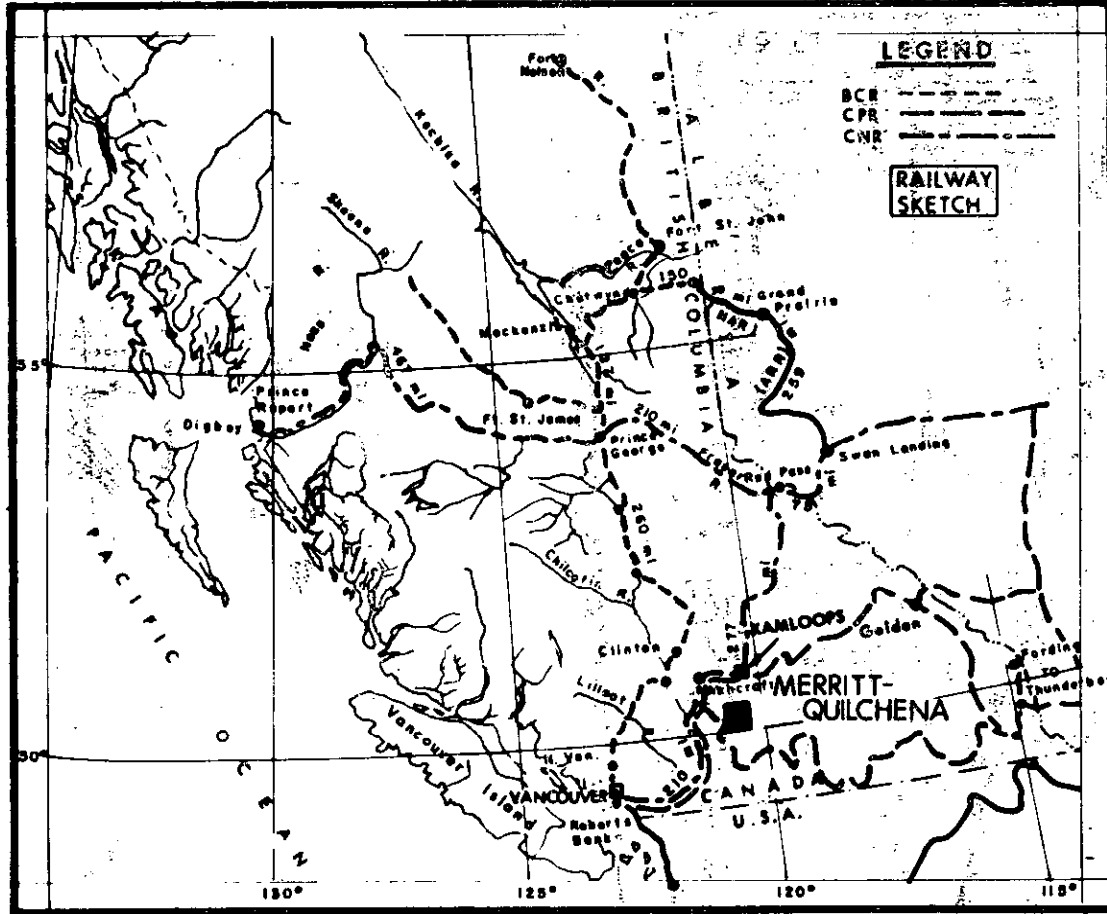


QUILCHENA COAL PROSPECT COOPEN FILE



Report on Coal Licenses 4322 to 4327 inclusive
 Kamloops Division of Yale Land District, British Columbia
 on work done in period May 26, 1980 to Dec 15, 1980 inclusive

**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

Held by: SHELL CANADA RESOURCES LIMITED
 Operated by: CROWS NEST RESOURCES LIMITED

N. Lat. 50° 06', W. Long. 120° 30', NTS 931, 2

March 20, 1981

00166
 (01)

Author:
 Patrick G. Gilmar
 Geologist
 Crows Nest Resources Ltd.

PROFESSIONAL VERIFICATION OF REPORT

Entitled: Quilchena Coal Prospect
Kamloops Division of Yale Land District, B. C.
B. C. Coal Licences
4322 - 4327 inclusive

Mr. Patrick C. Gilmar planned and carried out the 1980 geological field program on Quilchena B.C. Coal Licences held by Shell Canada Resources Ltd. and operated by Crows Nest Resources Ltd. He also prepared this report. Mr. Frank Martonhegyi supervised the activity of this program under the general direction of the undersigned.

Pat Gilmar, B.Sc., graduated in Geology from the University of Calgary, in 1978. Prior to his graduation Mr. Gilmar worked as a field assistant for a number of major mining companies in British Columbia and Alberta.

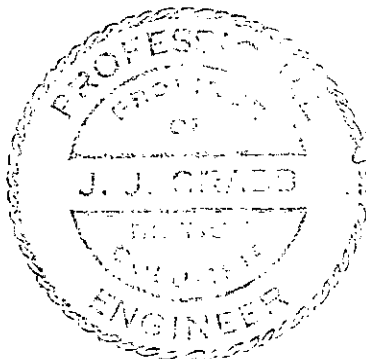
Frank Martonhegyi, M. E., graduated in Mining Geological Engineering from the University of the Heavy Industry, Hungary, in 1962; and received post-graduate training at the University of Saskatchewan, Saskatoon, in 1969-1971. His experience in Western Canadian coal exploration since 1971 includes positions with:

- CanPac Minerals Ltd., Calgary, Alberta
- Shell Canada Resources Ltd., Calgary, Alberta
- Crows Nest Resources Ltd., Calgary, Alberta

His prior experience includes underground coal mining geology, geotechnical engineering and geochemistry in Hungary, Austria and Canada.

He currently holds the position of Manager, B. C. Projects for Crows Nest Resources Ltd. supervising coal exploration in British Columbia.

I consider both the aforementioned geologists to be well qualified to undertake responsibilities they were assigned on this project. I am satisfied that the attached report dated March 20, 1981 has been competently prepared and justly represents the information obtained from this project.



A handwritten signature in black ink, appearing to read "J. J. Crabb", written over a horizontal line.

J. J. Crabb, P. Eng.

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Entitled: Quilchena Coal Prospect
Kamloops Division of Yale Land District, B. C.
B. C. Coal Licences
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J. J. Crabò, P. Eng.

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1.0	SUMMARY	1
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5.0	WORK DONE	6
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ENCLOSURES

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APPENDICES

		<u>Scale</u>
Appendix A	✓ Access Map	1:250,000
Appendix B	✓ B.C. Land Tenure Standing	
Appendix C	✓ Coal Prospects Map	1:100,000
Appendix D	✓ Applications to Extend Term of Licences	
Appendix E	✓ Drill Hole Summaries	
Appendix F	✓ Drill Hole Stratigraphic Sections	1:100
Appendix G	✓ Downhole Geophysical Logs	1:100
Appendix H	✓ Geodetic Survey Report	
Appendix I	✓ Regional Geology Map	1:50,000
Appendix J	✓ Geology Compilation Map	1:5,000

} see M-Guilchena 80(3)A

1.0 Summary

The Quilchena coal prospect is located in the Merritt Coalfield in South-central British Columbia. Six B.C. coal licences, covering 1,373 hectares, are held by Shell Canada Resources Limited and operated by Crows Nest Resources Limited.

Access to the project area is 24 km northeast from Merritt along Highway 5, then 5 km south. Sage brush covered grazing land of moderate relief is characteristic of the licence area.

The coal measures lie within the Coldwater Formation, Tertiary Age. They occupy a depression in Triassic volcanics and are also bounded by Jurassic intrusives and by younger volcanics. Six to seven seams have been recorded in the predominantly conglomeratic sandstone strata.

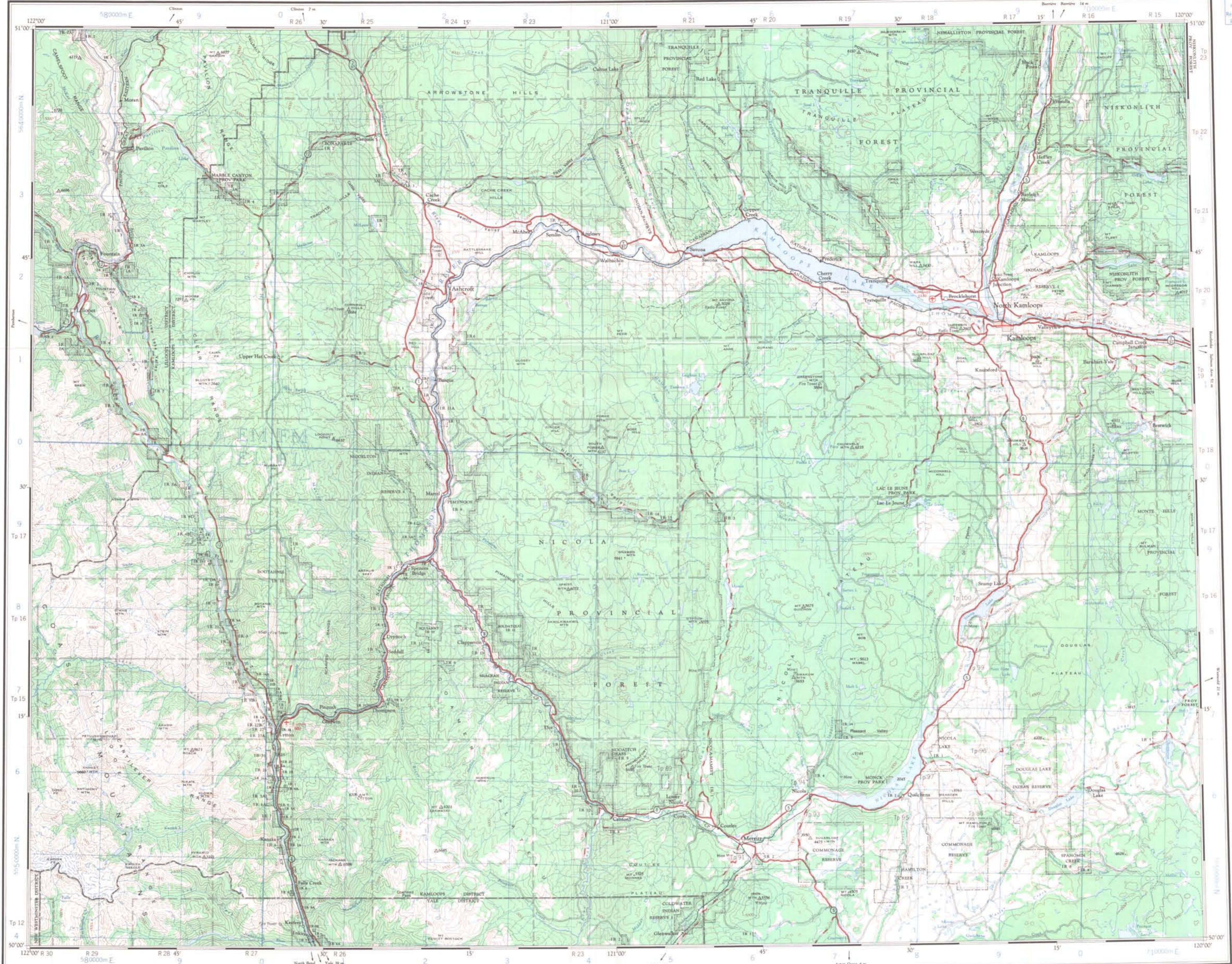
Prior to 1980, scattered mapping and excavating was done in the Quilchena coal basin. No detailed geological map was filed. The 1980 exploration included detailed mapping and rotary drilling totalling 523 metres.

The property is regarded as a thermal prospect. No quality analysis has been done but High Volatile Bituminous B coal is expected. Initial work indicates some underground potential but little if any open pit potential. Further exploration is required before coal resources can be estimated on this early grass roots project.

2.0 Location

Enclosure No. 1 Location Index Map.

Quilchena Coal Prospect is located in the Merritt Coalfield in South-central British Columbia, Township 91, Kamloops Division of Yale Land District, NTS 92I, 1 and 2. The licences are located at N. Lat. $50^{\circ}06'$, W Long. $120^{\circ}30'$, along Quilchena Creek, south of Nicola Lake.



Military users refer to this map as Reference to other maps pour usage militaire. SERIES A 502 SERIE MAP 92-1 CARTE EDITION 2 MCE EDITION

THE DECLINATION OF THE COMPASS NEEDLE IN 1960 DÉCLINAISON MAGNÉTIQUE EN 1960

Obtained by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, 1960 from large scale maps. Printed 1962.

ASHCROFT BRITISH COLUMBIA WEST OF SIXTH MERIDIAN - OUEST DU SIXIÈME MÉRIDIEN Scale 1:250,000 Échelle

Projection Transverse de Mercator Réseau géodésique nord américain 1983

Obtenu par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES MINES ET DES BÉLÉGES TECHNIQUES, en 1960.

