hor. Comp.

Completed Core Size Corr. Dip Vert. Comp.

Co-ordinates True Brg. Logged by

Objective % Recov. Date

Footage		Description	Runs (ft)	Shorts (ft)	Sample No.	Length	Analysis								
From	To						Claim	T Brg.	Collar Dip	Elev.	Length	Hole No.	Sheet		
			207 - 217	2.5											
			217 - 227	1.0											
			227 - 237	0.6											
			237 - 247	1.5											
			247 - 257	1.1											
			257 - 267	0.4											
			267 - 277	1.0											
			277 - 287	4.5											
			287 - 297	8.2											
			297 - 307	3.6											
			307 - 317	4.5											
			317 - 327	4.0											
			327 - 337	0.0											
			337 - 347	0.0											
			347 - 353	1.6											
			353 - 357	0.0											
			357 - 367	2.0											
			367 - 373												
			Stuck down Hole 6.0												
			Total Runs = 353 ft.	Total Shorts = 155.8 ft.											

$$\% \text{ Recovery} = \frac{353 - 155.8}{353} \times 100 = 55.9\%$$



PC

195

SM-Princeton North 81(3)A*
(L)

LOG HEADING

HOLE NO. PC-1

PROJECT Princeton Coal LOCATION Princeton, B.C. LOGGED BY A. Scott
 T.D. DRILLED 75.3 m. HOLE SIZE HQ WATER LEVEL _____
 GROUND ELEV. _____ CASING ELEV. _____ LOGGING UNIT Mt. Sopris 2500

GAMMA LOG

DATE LOGGED: May 15, 1981
 T.D. LOGGED: 74.5 m
 PROBE NO: _____
 DETECTOR SIZE: _____
 TIME CONSTANT: _____
 LOGGING SPEED: 5 m/min.

K-FACTOR:

--	--	--	--

 $\times 10^{-6}/10\text{cm}$
 DEAD TIME:

--	--	--	--

 $\times 10^{-6}\text{sec}$
 CASING FACTOR:

--	--	--	--

 FLUID FACTOR:

