



December 31,1981

Ministry of Energy, Mines and Petroleum Resources British Columbia

Enclosed please find our report on the Quilchena Coal Prospect.

Mr. Patrick C. Gilmar planned and carried out the 1981 geological field program on Quilchena B.C. Coal Licences held by Shell Canada Resources Limited and operated by Crows Nest Resources Limited. He and Shasta Abbott prepared this report. Kevin Sharman did the fieldwork. 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. Pat Gilmar has been employed with the company as a Geologist since 1978.

Kevin Sharman, B.Sc., graduated in Geology from the University of Calgary in 1979.

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

- CanPac Minerals Limited, Calgary, Alberta
- Shell Canada Resources Limited, Calgary, Alberta
- Crows Nest Resources Limited, 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 Limited supervising coal exploration in British Columbia.

In my opinion, all of these personnel are fully qualified, by training and experience to prepare this report and this account of work done under their direct supervision.

Yours very truly,

H.G. Rushton, P. Geol. Vice-President - Exploration

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Report on Coal Licences 4322 to 4327 inclusive Kamloops Division of Yale Land District, British Columbia

on work done in period August 1981 Held by: SHELL CANADA RESOURCES LIMITED Operated by: CROWS NEST RESOURCES LIMITED N. Lat. 50°06', W. Long. 120°30', NTS 92I/1 and 2

Authors

Patrick C. Gilmar Shasta A. Abbott Geologists Crows Nest Resources Limited

November 30, 1981

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## ENCLOSURES

		Page No.
<b>5</b>	Leasting Index Man	3
Enclosure No. 1	Table of Formations	9
Enclosure No. 2	Table of Formations	9

## APPENDICES

Scale

i

Appendix A	Coal Prospects Map	1:100,000
Appendix B	V Access Map	1:250,000
Appendix C	B.C. Land Tenure Standing	
Appendix D	Coal Land Disposition Map	1:31,680
Appendix E	Application to Extend	
	Term of Licences	
Appendix F	Urill Hole Summaries (1981) RQ 201, RQ 202	
Appendix G	Ø Drill Hole Stratigraphic Sections	1:100
Appendix H	Døwnhole Geophysical Logs	1:100
Appendix I	V Trench Section	1:100
Appendix J	Traverse Survey Map	1:5,000
Appendix K	Regional Geology Map	1:50,000
Appendix L	Geology Compilation Maps (2)	1:5,000
Appendix M	Geologic Cross Section A-A'	1:5,000

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## TABLE OF CONTENTS

1

1.0	SUMMARY
2.0	LOCATION
3.0	ACCESS
4.0	TENURE
5.0	WORK DONE
	5.1 PRIOR TO 1981
	5.2 1981 EXPLORATION PROGRAM
6.0	GEOLOGY
	6.1 REGIONAL
	6.2 STRATIGRAPHY
	6.3 STRUCTURE
	6.4 COAL RESOURCES AND MINEABILITY
	6.5 COAL QUALITY
7.0	BIBLIOGRAPHY

PAGE

1

2

4

5

6

6

7

8

8

10

11

12

13

14

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4/BXb.2

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1

Page 1

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. In 1980 Crows Nest Resources exploration included detailed mapping and drilling two rotary holes (523 metres). In 1981 two rotary holes (543 metres) were drilled and one hand trench was dug.

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.

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#### 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°06', W. Long. 120°30', along Quilchena Creek, south of Nicola Lake.

Both Rotary Holes are on Licence 4326

Trench is on Licence 4325



3.0 Access

Appendix A - Coal Prospects Map Appendix B - Access Map

From the Trans Canada Highway Merritt is 65 km west of Spences Bridge on Highway No. 8 and 100 km south of Kamloops on Highway No. 5. Southward 90 km, Highway No. 5 joins Highway No. 3 at Princeton. Merritt is approximately 385 km by CPR line from the Vancouver area ports.

Quilchena is 24 km northeast from Merritt along Highway 5, then 5 km south. Two all-weather, gravel roads provide access to the west and east sides of the property. Nearly all points on the prospect area are easily accessible on the sagebrush covered grazing land.

The prospect area has moderate relief, less than 400 metres on the coal bearing land. Surrounding hillsides are of more rugged relief with heavy timber cover. Quilchena Creek, on the west boundary of the prospect, drains northward into Nicola Lake.