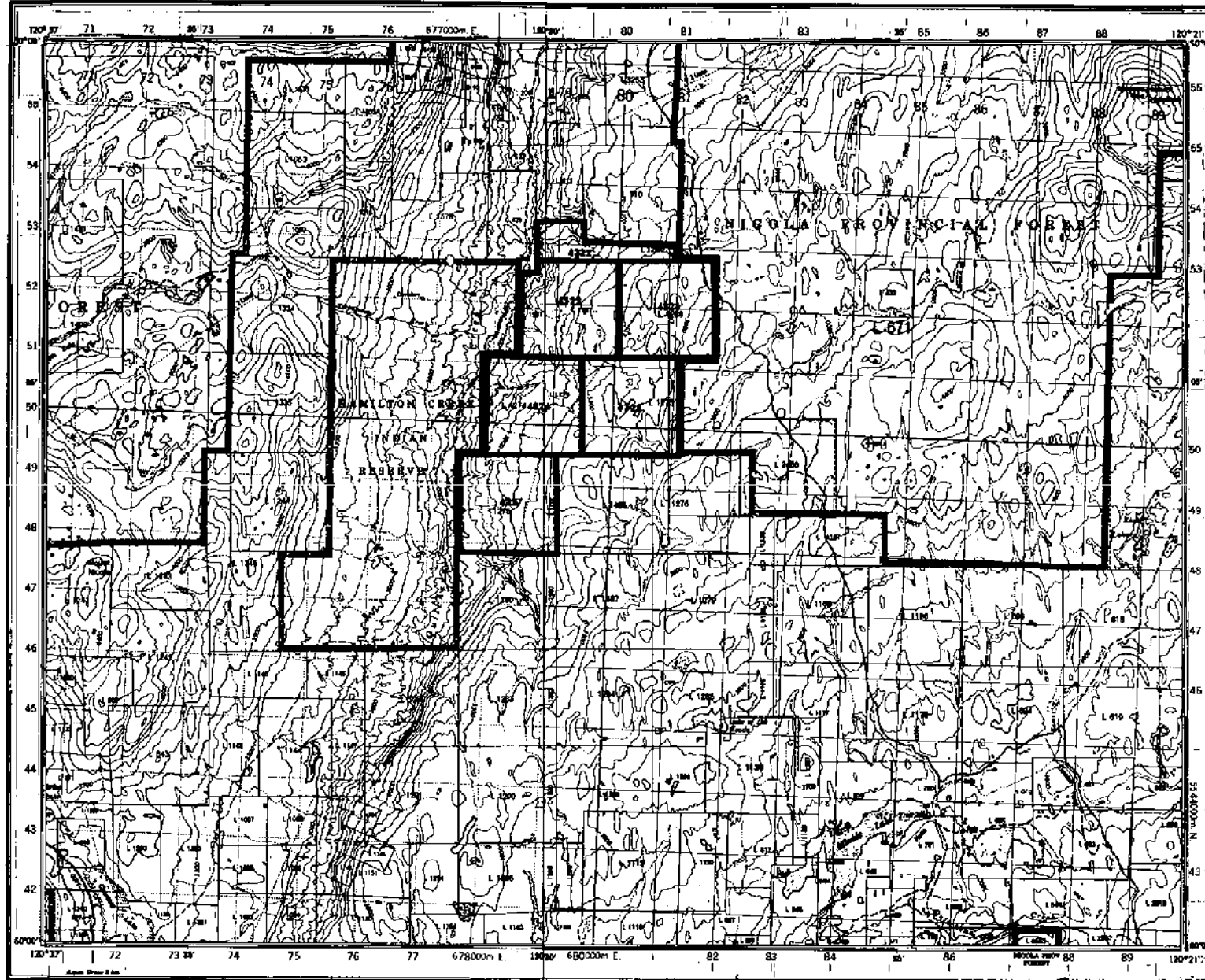


TEN THOUSAND METRE UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 10. Includes a table for UTM coordinates and a fire tower information box.

CARTER HARRING LIMITED logo and contact information. Large number '166' with 'MI' in a circle. Includes 'ASHCROFT 92-1 EDITION 2' and 'M-Bulckena 80(2)A appendix A'.

APPENDIX B

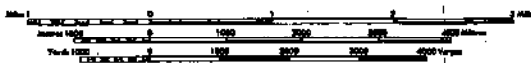
APPENDIX C



166
991

Symbol	Description
.....	High surface of water
.....	Low surface of water
.....	High surface of water
.....	Low surface of water
.....	High surface of water
.....	Low surface of water
.....	High surface of water
.....	Low surface of water

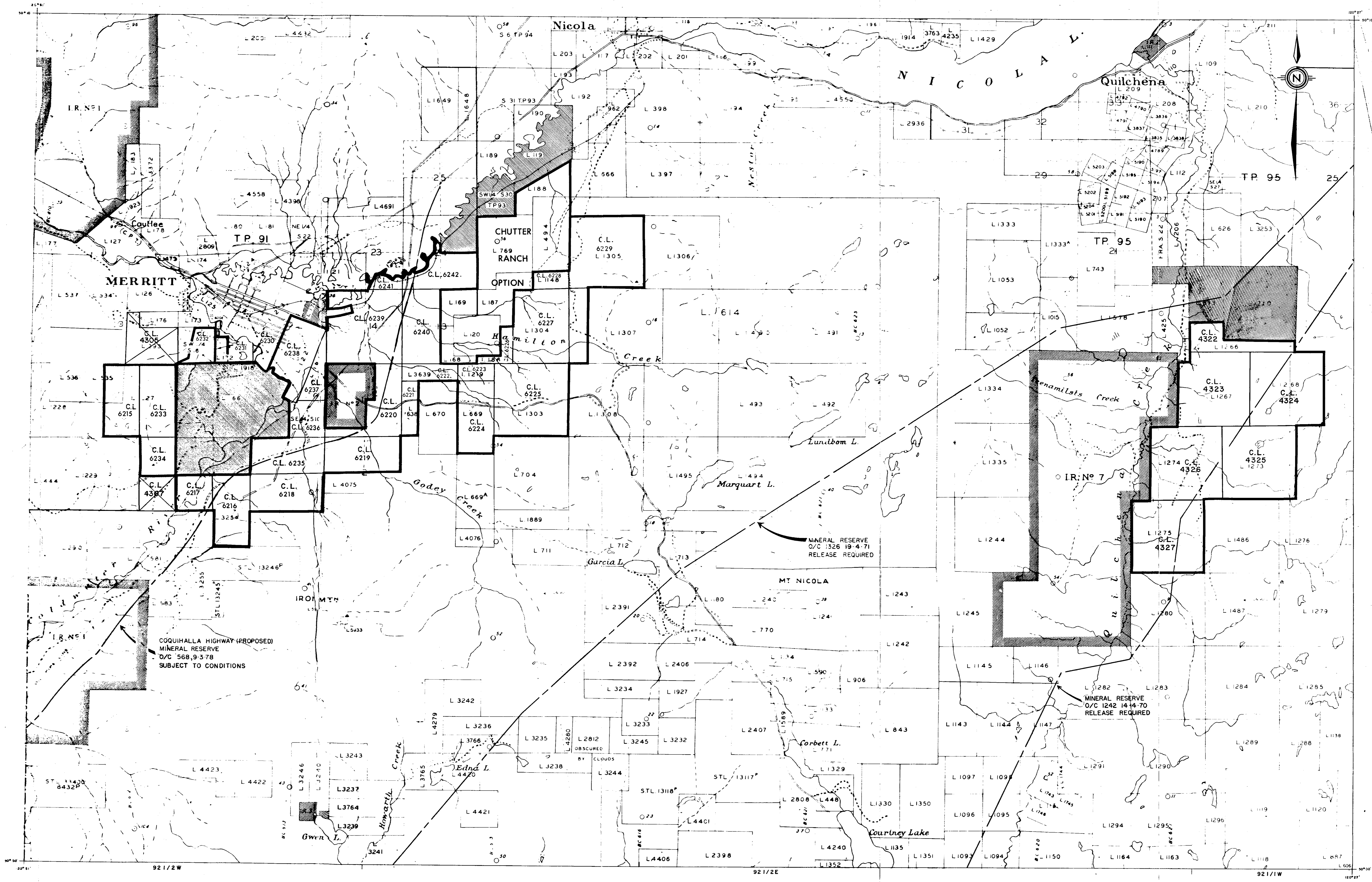
BRITISH COLUMBIA



M-Quilchena, 80(2)A

Crows Nest Resources Limited	
ENGINEERING	
QUILCHENA	
B.C.	
COAL PROSPECTS MAP	
KAMLOOPS DIVISION OF YALE LAND DISTRICT	
BRITISH COLUMBIA	
NTS 92-1/12	
AUTHOR: P. GILMAR	SCALE: 1:100,000
DATE: 81-08-25	REVISED
ENCLOSURE NO.	DRAWING NO. AA535

MERRITT COMPOSITE



LEGEND

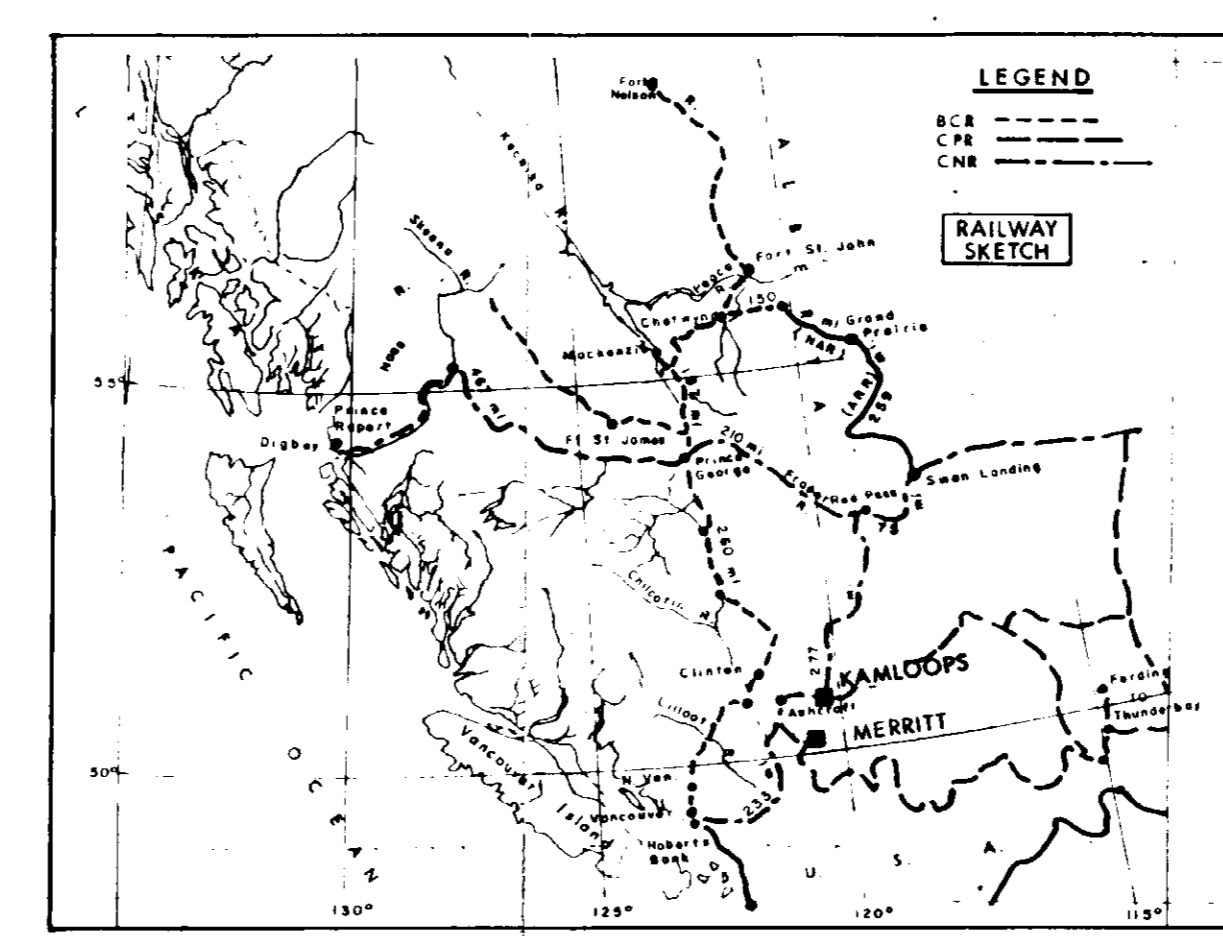
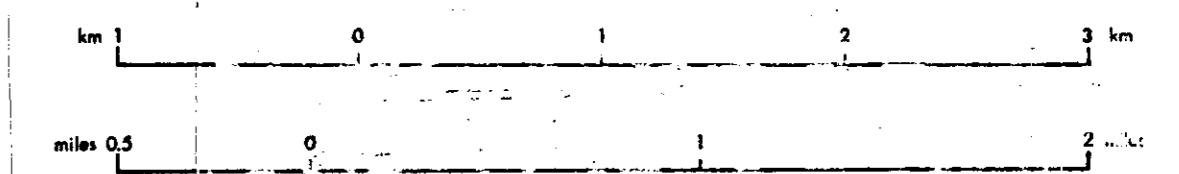
Drill hole	Open pit or strip-pit area	Alienated Coal Rights
Proposed drill hole	Stream tracing	Coal Licences
Shaft	Access road	Forfeited Coal Licences
Trench or open cut	Exploration road	
	Proposed exploration road	

SCALE 1:31,680

COAL TITLES REFERENCE MAP MERRITT COMPOSITE

DEPARTMENT OF MINES AND PETROLEUM RESOURCES, VICTORIA, B.C.
 FOR INFORMATION AND MAP COPIES APPLY TO THE OFFICE OF THE CHIEF GOLD COMMISSIONER VICTORIA, B.C.

Map prepared from Air Interim 921/182 (Parts)
 Aerial photographs dated 1946, 1949
 Completed 16/11/78, by D.H.