--	--	--	--

ELECTRIC LOG

DATE LOGGED: _____
 T.D. LOGGED: _____
 LOGGING SPEED: _____
 BORE HOLE FLUID: _____

COMMENTS:
"0" depth on log = top of casing = drillers "0"
Casing to 32 m depth

GAMMA RAY

SELF POTENTIAL

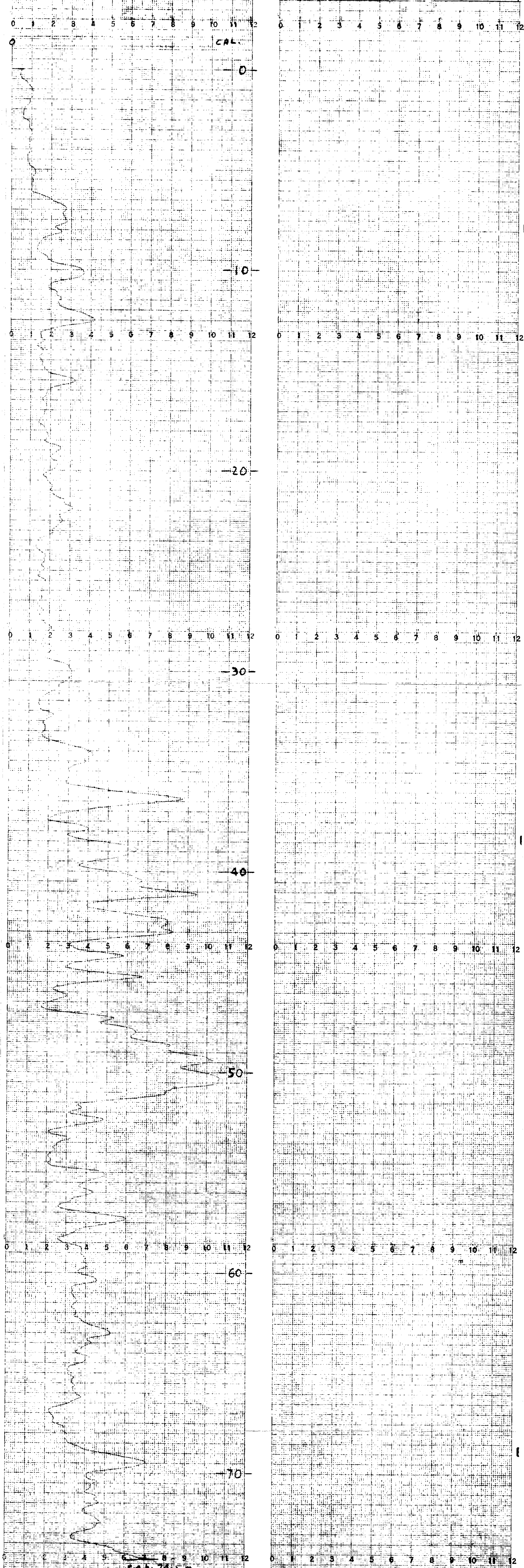
DEPTH METRES

RESISTANCE

10 cps / Div.

mv / Div.

ohms / Div.



[Handwritten signature]
 Geophysicist

PC 195

SM-Princeton North 8(3)A #1
L2



LOG HEADING

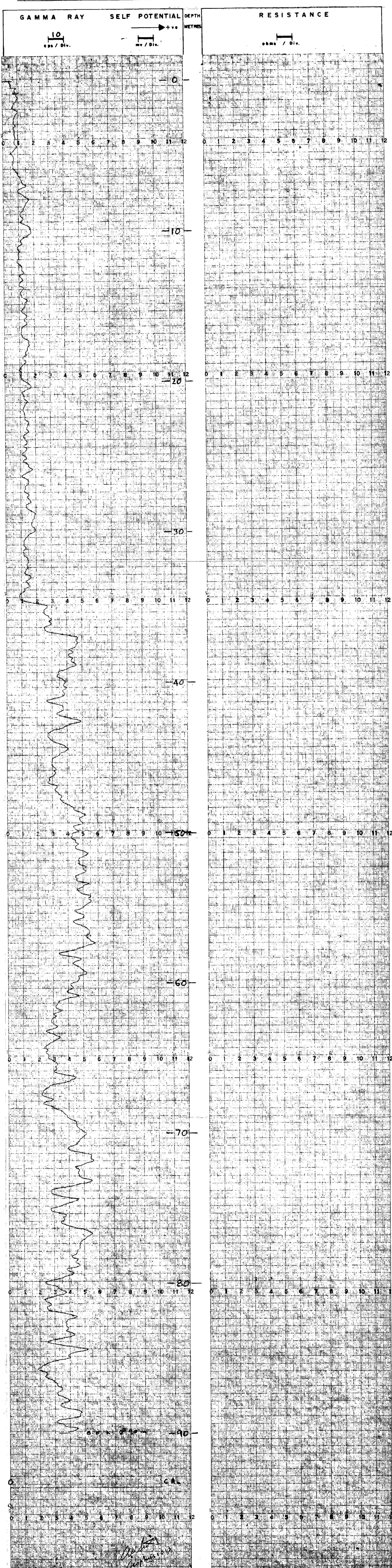
HOLE NO. PC-2

PROJECT Princeton Coal LOCATION Princeton, B.C. LOGGED BY A. Scott
T.D. DRILLED 90.5 m HOLE SIZE HQ WATER LEVEL _____
GROUND ELEV. _____ CASING ELEV. _____ LOGGING UNIT Mt. Sopris 2500

GAMMA LOG
DATE LOGGED: May 18, 1981
T.D. LOGGED: 90 m.
PROBE NO: _____
DETECTOR SIZE: _____
TIME CONSTANT: _____
LOGGING SPEED: 5 m/min
K-FACTOR: _____ $\times 10^{-6}/10\text{cm}$
DEAD TIME: _____ $\times 10^{-6}\text{sec}$
CASING FACTOR: 1.0
FLUID FACTOR: _____

ELECTRIC LOG
DATE LOGGED: _____
T.D. LOGGED: _____
LOGGING SPEED: _____
BORE HOLE FLUID: _____

COMMENTS: At casing to 33.5 m depth
'0' on log = top of casing = driller's '0'