4.0 Tenure

Appendix C - B.C. Land Tenure Standing Appendix D - Coal Land Disposition Map

The B.C. Coal Licences granted on September 27, 1978, held by Shell Canada Resources Limited and operated by Crows Nest Resources Limited, cover a total of 1373 ha of Crown land. These six licences are in one licence block. The surface rights belong to Douglas Lake Cattle Company Limited.

#### 5.0 Work Done

#### 5.1 Prior to 1981

The earliest reference to the Merritt Coalfield is in a Geological Survey of Canada report dated 1877-78. Underground production totalling 2.7 million tons occurred between 1906-1945, 80% by Middlesboro Collieries bordering Merritt townsite. Limited production continued until late 1950's.

Reference to the Quilchena coal basin is recorded in a Geological Survey of Canada preliminary report dated September 23, 1904. According to this report small excavations, shafts, and trenches uncovered several seams in the area. No detailed geological map of the coal measures was filed.

During the 1977-79 summer field seasons several Crows Nest Resources personnel scouted the prospect area trying to confirm information from the 1904 report.

In 1980 Crows Nest Resources did 1:5000 scale mapping, hand trenching, drilling of two rotary holes (523 metres), and location surveys. Work was completed on December 9.

5

#### 5.2 1981 Program

Appendix E - Applications to Extend Term of Licences Appendix F - Drill Hole Summaries Appendix G - Drill Hole Stratigraphic Sections Appendix H - Downhole Geophysical Logs Appendix I - Trench Section Appendix J - Traverse Survey Map

Fieldwork was carried out in August during dry, hot weather. Two rotary drill holes (543 metres) were completed by Can-West Drilling and geophysically logged by BPB Instruments. Logs run were gamma ray, l.s. density, caliper, neutron and focussed electric. Both drill holes were located on the north part of C.L. 4326. Neither drill hole intersected coal and therefore they were not cemented. RQ 201 was taken over by Douglas Lake Cattle Co. for a water well.

Location surveys of the two drill holes was completed by Sheltech Canada .

#### 6.0 Geology

#### 6.1 Regional

Enclosure No. 2 - Table of Formations Appendix I - Regional Geology Map

Coal deposits of the Merritt Coalfield lie within the Coldwater Formation, Kamloops Group, Tertiary age. These measures are predominantly conglomerates and sandstones with shales and lensing coal seams.

Lying unconformably below the Coldwater beds are Triassic Nicola Group rocks. They consist principally of volcanics of diverse types, grouped under the general term of greenstone. Intrusive into the greenstones are Coast Intrusions of Jurassic or later age. In some of the valleys nearly horizontal benches of Late Miocene vesicular basalt overlie the Coldwater beds. These are probably the most recent consolidated rocks of the area.

### TABLE OF FORMATIONS MERRITT COALFIELD QUILCHENA COAL BASIN

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PERIOD	EPOCH		FORMATION	LITHOLOGY
QUATERNARY	PLEISTOCENE & RECENT			STREAM ALLUVIAL, GLACIAL DRIFT
		<b></b>		·
TERTIARY	MIOCENE OR LATER		VALLEY BASALT	MAINLY VESICULAR BASALT
	MIOCENE OR EARLIER		VOLCANIC	RHYOLITE, ANDESITE BASALT WITH ASSOCIATED TUFFS BRECCIAS, AND AGGLOMERATES
		AMLOOPS GROUP	TRANQUILLE FM	CONGLOMERATE SANDSTONE, SHALE AND TUFF, THIN COAL SEAMS
		Ŷ	COLDWATER FM*	CONGLOMERATE SANDSTONE, SHALE & COAL
JURASSIC & (?) LATER		с	OAST INTRUSIONS	GRANODIORITE, QUARTZ DIORITE, DIORITE GABBRO, & PYROXENITE
TRIASSIC	UPPER TRIASSIC	NICOLA GROUP		GREENSTONE; ANDESITE, BASALT; AGGLOMERATE, BRECCI, TUFF; MINOR ARGILLITE LIMESTONE, AND CONGLOMERATE

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Page 10

#### 6.2 Stratigraphy

Outcropping strata along Quilchena Creek consist predominantly of conglomerate, conglomeratic sandstones, and sandstone. Shale and coal seams make up less than 10% of the 120 meters of exposed section.