Crows Nest Resources Limited		
EXPLORATION		
PIC		MERRITT AREA B.C. (M2)
LAND MAP		
SHELL-CNRL LICENCES: MERRITT (EAST & WEST) QUILCHENA		
921/182		
AUTHOR: COAL	SCALE: 1:31,680	ENCLOSURE No: Appendix 5
DATE: FEB. 1979	REVISED: JUNE, 27, 1980	DRAWING No: HH-18
To Accompany		

APPENDIX D



Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

APPLICATION TO EXTEND TERM OF LICENCE

I, Bolton Agnew (Name) agent for Shell Canada Resources (Name)
P.O. Box 100 (Address)
Calgary, Alberta, T2P 2H5 (Address)

Valid FMC No. 187621

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). 4322 - 4327 Incl.
6 Licences in the Kamloops Division of Yale Land District - 1373 hectares
for a further period of one year.

2. Property name Quilchena
3. I am allowing the following Coal Licence(s) No(s). to forfeit None
4. I have performed, or caused to be performed, during the period October 26 to December 10, 19 80, work to the value of at least \$ 74,940 on the location of coal licence(s) as follows:

CATEGORY OF WORK

CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
Geological mapping	<u>4322 - 4327 Incl.</u>	<u>\$ 6,335</u>
Surveys: Geophysical		
Geochemical		
Other (Location)	<u>4325, 4326</u>	<u>2,100</u>
Road construction		
Surface work		
Underground work		
Drilling	<u>4325, 4326</u>	<u>55,105</u>
Logging, sampling, and testing	<u>4325, 4326</u>	<u>to date 11,000</u>
Reclamation		
Other work (specify)		
Off-property costs		<u>400</u>

5. I wish to apply \$ 74,940 of this value of work on Coal Licence(s) No(s). 4322 - 4327 Incl.
6. I wish to pay cash in lieu of work in the amount of \$ on Coal Licence(s) No(s).
7. The work performed on the location(s) is detailed in the attached report entitled Quilchena Coal Property, B.C., Geological Report 1980 will be submitted in ninety days

1980.12.22 (Date) (Signature)

Land Supervisor (Position)

CATEGORY OF WORK

GEOLOGICAL MAPPING

Yes No

	Area (Hectares)	Scale	Duration
Reconnaissance	1,500	1:5,000	12 Man-Days
Detail: Surface	1	1:5,000	4 Man-Days
Underground			

*Other (specify)

Total Cost \$ 6,335

GEOPHYSICAL/GEOCHEMICAL SURVEYS

Yes No

Method

Grid

Topographic Location Surveys

*Other (specify)

Total Cost \$ 2,100

ROAD CONSTRUCTION

Yes No

Length Width

On Licence(s) No(s)

Access to

Total Cost \$

SURFACE WORK

Yes No

	Length	Width	Depth	Cost
Trenching	.....	.....	.....	.....
Seam Tracing	.....	.....	.....	.....
Crosscutting	.....	.....	.....	.....

*Other (specify)

Total Cost \$

UNDERGROUND WORK

Yes No

	No. of Adits	Maximum Length	No. of Holes	Total Metres	Cost
Test Adits	.....	.....	.....	.....	.....

*Other workings

Total Cost \$

DRILLING

Yes No

	Hole Size	No. of Holes	Total Metres	Cost
Core: Diamond	.....	.....	.....	.....
Wireline	.....	.....	.....	.....
Rotary: Conventional	5-5/8 inches	2	523	.....
Reverse circulation	.....	.....	.....	.....

*Other (specify)

Contractor Simpson Drilling

Where is the core stored? CNRL Lab. Fernie, B.C.

Total Cost \$ 55,105

LOGGING, SAMPLING AND TESTING

Yes No

Lithology: Drill samples	<input checked="" type="checkbox"/>	Core samples	<input checked="" type="checkbox"/>	Bulk samples	<input type="checkbox"/>
Logs: Gamma-neutron	<input checked="" type="checkbox"/>	Density	<input checked="" type="checkbox"/>		
Testing: Proximate analysis	<input type="checkbox"/>	FSI	<input type="checkbox"/>	Washability	<input type="checkbox"/>
Carbonization	<input type="checkbox"/>	Petrographic	<input type="checkbox"/>	Plasticity	<input type="checkbox"/>

*Other (specify)

To Date Total Cost \$ 11,000

OTHER WORK (specify details)

.....

.....

Total Cost \$

On-property costs \$ 74,540

Off-property costs 400

Total Expenditures \$ 74,940

1980.12.22

(Date)

(Signature)

Manager - Accounting, CNRL

(Position)

*A full explanation of other work is to be included.

APPENDIX H

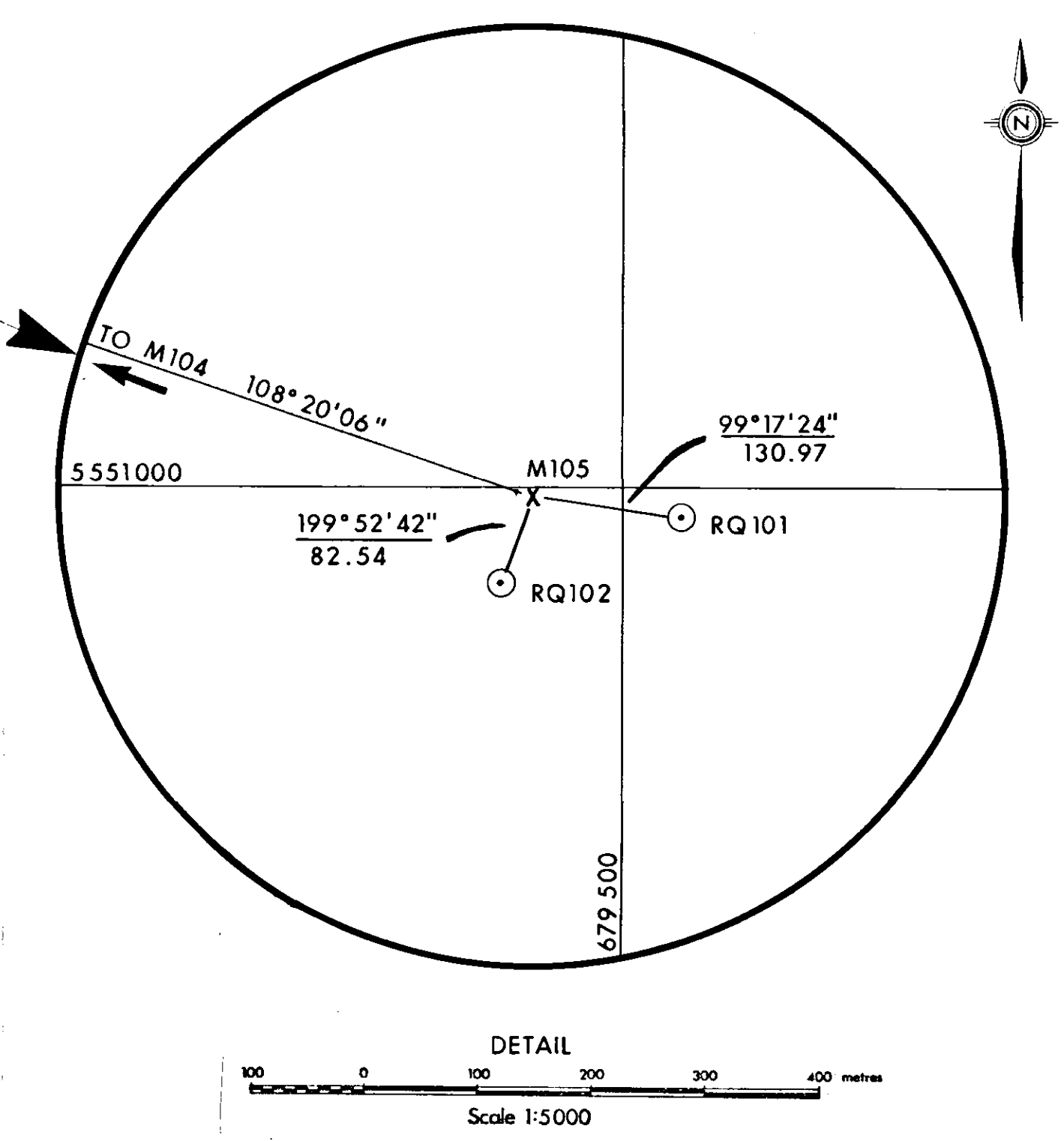
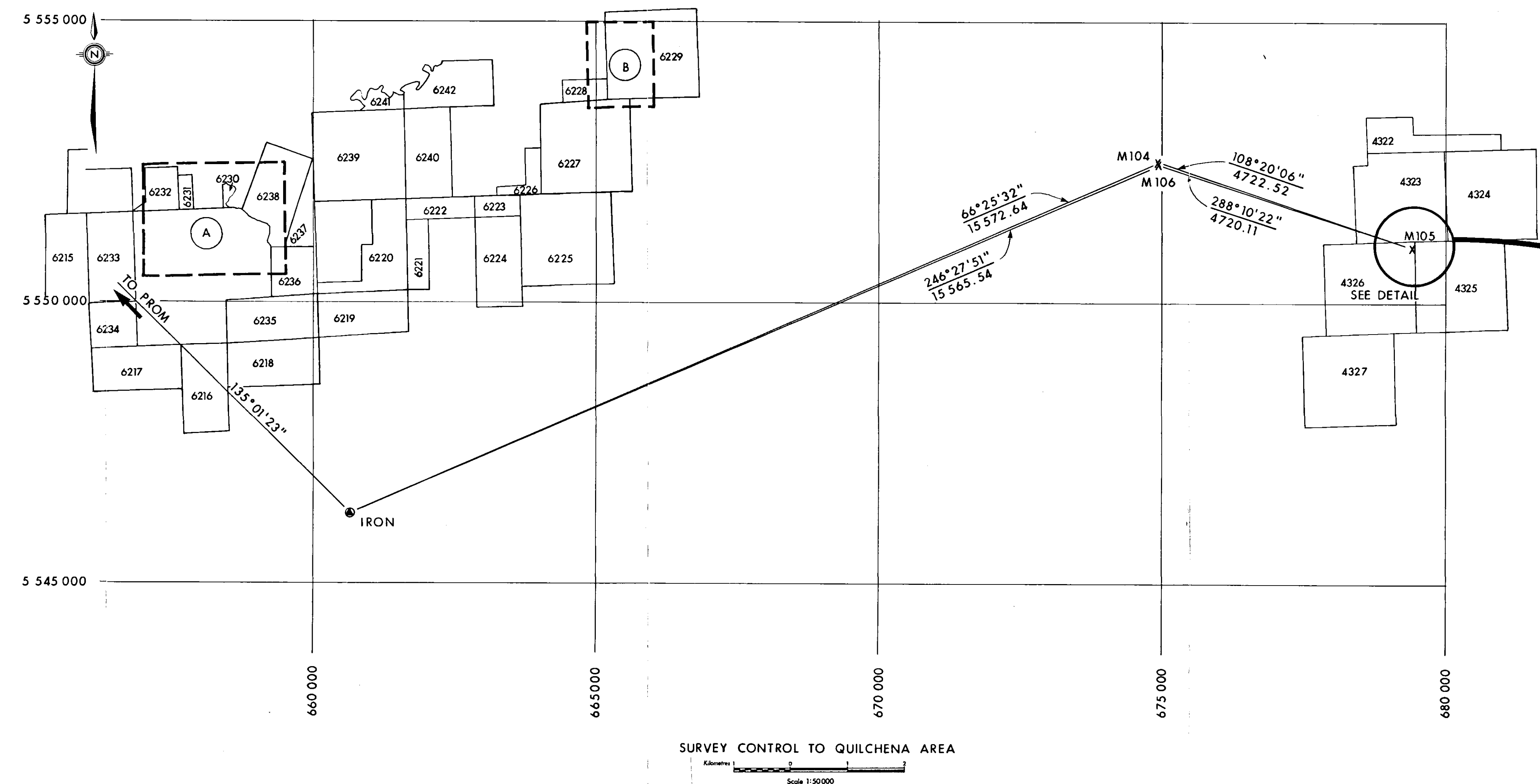
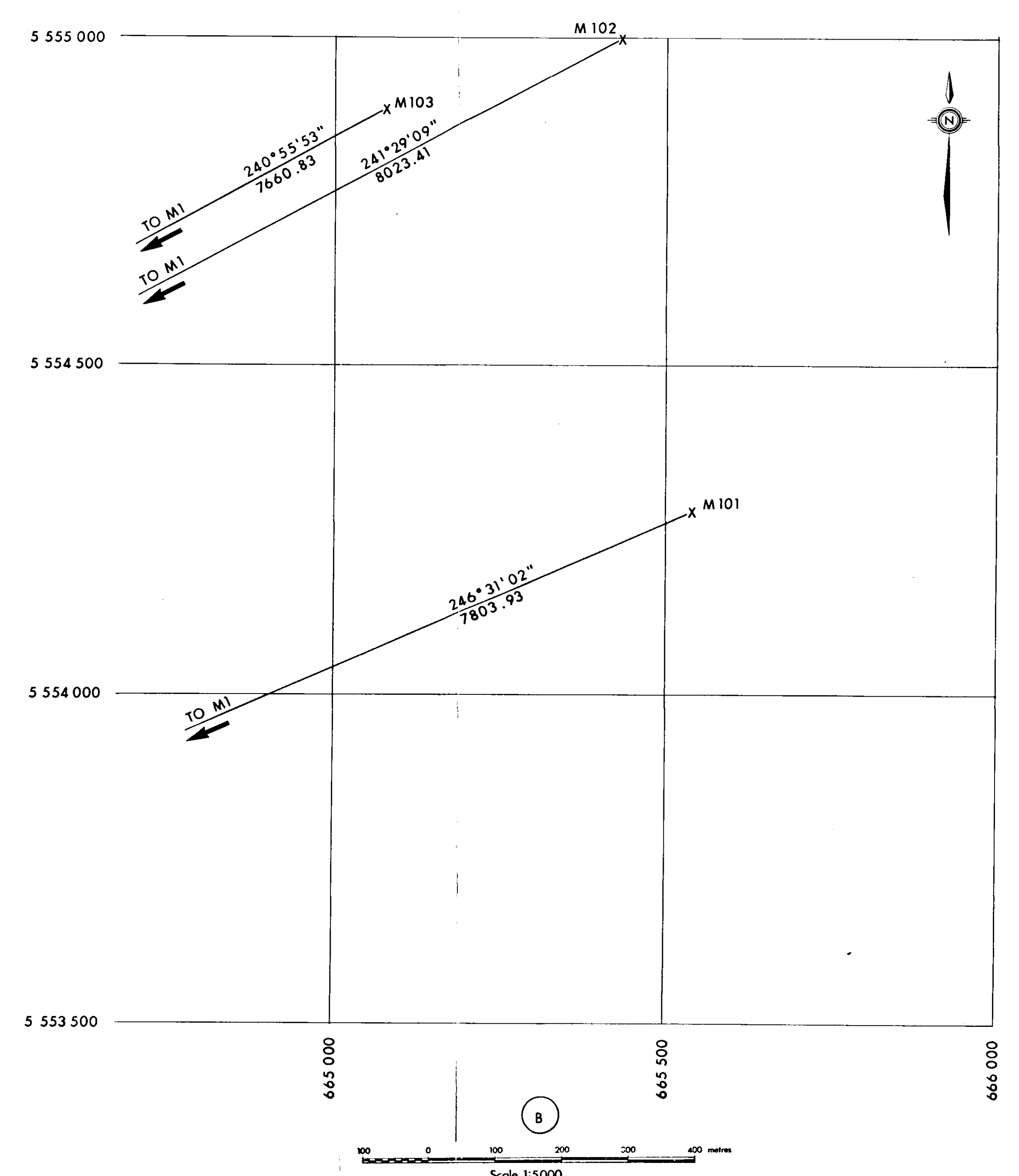
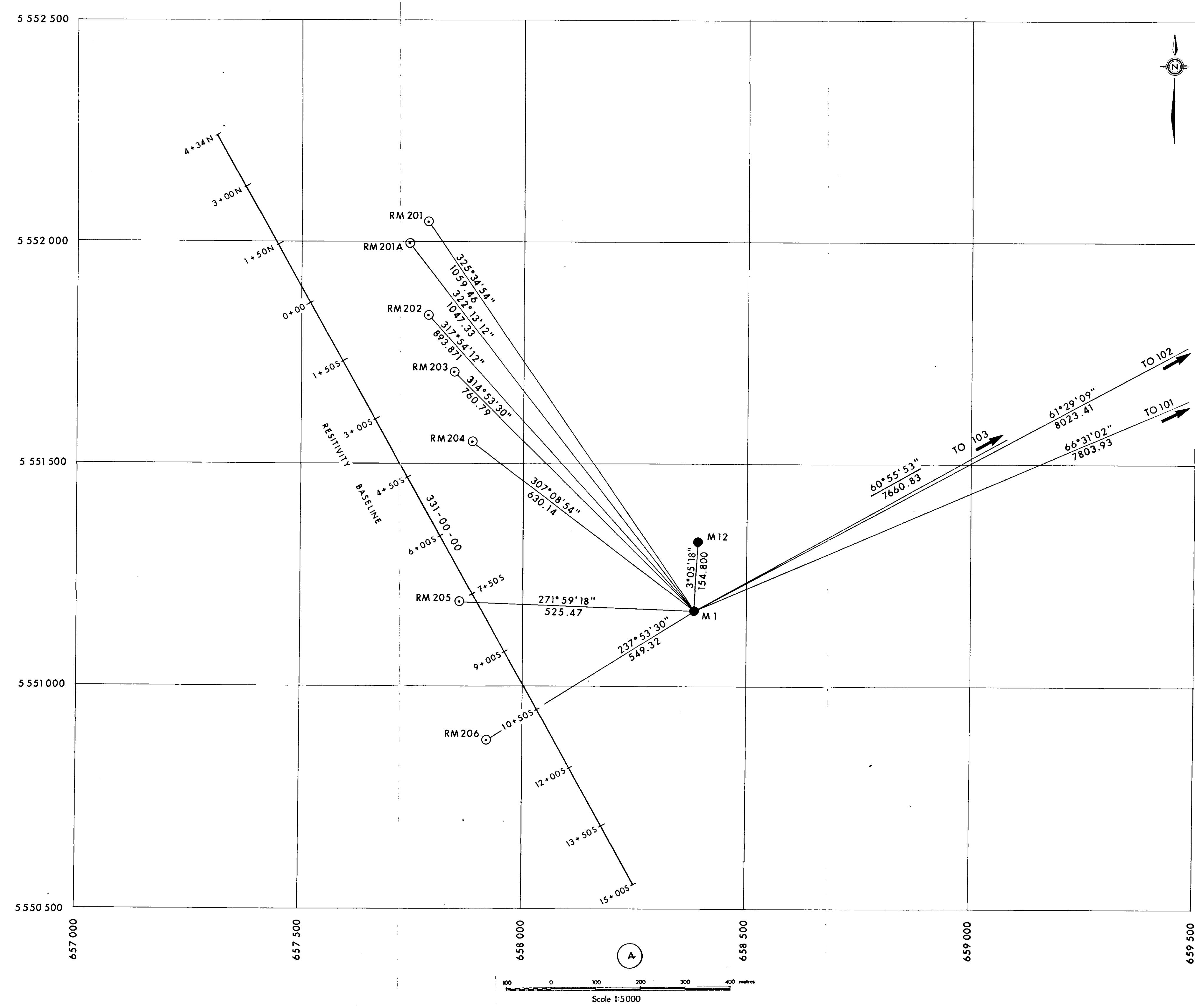