PC

195

SM-Princeton North 81(3)A #1
L3



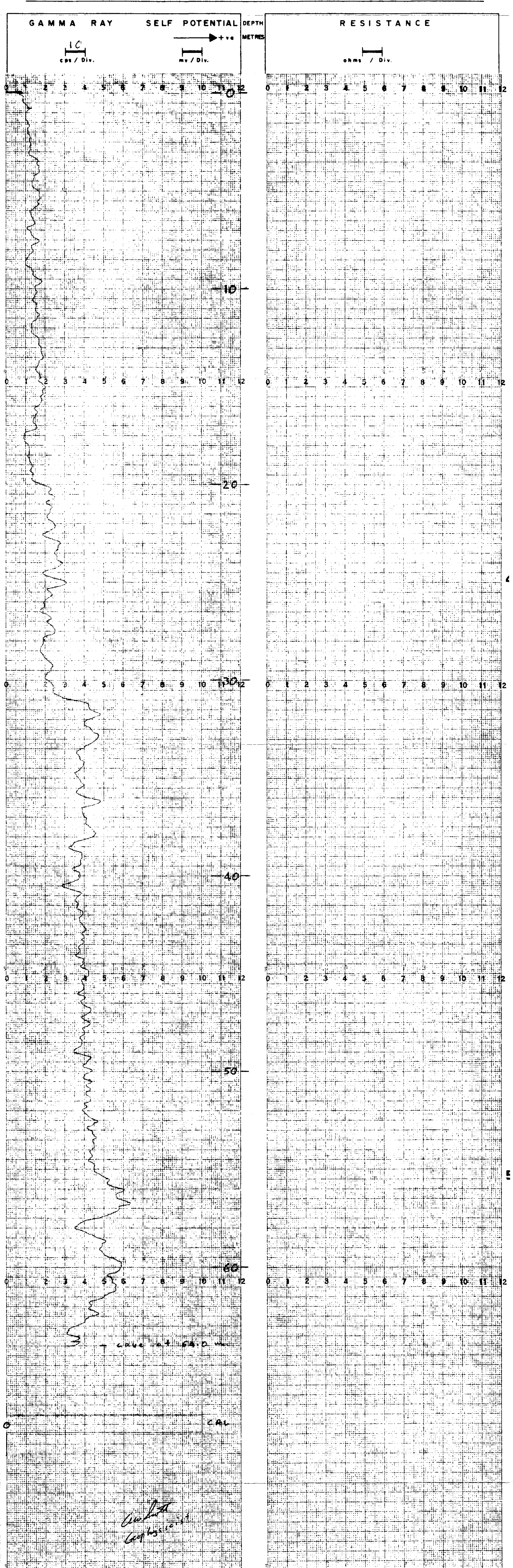
LOG HEADING

HOLE NO. PC-4

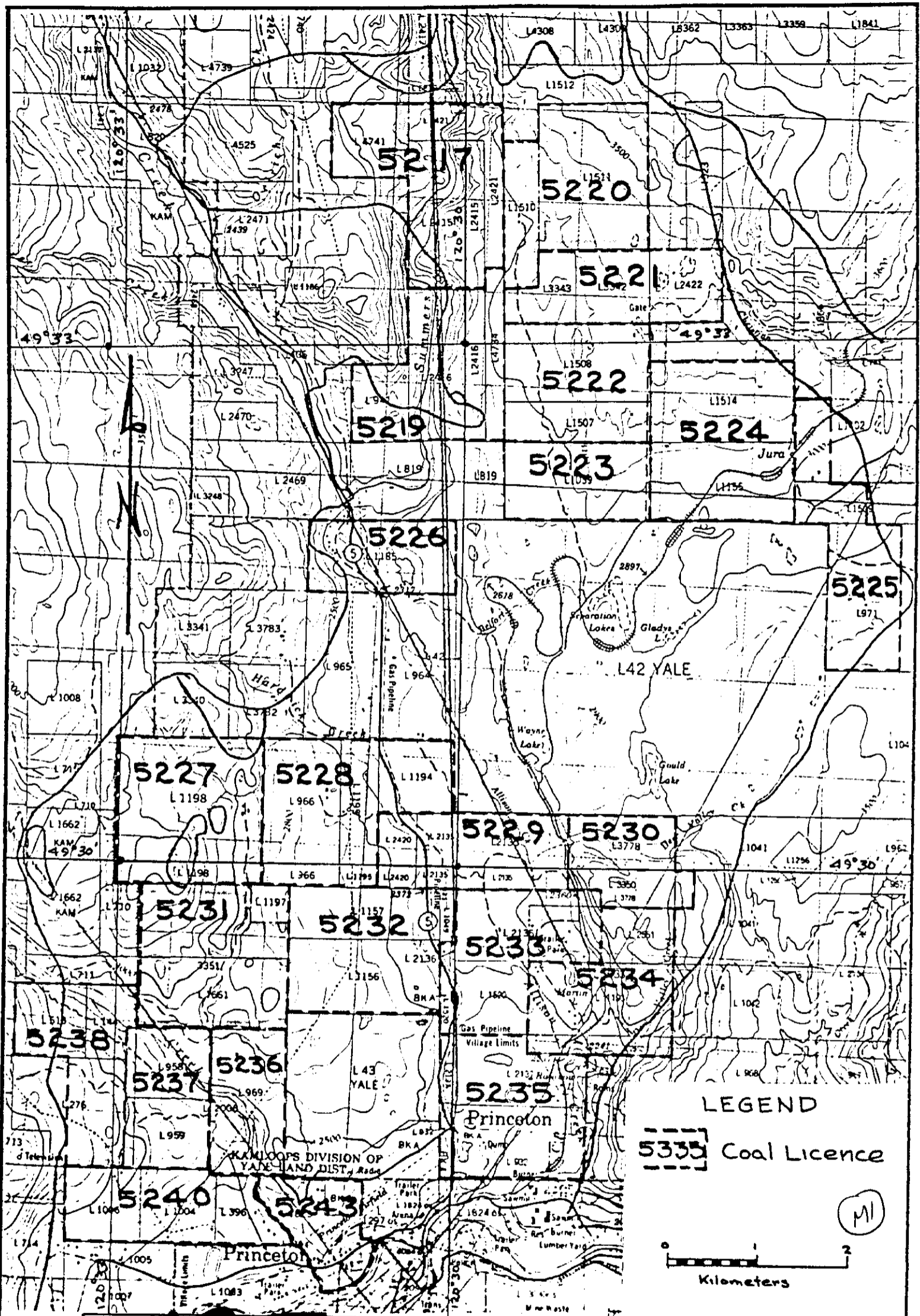
PROJECT Princeton Coal LOCATION Princeton, BC LOGGED BY A Scott
 T.D. DRILLED 99.7 m HOLE SIZE _____ WATER LEVEL _____
 GROUND ELEV. _____ CASING ELEV. _____ LOGGING UNIT Mt. Supers 2500

GAMMA LOG
 DATE LOGGED: May 23, 1981
 T.D. LOGGED: 64.0 m.
 PROBE NO.: _____
 DETECTOR SIZE: _____
 TIME CONSTANT: _____
 LOGGING SPEED: 5 m/min
 K-FACTOR: _____ $\times 10^{-6}/10\text{cm}$
 DEAD TIME: _____ $\times 10^{-6}\text{sec}$
 CASING FACTOR: _____
 FLUID FACTOR: _____

ELECTRIC LOG
 DATE LOGGED: _____
 T.D. LOGGED: _____
 LOGGING SPEED: _____
 BORE HOLE FLUID: _____
 COMMENTS:
 O on log = top of casing = driller's 'C'
 H casing to 30.8 m depth
 cave at 64.0 m - could not go deeper