The Quilchena coal measures closely resemble those of the Merritt basin. There, rapid vertical and lateral variations in thickness and nature of individual beds suggest deposition in an unstable environment. At Quilchena six to seven small seams have been recorded in outcrop and drill holes. To date, a stratigraphic section depicting the number and position of the coal seams has not been generated.

#### 6.3 Structure

Appendix L - Geology Compilation Map Appendix M - Cross Section A-A'

The Quilchena coal basin is roughly 11 Km long by 3 Km wide, stretching in a north-south direction. It occupies a depression in the Triassic greenstones. To the south, the sediments terminate against granodiorites and quartz diorites which are intruded into the greenstones. On the western boundary exposures of nearly horizontal benches of valley basalt unconformably overly the Coldwater beds.

Due to heavy drift cover, structure within the basin is not welldefined. Attitudes measured along the east banks of Quilchena Creek retain strikes of 330° to 360° with dips 20° to 40° north east. As seen in the Merritt basin, strata near the volcanic contact are probably bent into sharp folds with near vertical dips. This assumption is supported by steep dips measured from spot cores taken in the 1980 drilling.

Drill hole information is not sufficient to produce a typical stratigraphic section showing the number and position of coal seams. However, a cross section has been constructed using the drill hole data and the trench section. The coal zone which occurs near surface in RQ 102 appears to correlate with the coal zone occurring near the bottom of RQ 101. This would suggest an easterly dip of approximately forty degrees.

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## 6.4 Coal Resources and Mineability

Initial work indicates some underground but little if any open pit potential. Seams are relatively thin and gain cover rapidly down dip. The coal resources of the prospect cannot be estimated at this time due to incomplete exploration and evaluation even on a grass roots level.

## 6.5 Coal Quality

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The property is regarded as a thermal prospect. No quality information is available to date. A Merritt type coal quality (High Volatile Bituminous B) is expected.

#### 7.0 Bibliography

Bell, R.W. (1904) Preliminary Report on the Quilchena Coal Basin, Nicola Valley, B.C., Geol. Surv. of Canada, Open File 04(1)A.

<u>Camsell, C.</u> 1915 Nicola and Quilchena Coal Areas, Coal Fields of B.C., G.S.C. Memoir 69, p.p. 280-285.

<u>Cockfield, W.E.,(1961)</u> Geology and Mineral Deposits of Nicola Map-Area, British Columbia, Geol. Surv. of Canada Memoir 249.

Crows Nest Resources (1980) Quilchena Prospect Report

<u>Dawson, G.M.</u> Preliminary Report on the Physical and Geological Features of the Southern Portion of the Interior of British Columbia; Geol. Surv. Canada, Dept. of Prog. 1877-8 (1879).

<u>White, W.H. (1946)</u> Report on the Merritt Coalfield, Report of the Minister of Mines, (pages 250-279).

# CROWS NEST RESOURCES LIMITED (Exploration)

B.C. COAL LICENCES TENURE STANDING

BLOCK: MERRITT

YEAR: 1981

GROUP: #234

PROJECT:

OUILCHENA

DATE: DECEMBER 1981

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**Province of British Columbla** Ministry of Energy, Mines and Petroleum Resources

### APPLICATION TO EXTEND TERM OF LICENCE

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(Nала)	(Name)
P.O. BOX 100	CALGARY
(Address)	{Address}
ALBERTA	T2P_2H5
	Valid FMC No. 207568
hereby apply to the Minister to extend the term of Ca	cal Licence(s) No(s)
6 LICENCES, 1373 HECTARES, GROUP #2	34
for a further period of one year,	
2. Property name QUILCHENA, KAMLOOPS DIV	ISION OF YALE LAND DISTRICT
3. I am allowing the following Coal Licence(s) No(s). to	forfeit
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4. I have performed, or caused to be performed, during	the periodDECEMBER 31st 1980 to
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CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
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Geochemical		
Other (location)		2,751.00
Road construction	·····	<del>.</del>
Surface work		
Underground work	•	
Drilling	4326	36,253.00
Logging, sampling, and testing	4326	3,075.00
Reclamation		
Other work (specify)	· · · · · · · · · · · · · · · · · · ·	
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DECEMBER. 22. 1981

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(FORMS AND REPORT TO BE SUBMITTED IN DUPLICATE)

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MANAGER ACCOUNTINGC.N.R.L.