TABLE OF COORDINATES

STATION	NORTHING	EASTING	ELEVATION
IRON	5 546 250.73	660 666.38	1092.88
PRCM	5 562 093.82	644 836.04	1732.68
M 11	5 561 168.48	658 383.16	706.57
M 12	5 561 323.06	658 381.51	695.20
A 101	5 554 278.14	666 540.77	869.05
A 102	5 554 998.67	666 433.33	826.01
A 103	5 554 890.55	666 079.03	763.00
M 104	5 552 478.86	674 938.35	1210.25
M 105	5 550 993.28	679 422.12	968.71
M 106	5 562 466.41	674 937.46	1206.97

RESISTIVITY BASELINE		
0+00	5 551 862	657 522
1+50 N	5 551 994	657 460
3+00 N	5 552 125	657 377
4+34N	5 552 242	657 312
1+50 S	5 551 732	657 595
3+00 S	5 551 600	657 668
4+50 S	5 551 469	657 740
6+00 S	5 551 338	657 813
7+50 S	5 551 207	657 886
9+00 S	5 551 075	657 959
10+50 S	5 550 944	658 031
12+00 S	5 550 813	658 104
13+50 S	5 550 682	658 177
15+00 S	5 550 551	658 250
16+50 S	5 550 420	658 322

DRILL HOLES			
RM 201	5 562 042.46	657 784.33	608.24
RM 201 A	5 551 996.26	657 741.34	607.11
RM 202	5 551 831.75	657 783.93	605.73
RM 203	5 551 706.42	657 844.19	607.37
RM 204	5 551 540.01	657 900.90	612.87
RM 205	5 551 384.71	657 958.02	618.76
RM 206	5 550 876.50	657 917.87	668.01
RQ 101	5 550 972.14	679 551.37	968.30
RQ 102	5 550 916.66	679 384.05	945.95



- LEGEND
- — 2nd ORDER CONTROL STATION
 - — FOUND 12" SPIKE
 - X — PLANT 12" SPIKE
 - — DRILL HOLE

SURVEY DONE BY Sheltech Canada, 1980.
 ALL DISTANCES ARE IN METRES AND HAVE BEEN REDUCED TO THE U.T.M. PLANE.
 ALL BEARINGS ARE REFERRED TO 123°W

166

M-01, Merritt, 88/23A

Sheltech Canada

Crows Nest Resources Limited
ENGINEERING

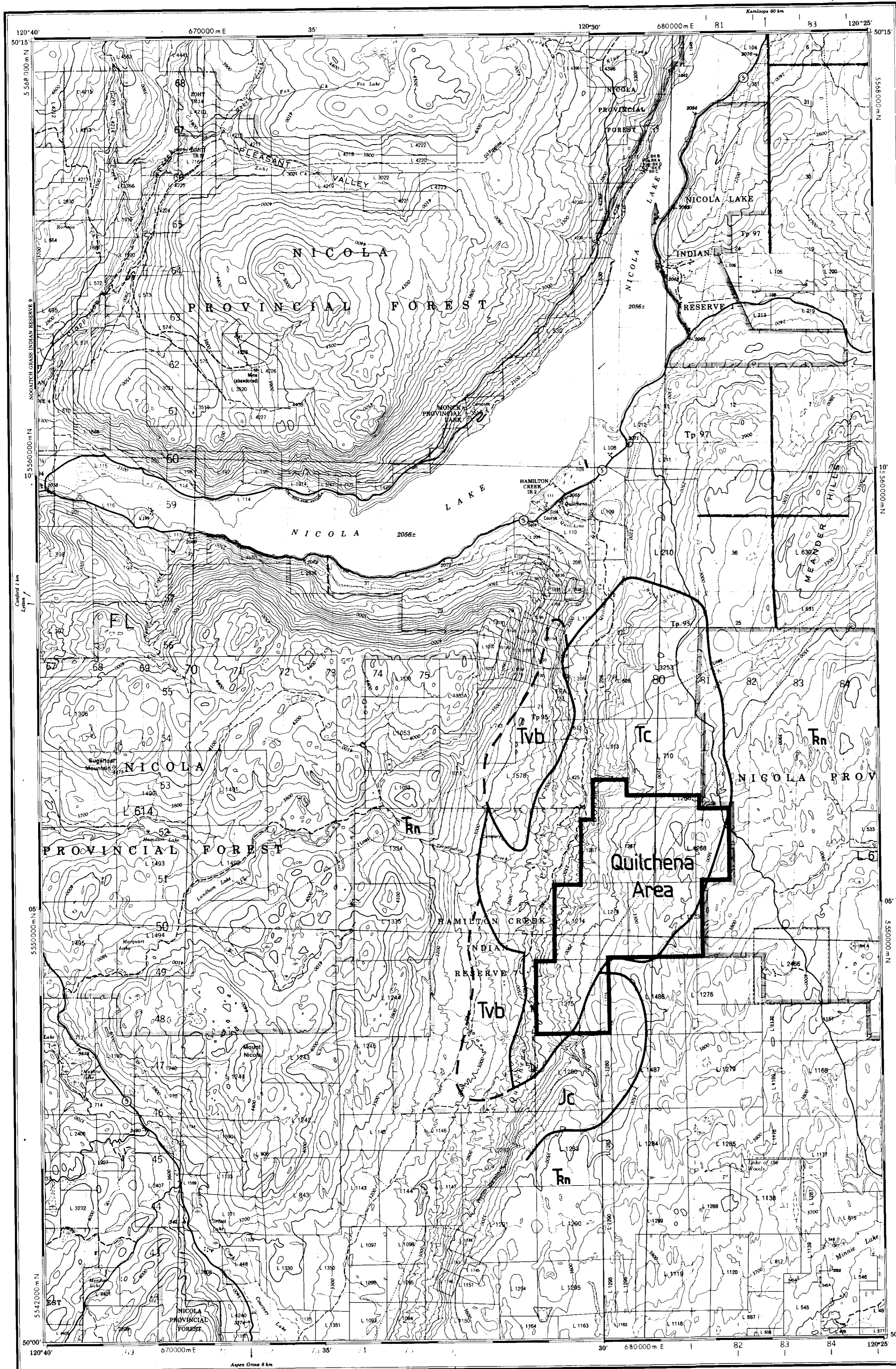
MERRITT - QUILCHENA
B.C.