A. Scott
 Geophysicist



195

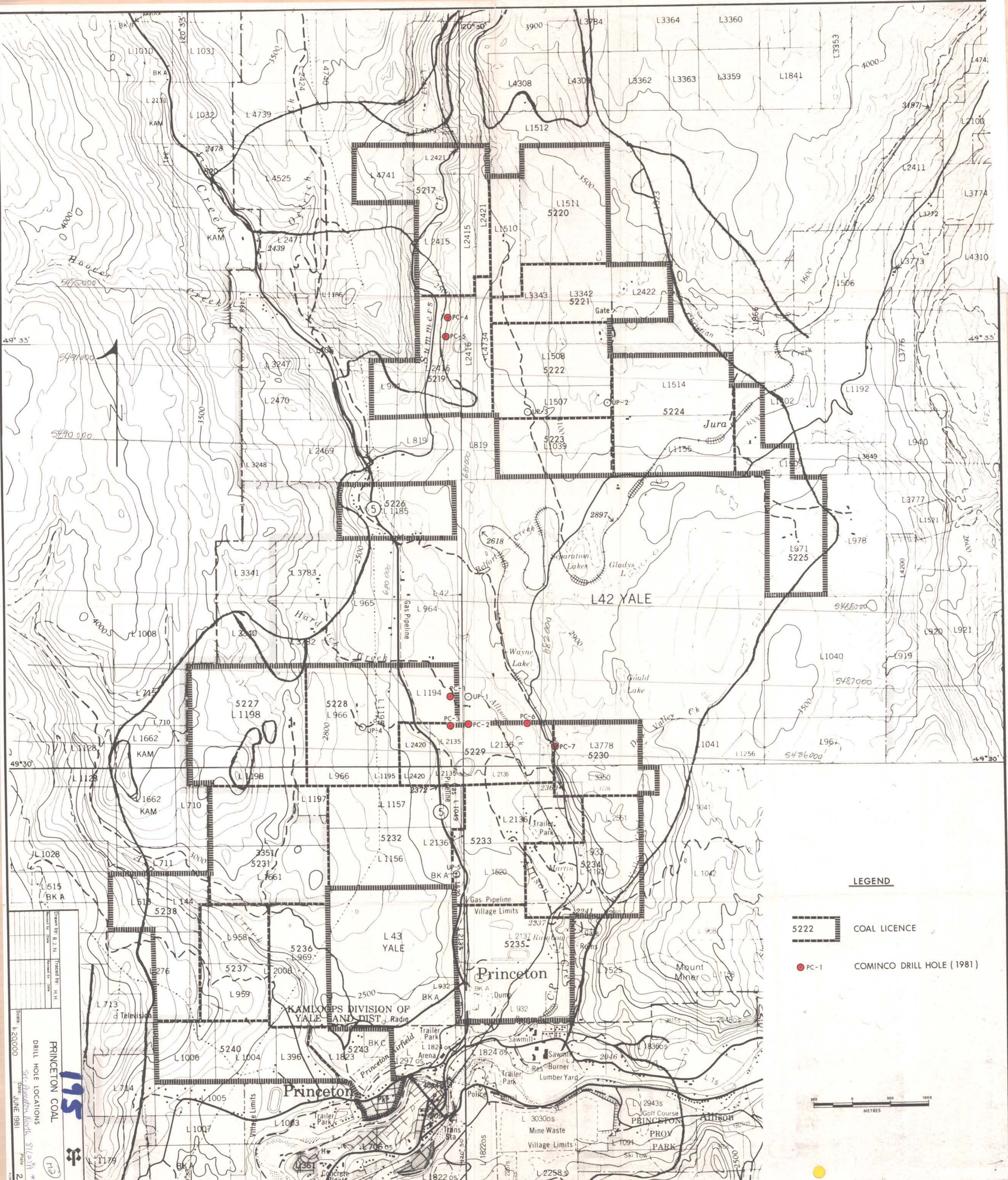
S01-Princeton North 81(2)A *1



Drawn by:		Traced by: <i>AK</i>	
Revised by	Date	Revised by	Date

**PRINCETON COAL
INDEX MAP 92 H 7 to 10**

Scale: 1:50,000 Date: July 1981 Plate: 1



LEGEND

- 5222 COAL LICENCE
- PC-1 COMINCO DRILL HOLE (1981)

Drawn by R.J.N. Traced by H.H.
 Checked by [unclear]
 Scale: 1:20,000
 Date: JUNE 1981
PRINCETON COAL
DRILL HOLE LOCATIONS
 Plate 2