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



DATE:

August 12 - August 13/81

LOCATION: Quilchena, North boundary of Licence 4326

Can-West Drilling, TH-100 cyclone, single wall rotary **RIG TYPE:** 

ELEVATION(m) 915.70

NORTHING: 5550954,10

EASTING: 679174.36

TOTAL DEPTH (m): 238

ANGLE: Vertical

Abandoned D.H. taken over by Douglas Lake Cattle Co. for a COMMENTS: water well, Quaternary to 67 m.

LOGS RUN:	(BPB Instruments)	SCALE:	DEPTH:
	Gamma Ray	100:1	202 m
	L.S. Density	100:1	202 m
	Caliper	100:1	202 т
	Neutron-Neutron and G.R.	100:1	202 m

No coal intersections

4/B0a.1

DATE: August 14 - August 16/81

LOCATION: Quilchena, North boundary of Licence 4326

RIG TYPE: Can-West Drilling, TH-100 cyclone, single wall rotary

ELEVATION(m) 896.41

NORTHING: 5550878.62

EASTING: 678999.08

TOTAL DEPTH (m): 305

ANGLE: Vertical

COMMENTS: Hole not cemented because no coal intersections Quaternary to 103 m.

LOGS RUN:	(BPB Instruments)	SCALE:	DEPTH:
	Gamma Ray	100:1	290 m
	L.S. Density	100:1	290 m
	Caliper	100:1	290 m
	Neutron-Neutron and G.R.	100:1	290 m
	Focussed Electric	100:1	290 m

No coal intersections

4/B0a.2

## QUILCHENA

## TRENCH TQ-81-1

(measured thickness)



M-Quitche 81 Crows Nest Resources Limited EXPLORATION. QUILCHENA BRITISH COLUMBIA TRENCH TQ - 81-1 APPENDIX I BCALE: 1:100 **AA 75** 







To Accompany

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GAMMA RAY	DEPTH BULK DENSITY CALIPER INCHES

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![](_page_37_Figure_0.jpeg)

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![](_page_41_Figure_5.jpeg)

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M 1	5 551 168 48	658 383 16	700.72
M 12	5 551 323.06	658 391.51	695.20
M 101	5 554 278 14	665 540 77	869.25
M 102	5 554 998.67	665 433 33	826.01
M 103	5 554 890.55	665 079 03	763.15
M 104	5 552 478.86	674 939 35	1210.40
M 105	5 550 993 28	679 422 12	<b>96</b> 8,99
M 106	5 552 465.41	674 937.45	1207.12
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4+34N	5 552 242	657 312	
1+50 S	5 551 732	<b>6</b> 57 <b>5</b> 95	
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	5 551 076	<b>657 9</b> 59	
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 55 1	658 250	
16+50 S	5 550 420	658 322	
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KM 201	5 552 042.46	65/784.33	608.24
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RM 206	5 550 876.50	657 917.87	666.01
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![](_page_43_Figure_7.jpeg)

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M-Quilchena 81(2)A-APPENDIX J DRAWING No: HA-69

![](_page_44_Figure_0.jpeg)

Aband	Abandoned	Abandonná, ás
C	Cemetery	Cimetière
CO	County	Comté
E	Elevator	Élevateur
Fy	Ferry	Traversier
IR	Indian Reserve	Réserve indienne
н	Hospital	Höpital
L	Lot	Lot
Micro		Micro-ondes
Mun	Municipality	Municipalité
P	Post Office	Bureau de poste
PH	Power House	Centrale électrique
RCMP	Royal Canadian Mounted P	olice
	(	lendarmerie Royale Canadie
Res	Reservoir	Réservoir
Trans Sta	Transformer Station	Poste de transformate
TFL	Tree Farm Licence	Licence de sylviculture

![](_page_44_Figure_3.jpeg)

C.L. 4326 INDIAN RESERVE 678000 E 1200 1100 \_ 1000 \_ COARSE SANDSTONE OUTCROP PROJECTED 1000m SOUTH ALONG STRIKE 350° ∆ccess T 900 ELEVATION (m) 800 700 30.5° East Average Dip 600 ] Tc  $\mathbf{X}$ 

![](_page_45_Figure_1.jpeg)

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			Tc Coldwater For shale and C	mation - Conglomerate , sandsto DAL
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![](_page_45_Figure_5.jpeg)

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