TRAVERSE SURVEY MAP

M3

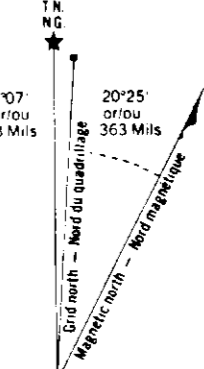
AUTHOR: SHELTECH	SCALE: AS SHOWN	ENCLOSURE No: 000.1
DATE: 12/24	REVISED:	DRAWING No: HA-69
To Accompany:		

APPENDIX I



ABBREVIATIONS ABRÉVIATIONS

Aband	Abandoned	Abandonné	Ab
C	Cemetery	Cimetière	C
CO	County	Comté	CO
E	Elevator	Élévateur	E
F	Ferry	Traversier	F
IR	Indian Reserve	Réserve indienne	IR
H	Hospital	Hôpital	H
L	Lot	Lot	L
Micro	Microwave	Micro-ondes	Micro
Mun	Municipality	Municipalité	Mun
P	Post Office	Bureau de poste	P
PH	Power House	Centrale électrique	PH
RCMP	Royal Canadian Mounted Police	Gendarmes Royaux Canadiens	RCMP
Res	Reservoir	Reservoir	Res
Trans Sta	Transformer Station	Poste de transformateurs	Trans Sta
TFL	Tree Farm Licence	Licence de sylviculture	TFL



Utiliser le diagramme pour obtenir les valeurs numériques
DECLINAISON MOYENNE APPROXIMATIVE
AU CENTRE DE LA CARTE EN 1987
Variation annuelle décroissante 4.7

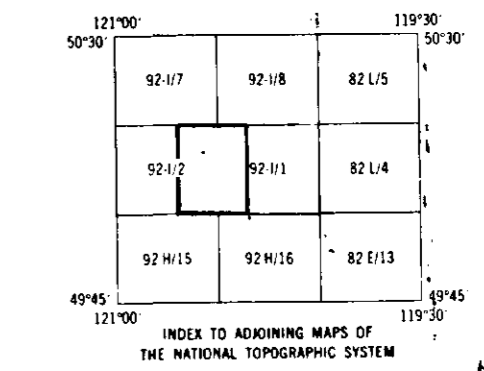
ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 10
QUADRILLAGE DE MILLE MÈTRES
TRANSVERSE UNIVERSEL DE MERCATOR

LEGEND

- Tvb - VALLEY BASALT
- TKv - KAMLOOPS VOLCANICS
- Tc - COLDWATER BEDS
- Jc - COASTAL INTRUSIONS
- TRn - NICOLA VOLCANICS

Roads
 hard surface, all weather dual highway more than 2 lanes
 hard surface, all weather 2 lanes less than 2 lanes
 loose or stabilized surface, all weather 2 lanes or more less than 2 lanes
 loose surface, dry weather
 unclassified streets
 cart track

CONVERSION SCALE FOR ELEVATION
 Metres 30 20 10 0 50 100
 Feet 100 50 0 100 200 300
 CONTOUR INTERVAL 100 FEET
 Elevations in Feet above Mean Sea Level
 North American Datum 1927
 Transverse Mercator Projection



M-Quilchena SO(2)A

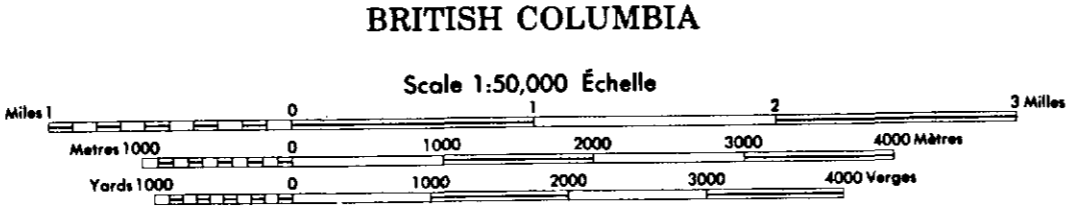
Crows Nest Resources Limited
EXPLORATION

QUILCHENA PROSPECTS

REGIONAL GEOLOGY MAP

104

Appendix I		
AUTHOR: P. Gilmer	SCALE: 1:50,000	ENCLOSURE No:
DATE: 81-03-17	REVISED:	DRAWING No: HE-70A
To Accompany:		



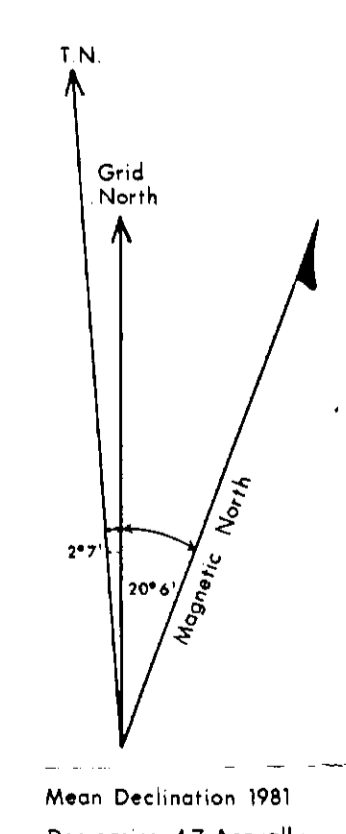


NTS Part of 921/12

SCALE 1:5000
 FORM LINE INTERVAL 5 METRES
 Zone 10 UTM Grid System

LEGEND

- ACCESS TRAIL (position approximate)
- VOLCANIC BOUNDARY
- BEDDING ATTITUDE
- QUATERNARY COVER
- COLDWATER BEDS



M-Quilchena 92(2) 9

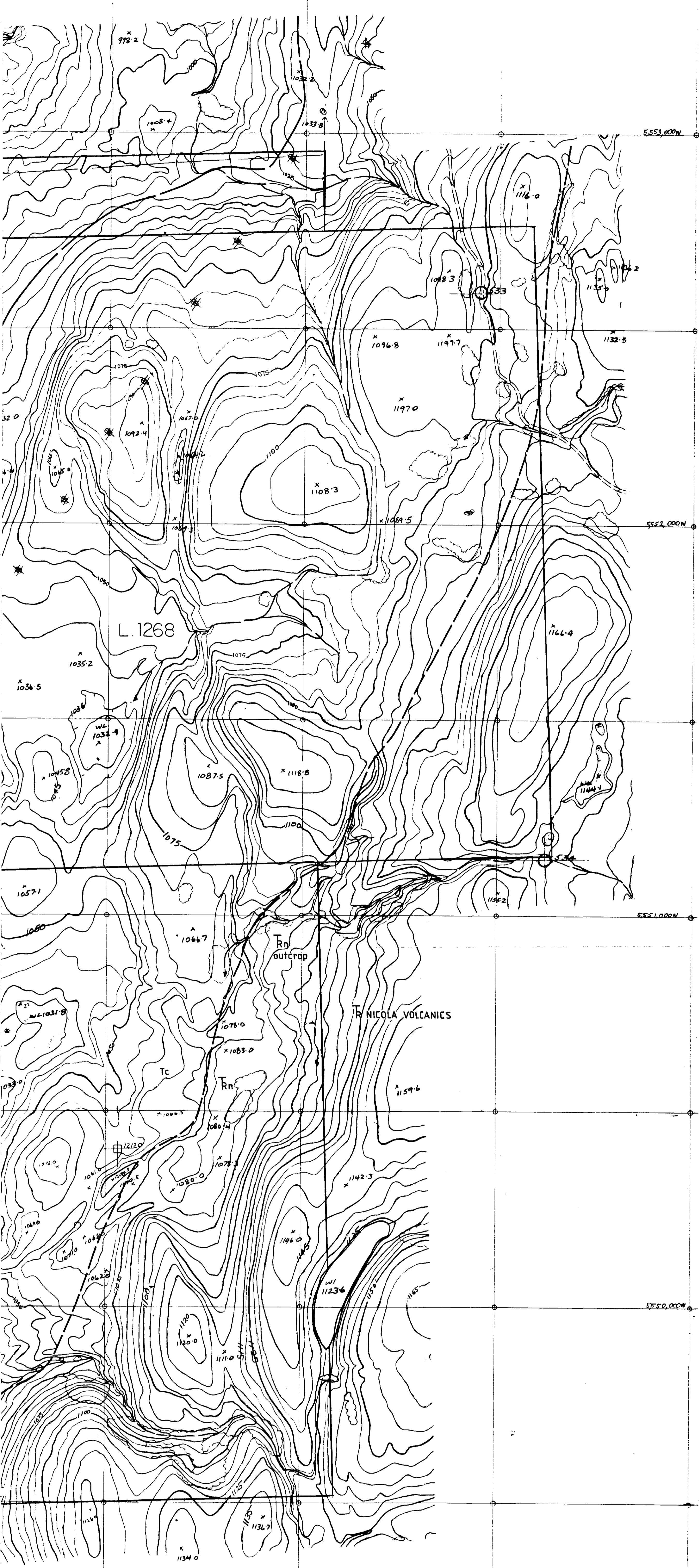
Crows Nest Resources Limited
 EXPLORATION
 QUILCHENA P.C. (M05)

QUILCHENA PROSPECT 1980
GEOLOGY COMPILATION MAP

AUTHOR: P.GILMER	SCALE: 1:5000	DATE: 81-03-17	REVISION:	DRAWING No: HE-70
To Accompany:				

166

105b



NTS Part of 921/12

METRES 0 100 200 300 400 500 METRES

SCALE 1:5000

FORM LINE INTERVAL: 5METRES

Zone 10 UTM Grid System

LEGEND

- ACCESS TRAIL (position approximate)
- VOLCANICS BOUNDARY
- BEDDING ATTITUDE
- QUATERNARY COVER
- COLDWATER BEDS

M-Quilchena 80(2) A

Crows Nest Resources Limited
EXPLORATION

QUILCHENA B.C. **M05**

QUILCHENA PROSPECT 1980
GEOLOGY COMPILATION MAP

AUTHOR: P.GILMAR	SCALE: 1:5000	Appendix J
DATE: 81-03-17	REVISED:	DRAWING No: HE-70
To Accompany		

166

CONFIDENTIAL
OPEN FILE

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

00 166
(2)

ROTARY HOLE RQ-101

DATE: November 26 - December 2, 1980
LOCATION: Quilchena, East boundary of Licence 4326
RIG TYPE: Failing 1500, single wall
ELEVATION (m): 965.30
NORTHING: 5550972.14
EASTING: 679551.37
TOTAL DEPTH (m): 246
ANGLE: Vertical
AZIMUTH: -
COMMENTS: Full log suite to TD, Quaternary to 6.6m.

COAL INTERSECTIONS

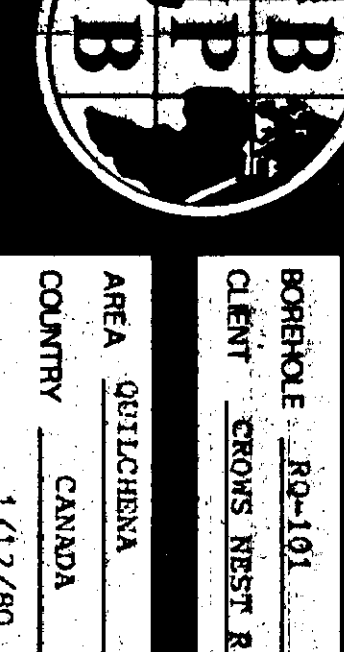
<u>THICKNESS METERS</u>	<u>DEPTH METERS</u>
1.1	134.3 - 135.4
1.6	156.4 - 158.0
1.4	159.0 - 160.4
0.7	162.9 - 163.6
0.8	164.4 - 165.2
0.5	167.0 - 167.5
0.7	168.2 - 168.9
1.3	170.0 - 171.3
0.5	172.2 - 172.7
0.9	175.7 - 176.6
0.5	177.4 - 177.9

ROTARY HOLE RQ-102

DATE: December 2-9, 1981
LOCATION: Quilchena, west boundary Licence 4325
RIG TYPE: Failing 1500, single wall
ELEVATION (m): 945.95
NORTHING: 5550915.66
EASTING: 679394.05
TOTAL DEPTH (m): 276
ANGLE: Vertical
AZIMUTH: -
COMMENTS: Full log suite to TD, Quaternary to 5.8 m

COAL INTERSECTIONS

<u>THICKNESS METERS</u>	<u>DEPTH METERS</u>	
1.0	16.0 - 17.0	
2.2	20.4 - 22.6	
1.8	23.2 - 25.0	
2.0	26.2 - 28.2	
1.0	41.8 - 42.8	SHALY
2.8	43.8 - 45.6	



BOREHOLE R4-101 (L01)
CLIENT CHROMS NEST RESOURCES
AREA QUILICHINA
COUNTRY CANADA
DATE LOGGED 1/17/98
LOG LOSS 1.0m

COAL LITHOLOGY LOG
BOREHOLE DATA
 TEMPERATURE AT 100m: 22.0°C
 TEMPERATURE AT 200m: 22.0°C
 TEMPERATURE AT 300m: 22.0°C
 TEMPERATURE AT 400m: 22.0°C
 TEMPERATURE AT 500m: 22.0°C
 TEMPERATURE AT 600m: 22.0°C
 TEMPERATURE AT 700m: 22.0°C
 TEMPERATURE AT 800m: 22.0°C
 TEMPERATURE AT 900m: 22.0°C
 TEMPERATURE AT 1000m: 22.0°C

LOG
SONDE TYPE 166
COAL COMBINATION
LOG SUITE
GAMMA RAY
S DENSITY
CALIPER
WITNESSES

EQUIPMENT AND RECORDING DATA

LOG	SONDE	SOURCE	EQUIPMENT	CALIBRATION	LOG TAPED	TAPPING RECORD SPEED	DIRECT REPLAY	PANEL	J.C. SECS	NORM	FROM	TO	SEAM LOG RUN
GAMMA RAY	166B	160B	160B	371	N	9	D	9	1	1.68	246	0	246
S DENSITY	166B	160B	160B	0040	N	9	D	9	3	7.20	246	0	246
CALIPER	166B	160B	160B		N	9	D	9	3		246	0	246

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

TO	FROM	SEAM	THICKNESS	INTERVAL
213m	210m	151m	137m	
17m	20m	155m	132m	
17m	100m	26m	5m	

INTERVAL TOTAL 58m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOGS	DETAIL SCALE LOGS
18	N-N	100.1	
125	Sonic	100.1	
	P.R.	100.1	

REMARKS
 LOGS NOT TAPED DUE TO ELECTRICAL PROBLEMS

BPB COAL LITHOLOGY LOG

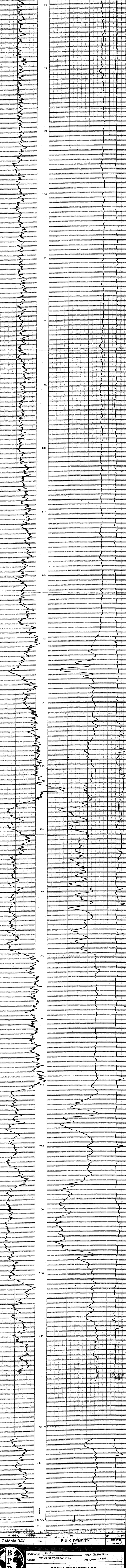
CALIBRATION DATA

JIG No. 371 VALUE 52.0 2" DIAM. JIG CAL DATE 30/11/98 VALUE 310 SOURCE - g/cm³ 8 vs 800 cps
 JIG MARK SHOWN AT ABOVE VALUE -3.3 JIG No. 0040 SPAN 6000 NORM 7.20 3 vs 530 cps

GAMMA RAY DEPTH **BULK DENSITY** g/cm³ **CALIPER** INCHES

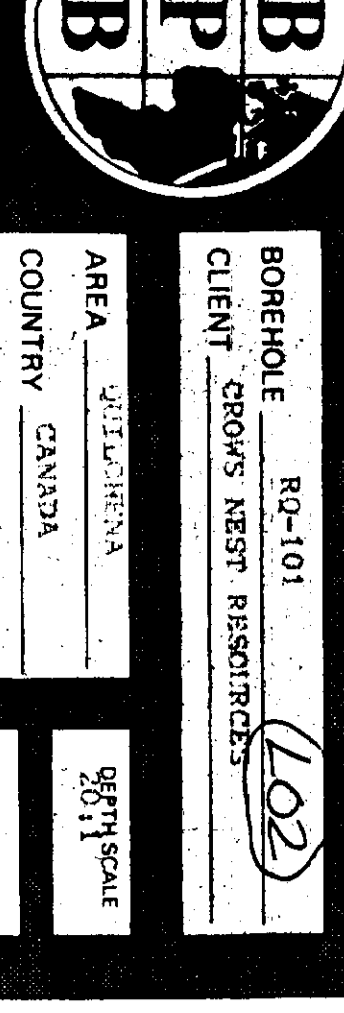
HOLE SIZE CORRECTION DATA

DEPTH (m)	125	13	138	14	145	15	156.58	17	18	19	20	21	22	23	25	30
0																



GAMMA RAY DEPTH **BULK DENSITY** g/cm³ **CALIPER** INCHES

BOREHOLE R4-101 **AREA** QUILICHINA
CLIENT CHROMS NEST RESOURCES **COUNTRY** CANADA
COAL LITHOLOGY LOG



BOREHOLE EQ-101
 CLIENT CROWN'S NEST RESOURCES
 AREA QUILICHANA
 COUNTRY CANADA

DATE LOGGED 1/2/99
 2 OF 4 LOGS

COAL QUALITY LOG
 BOREHOLE DATA refer to lithology log
 OPERATION DATA refer to lithology log
 EQUIPMENT AND RECORDING DATA

LOG
 LOG NUMBER 100
 LOG DATE 1/2/99
 LOG TIME 10:00
 LOG LOCATION EQ-101
 LOG COMMENTS

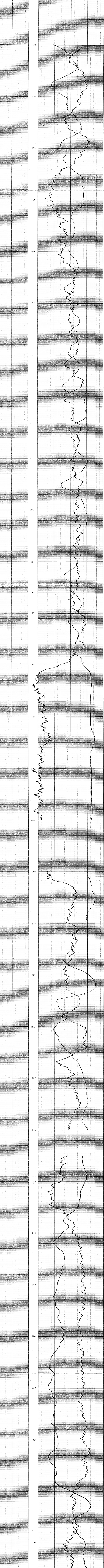
COAL
 COMBINATION
 SIZING
 LOGS SUITE
 GAMMA RAY
 S DENSITY

BPB COAL QUALITY LOG

DEPTH GAMMA RAY
 COAL BULK DENSITY ρ_{cm^3}

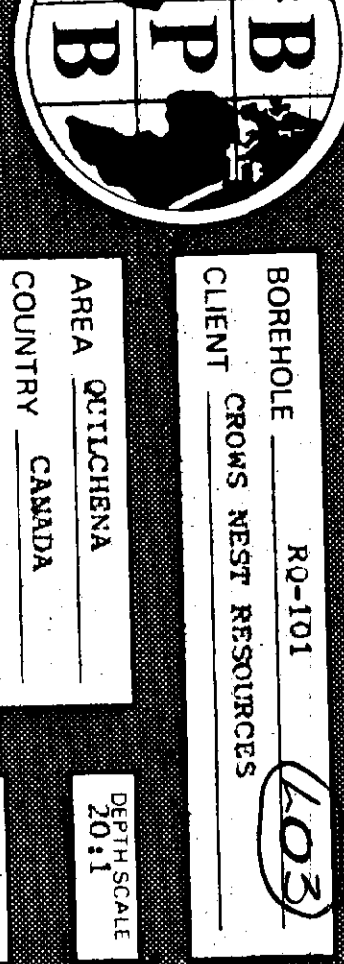
HOLE SIZE CORRECTION DATA

2"	1.2	1.25	1.3	1.35	1.4	1.45	1.5	1.55	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	



DEPTH COAL BULK DENSITY
 GAMMA RAY

116



BOREHOLE RQ2-101
CLIENT CROSSTRESS RESOURCES
AREA QUILCHENA
COUNTRY CANADA
DATE LOGGED 1/17/89

BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

SEAM THICKNESS LOG

LOG

SONDE TYPE
COAL COMBINATION
SONDE
LOG SUITE
CALIPER
BR DENSITY

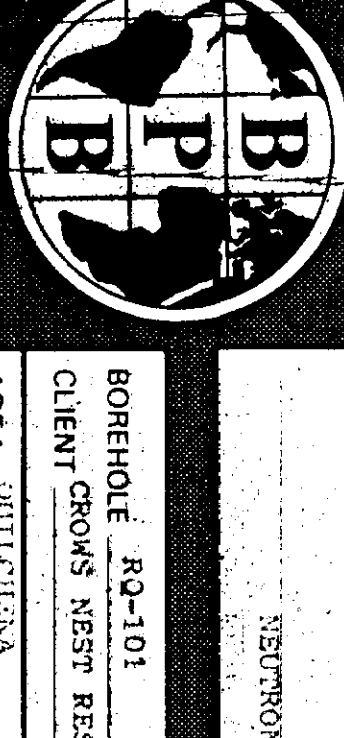
SEAM THICKNESS LOG INTERVALS	
RAW	2396 3138 1818 1372
NET	2138 2098 1558 1372
NET/RAW	178 108 268 58
DEPTH	
FROM	
TO	
REMARKS	LAGS NOT ENTERED

166

B P B SEAM THICKNESS LOG



CALIPER (INCHES)	DEPTH	BED RESOLUTION DENSITY (SRDU)
8	170	15000
7	172	15000
6	174	15000
5	176	15000
4	178	15000
3	180	15000
2	182	15000
1	184	15000
0	186	15000
0	188	15000
0	190	15000
0	192	15000
0	194	15000
0	196	15000
0	198	15000
0	200	15000
0	202	15000
0	204	15000
0	206	15000
0	208	15000
0	210	15000
0	212	15000
0	214	15000
0	216	15000
0	218	15000
0	220	15000
0	222	15000
0	224	15000
0	226	15000
0	228	15000
0	230	15000



1- Gillman 85(3)A
Appendix 6

SECTRON SYSTEMS LTD.
166

BOREHOLE R2-101
CLIENT CRODS NEST RESOURCES
AREA QUILCHENA
COUNTRY CANADA
DATE LOGGED 1/12/99
DATE OF LOGS 1/06/98

BOREHOLE DATA
CORRECTION FACTOR 1.00
TYPING SPEED 9.0
CORRECTION FACTOR 1.00
CORRECTION FACTOR 1.00
CORRECTION FACTOR 1.00

FLUID DATA
TEMPERATURE 1.02
PRESSURE 0.00

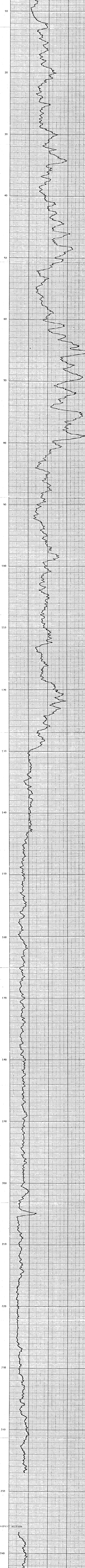
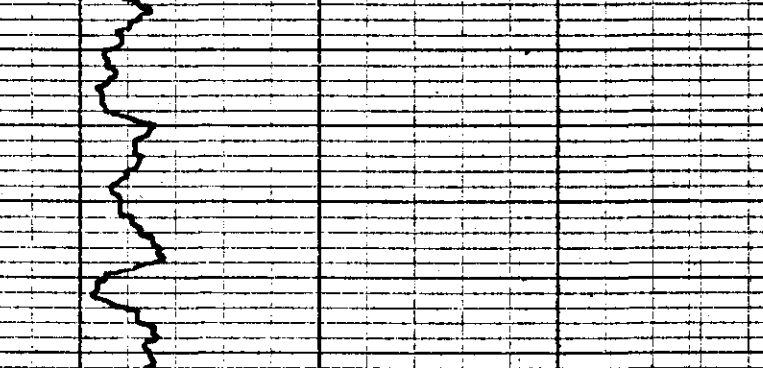
OPERATION DATA
LOG NO. 166

LOG NO. 166

LOG	EQUIPMENT	TAPING	PANEL	CAL CORRECT	DEPTHS	
SONDE	SOURCE	LOG	RECORDS	DEPTH	FROM TO INTERVAL	
N-N	18	2479	175	N	9 D 9 1 7.62	247 0 247

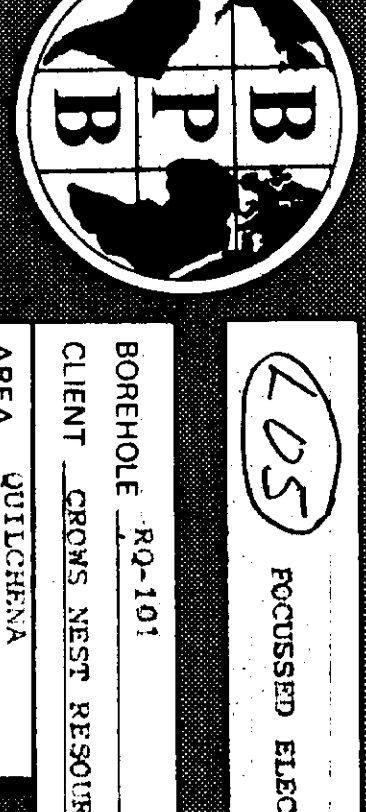
SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALES LOG	REFER TO ADDITIONAL HEADINGS	REMARKS
160B	CCS	100:1	20:1		LOG NOT TAPED
125	Sonic	100:1			
	F ₂₀	100:1			

DEPTH	0	300	400
-------	---	-----	-----



DEPTH	0	300	400
-------	---	-----	-----





LOG ROSSIGNOL ELECTRIC LOG

BOREHOLE #0-101
CLIENT CROWS NEST RESOURCES

AREA OULICHANA
COUNTRY CANADA

DATE LOGGED 1/12/80

DEPTH 5 OF 6 LOGS

BOREHOLE DATA

PERMANENT DATA
ELEVATION OF TO

MEASUREMENTS
DEPTH REACHED 24.3m

CASING SHOE 1.2m

BIT SIZES 1 5/8 TO 1 7/8

CASING SIZES 1 1/2 TO 1 7/8

FLUID DATA

NATURE
LEVEL

VISCOSITY
TEMPERATURE

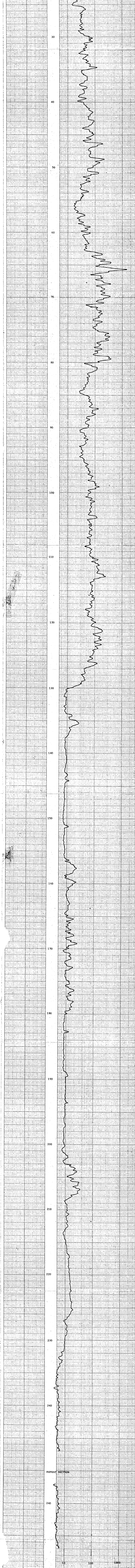
OPERATION DATA

166

EQUIPMENT AND RECORDING DATA

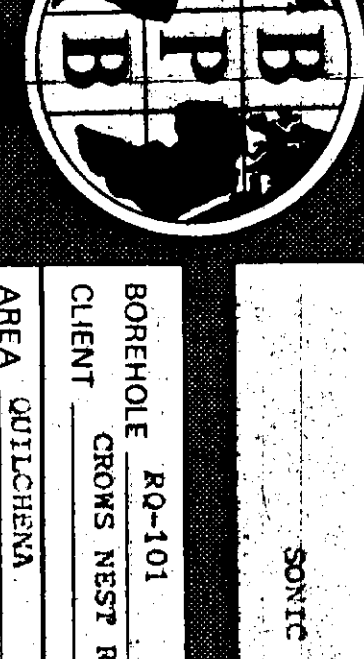
LOG	EQUIPMENT	TAPING	PANEL	CAL COEFF	DEPTHS
	SOURCE	LOG TAPING	RECORDING SPEED	FROM	TO
166	SONIC	1001	1001	247	247

SONDE	LOG	GENERAL SCALE	DETAIL SCALE	REMARKS
160B	CCS	1001	201	REFER TO ADDITIONAL HEADINGS
18	N-N	1001		
125	Sonic	1001		



DEPTH	BOREHOLE	AREA
5	RQ-101	OULICHANA
	CLIENT CROWS NEST RESOURCES	COUNTRY CANADA





SONIC LOG **166**

BOREHOLE RQ-101
 CLIENT CROMS NEST RESOURCES
 AREA JULLICHENA
 COUNTRY CANADA
 DATE LOGGED 1/12/80
 DEPTH SCALE 100' ±
 5 or 6 LOGS

FORMATIONAL DEPOSIT TYPE
 ELEVATION OF P.S.
 LOGGING METHOD
 LOGGING SPEED
 CASING SIZE
 BIT SIZES
 CASING SIZES

FLUID DATA
 TEMPERATURE
 PRESSURE
 GRAVITY
 VISCOSITY

OPERATION DATA
 LOGGING TIME
 LOGGING DATE
 LOGGING LOCATION
 LOGGING DEPTH

EQUIPMENT AND RECORDING DATA

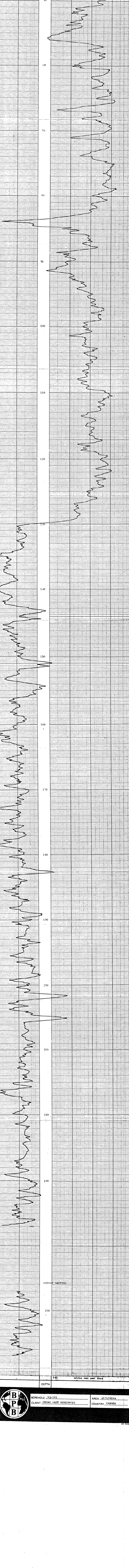
LOG	EQUIPMENT	TAPING	RECORDING	DIRECT	RECORDING	PANEL	CAL	DEPTH
SONDE	SOURCE	LOG	TAPE	SPEED	REPLY	RECORD	COEFF	FROM
		N		D		9	1	247
								0
								247

ADDITIONAL SONDES RUN

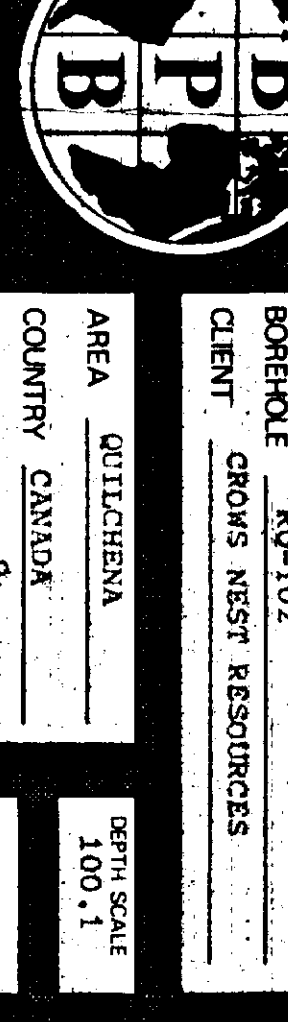
SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
160B	CCS	100ft	20ft
18	N-N	100ft	
	P.F.	100ft	

REMARKS
 LOG NOT TAPED

DEPTH 140 micro sec per foot 40



DEPTH 140 micro sec per foot 40



BOREHOLE RQ-102
CLIENT CROWS NEST RESOURCES
AREA JULLICHENA
COUNTRY CANADA
DATE LOGGED 9/17/80
DEPTH 300.1
LOSS 1.9 G LOSS

COAL LITHOLOGY LOG

BOREHOLE DATA
 ESTIMATED TD 378
 DEPTH TO BIT 378
 DEPTH TO G.L. 378
 DEPTH TO G.M.H. 378

SONDETYPE 15
COAL COMBINATION 15
SONDE 15
LOG BUREAU 15
GAMMA RAY 15
L.S. DENSITY 15

FLUID DATA
 SURFACE PRESSURE 1.277
 TEMPERATURE 100.0
 PH 7.75
 DENSITY 1.00
 VISCOSITY 0.01
 SURFACE TENSION 0.01
 SURFACE TENSION COEFFICIENT 0.01
 SURFACE TENSION COEFFICIENT 0.01
 SURFACE TENSION COEFFICIENT 0.01

EQUIPMENT AND RECORDING DATA

LOG	SONDE	EQUIPMENT	LABORATORY	LOG TAPED	TAPPING RECORD SPEED	CORRECT REPLAY	PANEL SPEED	IC SECS	CAL CORR	DEPTHS FROM	TO	SEAM LOG RUN
GAMMA RAY	160	371	Y	Y	9	D	9	1	1.61	275	0	275
SONIC CALIPER	15	0040	Y	Y	9	D	9	3	6.72	275	0	275

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	TO	INTERNAL
50m	12m	38m
12m	35m	

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL USE	DETAIL LOG SCALE
18	N-N	100:1	
125	Sonic	100:1	

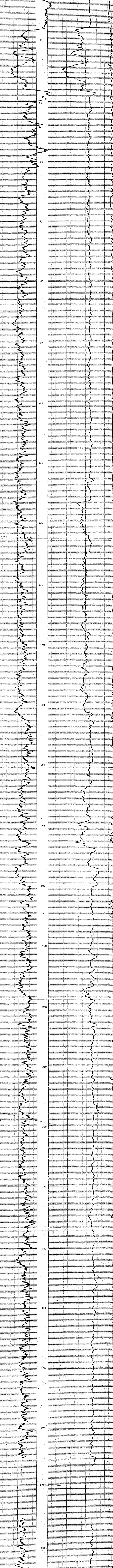
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No.	DATE	VALVE	VALVE	JIG No.	DATE	VALVE	VALVE
371	30/11	2	310	0040	30/11	2	310

GAMMA RAY and **BULK DENSITY** scales

GAMMA RAY	DEPTH	BULK DENSITY (g/cm³)	CALIPER INCHES
0	0	1.38	0
10	10	1.42	0
20	20	1.45	0
30	30	1.48	0
40	40	1.50	0
50	50	1.52	0
60	60	1.54	0
70	70	1.56	0
80	80	1.58	0
90	90	1.60	0
100	100	1.62	0
110	110	1.64	0
120	120	1.66	0
130	130	1.68	0
140	140	1.70	0
150	150	1.72	0
160	160	1.74	0
170	170	1.76	0
180	180	1.78	0
190	190	1.80	0
200	200	1.82	0
210	210	1.84	0
220	220	1.86	0
230	230	1.88	0
240	240	1.90	0
250	250	1.92	0
260	260	1.94	0
270	270	1.96	0



GAMMA RAY and **BULK DENSITY** scales (repeated)

GAMMA RAY	DEPTH	BULK DENSITY (g/cm³)	CALIPER INCHES
0	0	1.38	0
10	10	1.42	0
20	20	1.45	0
30	30	1.48	0
40	40	1.50	0
50	50	1.52	0
60	60	1.54	0
70	70	1.56	0
80	80	1.58	0
90	90	1.60	0
100	100	1.62	0
110	110	1.64	0
120	120	1.66	0
130	130	1.68	0
140	140	1.70	0
150	150	1.72	0
160	160	1.74	0
170	170	1.76	0
180	180	1.78	0
190	190	1.80	0
200	200	1.82	0
210	210	1.84	0
220	220	1.86	0
230	230	1.88	0
240	240	1.90	0
250	250	1.92	0
260	260	1.94	0
270	270	1.96	0

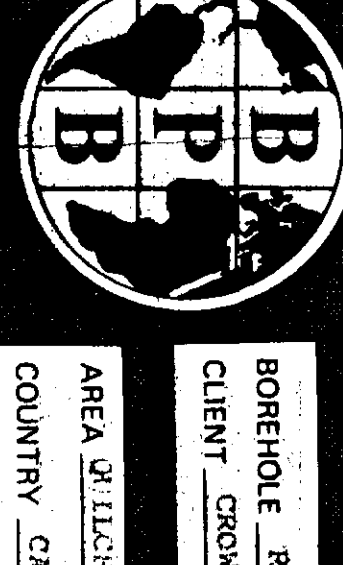
COAL LITHOLOGY LOG

BOREHOLE RQ-102
CLIENT CROWS NEST RESOURCES
AREA JULLICHENA
COUNTRY CANADA



HP A50141

M-Qual Data-60-39A
APPENDIX 5



COAL QUALITY LOG

COAL QUALITY LOG

BOREHOLE: RQ-102
 CLIENT: CROWS NEST RESOURCES
 AREA: QUILCHENA
 COUNTRY: CANADA
 DATE LOGGED: 9/12/90
 DEPTH SCALE: 20.1
 2 or 5 LOGS

BOREHOLE DATA: REFER TO LITHOLOGY LOG
 OPERATION DATA: REFER TO LITHOLOGY LOG
 EQUIPMENT AND RECORDING DATA

COAL COMBINATION SOURCE: SERIAL POSITION: 001
 LOG: 1000
 QUANTITY: 1000
 S. DISBURS: 1
 SOURCE, SOURCE AND CALIBRATION: REFER TO LITHOLOGY LOG

SOIL TYPE: _____
 COAL COMBINATION: _____
 FROM: 50m
 TO: 12m
 INTERVAL: 3m
 LOG SUITE: _____
 GAMMA RAY: _____
 L.S. DENSITY: _____

REMARKS: _____

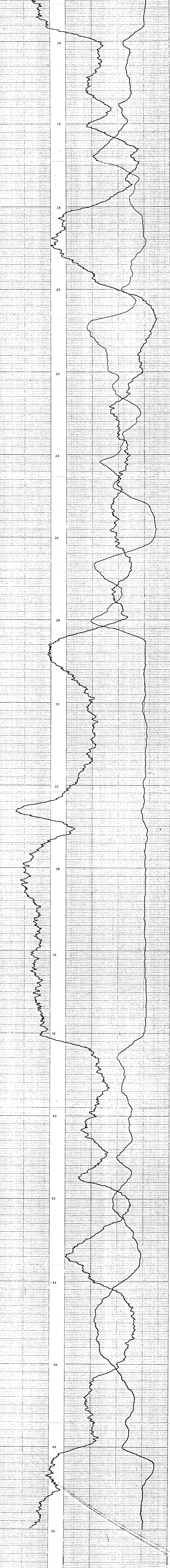
166 LOG

BPB COAL QUALITY LOG

DEPTH: _____
 GAMMA RAY
 COAL BULK DENSITY
 g/cm^3

HOLE SIZE CORRECTION DATA

2"	1.2	1.25	1.3	1.35	1.4	1.45	1.5	1.55	1.6	1.7	1.8	1.9	2.0	2.2	2.4	3.0
----	-----	------	-----	------	-----	------	-----	------	-----	-----	-----	-----	-----	-----	-----	-----

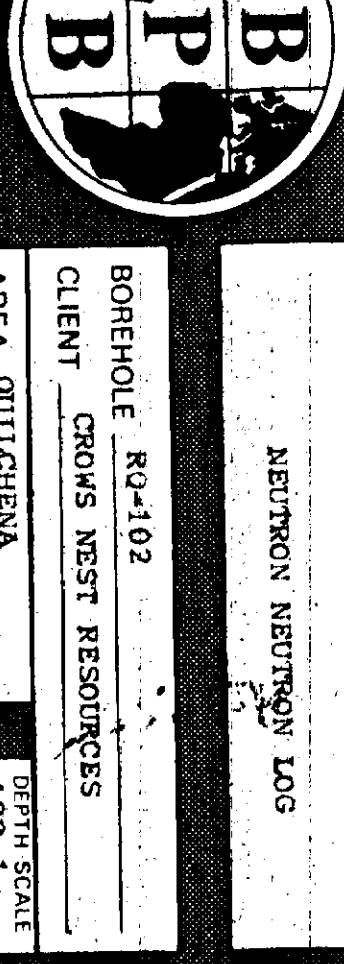


DEPTH: _____
 COAL BULK DENSITY
 g/cm^3

DEPTH: _____
 GAMMA RAY

BOREHOLE: RQ-102
 CLIENT: CROWS NEST RESOURCES
 AREA: QUILCHENA
 COUNTRY: CANADA
COAL QUALITY LOG





NEPTON SERVICE LOG

BOREHOLE NO-102
 CLIENT CROWS NEST RESOURCES
 AREA QUILCHENA
 COUNTRY CANADA
 DATE LOGGED 9 / 12 / 80
 3 of 6 LOGS

STANDARDIZATION
 GEOMETER LEVELS

SLIP/TON OF RO 8.78
 WINDING/INCH 0.11
 DIST/RECORD 1.5
 CABLES/FOOT 1.5
 CABLES/FEET 1.5

STANDARDIZATION
 GEOMETER LEVELS

SLIP/TON OF RO 8.78
 WINDING/INCH 0.11
 DIST/RECORD 1.5
 CABLES/FOOT 1.5
 CABLES/FEET 1.5

SLIP/TON OF RO 8.78
 WINDING/INCH 0.11
 DIST/RECORD 1.5
 CABLES/FOOT 1.5
 CABLES/FEET 1.5

SLIP/TON OF RO 8.78
 WINDING/INCH 0.11
 DIST/RECORD 1.5
 CABLES/FOOT 1.5
 CABLES/FEET 1.5

OPERATION DATA

LOG NO. 166
 DATE LOGGED 9 / 12 / 80

EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT	DEPTH	DEPTH	DEPTH
166B	160B	175	175	175

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	DETAIL SCALE
160B	OCS	10011	20.11
125	SONIC	10011	

REMARKS

REFER TO ADDITIONAL HEADINGS

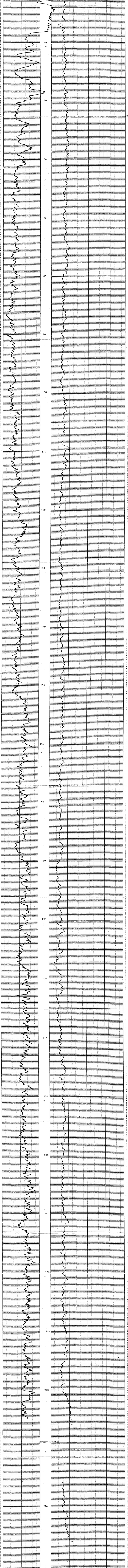
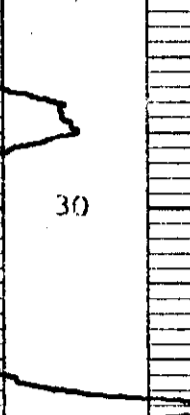
FLUID DATA

TEMPERATURE 1.23
 PRESSURE 1.23

DEPTH

Gamma Ray API 150
 Neutron SNT 400

SANDSTONE POROSITY



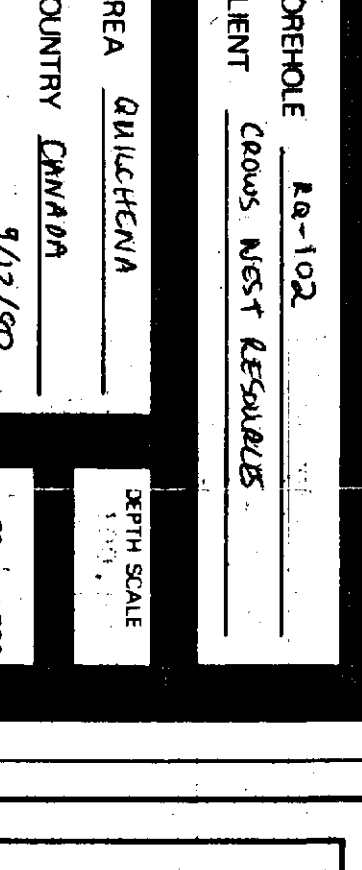
DEPTH

Gamma Ray API 150
 Neutron SNT 400



BOREHOLE NO-102
 CLIENT CROWS NEST RESOURCES

AREA QUILCHENA
 COUNTRY CANADA



COAL LITHOLOGY LOG
R-D-102 LOG

BOREHOLE: R-D-102
 CLIENT: SASS, NISST & SQUARZ
 AREA: QUILICHEVA
 COUNTRY: DEMAMA
 DATE LOGGED: 1/17/70
 BOREHOLE DEPTH: 371.0000

SONDE TYPE: COAL
 COMBINATION: SCIENCE
 LOG SITE: GAMMA RAY
 CALIPER: L.S. DENSITY

REMARKS DATA:
 REMARKS: [Blank]
 OPERATOR: [Blank]
 DATE: [Blank]
 TIME: [Blank]
 LOCATION: [Blank]
 SURFACE: [Blank]
 DEPTH: [Blank]
 TEMPERATURE: [Blank]
 PRESSURE: [Blank]
 WINDSPEED: [Blank]
 WINDDIRECTION: [Blank]
 VISIBILITY: [Blank]
 CLOUDS: [Blank]
 PRECIPITATION: [Blank]
 SURFACE WINDSPEED: [Blank]
 SURFACE WINDDIRECTION: [Blank]
 SURFACE VISIBILITY: [Blank]
 SURFACE CLOUDS: [Blank]
 SURFACE PRECIPITATION: [Blank]

EQUIPMENT AND RECORDING DATA

LOG	SONDE	SOURCE	CALIBRATOR	LOG TAPED	TAPING	RECORD SPEED	DIRECT REPT. AT	PANEL	IC RES.	NORM	DEPTH	SEAM LOG RUN
GAMMA RAY	100	100	100	Y	Y	100	100	100	100	100	100	100
DENSITY	100	100	100	Y	Y	100	100	100	100	100	100	100
CALIPER	100	100	100	Y	Y	100	100	100	100	100	100	100

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	TO	INTERVAL	TOTAL
0	10	10	10
10	20	10	20
20	30	10	30
30	40	10	40
40	50	10	50
50	60	10	60
60	70	10	70
70	80	10	80
80	90	10	90
90	100	10	100

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	DETAIL SCALE	REMARKS
100	100	100	100	REFER TO ADDITIONAL HEADINGS
100	100	100	100	
100	100	100	100	

BPB COAL LITHOLOGY LOG
CALIBRATION DATA

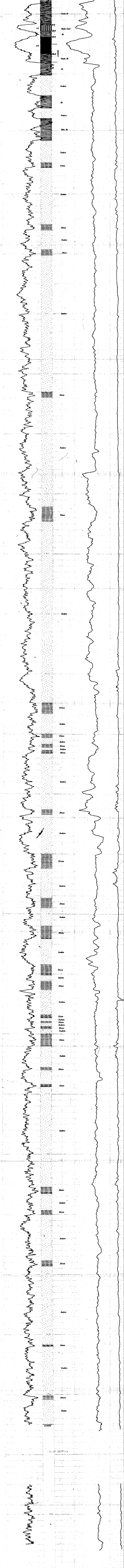
JIG No: 171 VALLE: 2 DIAM: 2" JIG CAL DATE: 10/1/70 JIG VALLE: 1 SDU: 0.01 g/cm³ vs 0.01 g/cm³

JIG MARK SHOWN AT ABOVE VALLE: JIG No: 171 SPAN: 100.00 NORM: 100.00 vs 100.00

GAMMA RAY	DEPTH	BULK DENSITY	CALIPER
-----------	-------	--------------	---------

HOLE SIZE CORRECTION DATA

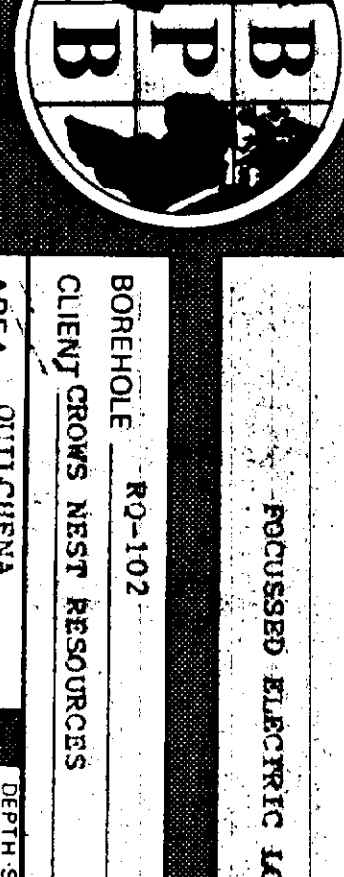
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



GAMMA RAY	DEPTH	BULK DENSITY	CALIPER
-----------	-------	--------------	---------

COAL LITHOLOGY LOG

BOREHOLE: R-D-102 AREA: QUILICHEVA
 CLIENT: SASS, NISST & SQUARZ COUNTRY: DEMAMA



FOCUSED ELECTRIC LOG

BOREHOLE RQ-102

CLIENT CROWS NEST RESOURCES

AREA QUILICHENA

COUNTRY CANADA

DATE LOGGED 5 of 6, 1988

BOREHOLE DATA

REMARKS

OPERATION DATA

15 GPM WATER @ 10°C

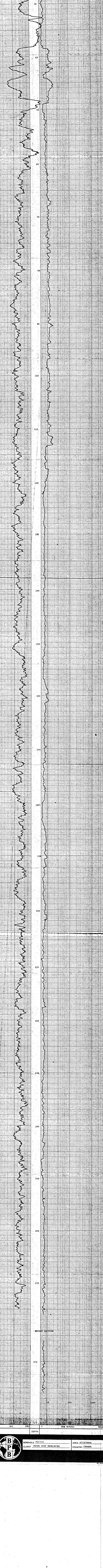
166

EQUIPMENT AND RECORDING DATA

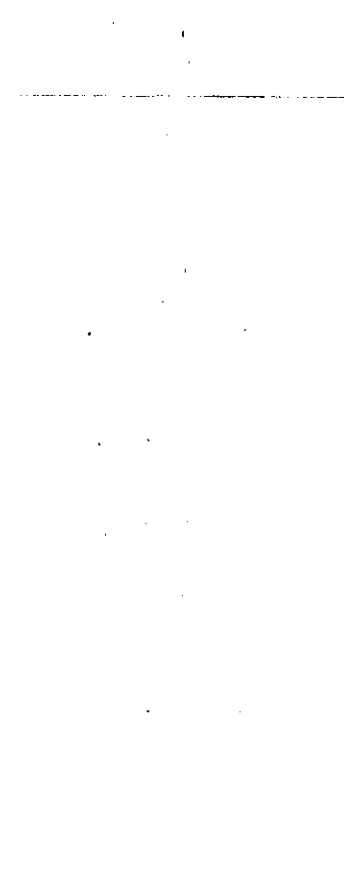
LOG	EQUIPMENT	TAPING	PANEL	CAL	DEPTH
SONDE	SOURCE	RECORD	NO.	COEFF	FROM TO
P.E.		Y	D	1.68	0 276
Gamma 160B	371	Y	R		0 275

SONDE	LOG	GENERAL SCALE	DETAIL SCALE	REFER	TO
18	N-N	100:1			
125	Sonic	100:1			

DEPTH	Gamma ray	DEPTH	Focused electric
0	API 150	5	ohm metres 5000



DEPTH	API	DEPTH	ohm metres
0	150	5	5000

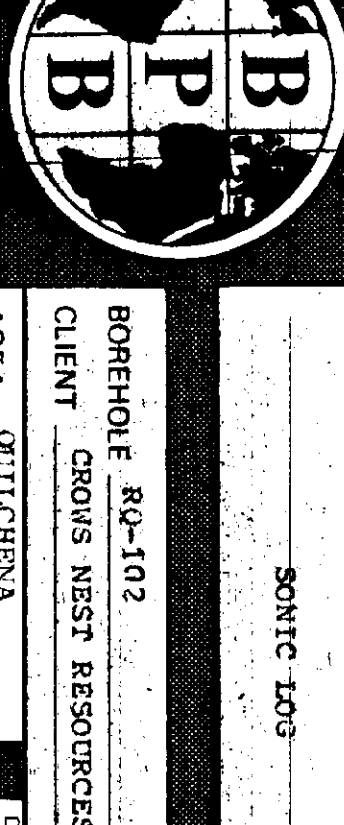


BOREHOLE RQ-102
CLIENT CROWS NEST RESOURCES

AREA QUILICHENA
COUNTRY CANADA

M-O-4/4-88 SC-31A

MR 91143 4



SONIC LOG

BOREHOLE NO. **RQ-102**
 CLIENT **CROWS NEST RESOURCES**
 AREA **QUILICHENA**
 COUNTY **CANADA**
 DATE LOGGED **9/2/80**
 TIME SCALE **100:1**

BOREHOLE DATA
 ELEVATION OF B.O. _____
 S.P.S. _____
 G.I. _____

VELOCITY/TEMP. _____
 CORRECTION _____
 BIT SIZE 1 1/2" TO 5/8" 1 5/8" TO 1 1/4"
 CHUCK SIZE 1 3/4" TO 1 3/8" 1 3/4" TO 1 3/8"

FLUID DATA
 VOLUME _____
 TEMPERATURE _____
 VISCOSITY _____
 BIT FROM 15 CHIN. INFEEDERS 8 10°C

OPERATION **166**
 FIRST READING **Z 7:05**
 LAST READING **Z 7:05**
 CENTRAL LOG NO. **UZZ**
 INSTRUMENT **S-111**

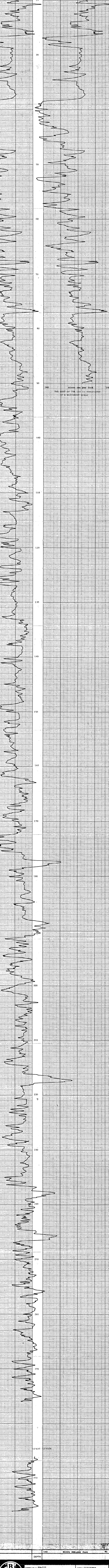
EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT	TAPING	PANEL	CAL	DEPTH
SONIC	125	Y	D	1	276 6 270

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	DETAIL SCALE
160B	CCS	100:1	20:1
18	N-N	100:1	
	F.E.	100:1	

REMARKS
 SONIC REPLAYED FROM 53m TO ZERO AT A SCALE OF 240 TO 140 micro sec per foot



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