

1979 GEOLOGICAL REPORT

ON FIELD WORK DONE IN AUGUST, 1979

B.C. COAL LICENCES 4472 AND 4473 Held by: Shell Canada Resources Limited operated by: Crows Nest Resources Limited

MOUNT REESOR COAL PROPERTY

PEACE RIVER LAND DISTRICT, N.E., B.C.

MAP REFERENCE: N.T.S. 93P3 LAT. 55°04' N LONG 121°26' W



March 27, 1980 Georgia Hoffman, p. geol. (Alberta) For Crows Nest Resources Limited

PROFESSIONAL VERIFICATION OF REPORT

1979 Geological Report Mt. Reesor Coal Property Coal Licences 4472 and 4473 Peace River Land District, B.C.

Miss Georgia Hoffman carried out the 1979 geological field program on the Mt. Reesor Coal Property held by Shell Canada Resources Limited, operated by Crows Nest Resources Limited. She also prepared this report. Mr. Frank Martonhegyi supervised the activity of this program under the general direction of the undersigned.

Georgia Hoffman graduated from the University of Pennsylvania in Philadelphia, Pennsylvania, U.S.A., with a Bachelor's degree in Geology. She is a member, as a Professional Geologist, of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta. Her experience in Western Canadian coal exploration includes positions with:

- Denison Mines Limited, Vancouver, B.C.

- Shell Canada Resources Limited, Calgary, Alberta

- Crows Nest Resources Limited, Calgary, Alberta She is self-employed since August 1, 1979.

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 Senior Staff Geologist 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 for this project. I am satisfied that the attached report dated March 27, 1980 has been competently prepared and justly represents the information obtained from this project.



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1.0 SUMMARY

The Mt. Reesor Property consists of 594 hectares of coal licences held by Shell Canada Resources Ltd. These licences lie within -Lower Cretaceous strata of the Foothills coal field of northeastern British Columbia, and are located approximately 105 km southwest of Dawson Creek, B.C.

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Crows Nest Resources Ltd. carried out a program of geologic mapping on the Mt. Reesor Property during August of 1979. There are not roads or trails near the Mt. Reesor licences at present, and the field work was carried out from Chetwynd, B.C. with helicopter support.

The 1979 program of geologic mapping defined the stratigraphy and geologic structure of the Mt. Reesor Property. The presence of coal seams in several formations was established, and the seams of the upper Gething Formation may have the best economic potential. The Gething Formation is known to contain good quality metallurgical coal in areas near Mt. Reesor, but more work will be required to provide coal quality data for the seams of Mt. Reesor.



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2.0 LOCATION, ACCESS AND TENURE

Shell Canada Resources Ltd. obtained British Columbia Coal Licences No. 4472 and 4473 on December 29, 1978. These two licences comprise the Mt. Reesor Property and cover an area of 594 hectares. Shell's 5,94 wholly-owned subsidiary Crows Nest Resources Ltd. is the operator and conducted the 1979 exploration work on the property. All pertinent information concerning coal right tenure is tabulated on Enclosure 3: B.C. Coal Licences Tenure Standing and shown on Enclosure 4: Coal Land Disposition Map.

The Mt. Reesor Property lies in the Peace River Coal Fields in the Foothills of the Rocky Mountains in northeastern British Columbia. It is some 105 km southwest of Dawson Creek, B.C. (Enclosures 1 and 2: Location and Access Maps).

There are no roads or trails on the property itself. The nearest roads lie on Mt. Spieker and in the valleys of the Wolverine River and Bullmoose Creek. Access to the property was gained by means of helicopter during the 1979 exploration program.

The relief of the property varies from 1400 to 2030 metres. The area is covered by spruce forest at the lower elevations and by alpine vegetation at higher altitudes.



CROWS NEST RESOURCES LIMITED EXPLORATION

B. C. COAL LICENCES TENURE STANDING

BLOCK: MT REESOR GROUP: NOT GROUPED

NOT GROUPED MT REESOR

MT REESOR DATE: MARCH, 80

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3.0 THE 1979 EXPLORATION PROGRAM

The 1979 exploration program for the Mt. Reesor Property consisted of geologic mapping with the objective of defining the geologic structure and confirming the stratigraphy and the presence of coal-bearing strata.

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The mapping program was undertaken during the month of August from Chetwynd, B.C., and access to the property was provided by helicopters contracted from Maple Leaf Helicopters Ltd. The results of the field mapping were compiled on aerial photographs and transferred to a 1:50 000 scale topographic map. This information is presented in this report on two aerial photographs (Enclosures 8, 9) and on a Regional Geology Map (Enclosure 7) which is also an index to the photographs. 4.0 GEOLOGY

The Mt. Reesor Property contains Lower Cretaceous sediments of the Minnes Group through Commotion Formation (Enclosure 6). Of these, the Gething and Commotion Formations are both known to contain seams of metallurgical coal in the Mt. Reesor area. The Commotion Formation seams thin and die out to the north, while the Gething seams thin to the south. The Cadomin Formation and the upper Minnes Group also contain some coal in the Mt. Reesor area.

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The Mt. Reesor Property covers an area of complex geologic structure. Two major faults and numerous folds cross the licence area.

4.1 STRATIGRAPHY

The nonmarine sediments of the upper Minnes Group form the base of the geologic section on the Mt. Reesor Property. These beds were explored for coal by hand trenching, and two seams on the order of 1 metre thick were found.

The Cadomin Formation unconformably overlies the Minnes Group strata and consists mainly of quartz pebble conglomerate. Reconnaissance mapping located several prominent conglomerate beds on the west ridge of Mt. Reesor which are perhaps due to an interfingering of Cadomin and Gething facies. The lowermost exposed conglomerate was mapped as Cadomin Formation to allow sufficient thickness for the overlying Gething Formation. Discontinuous coal seams and carbonaceous shale units were found to be interbedded with this conglomerate on the high ground south of the Mt. Reesor summit at the southern boundary of Coal Licence 4472.

The Gething Formation conformably overlies the Cadomin Formation, and consists predominately of nonmarine sediments, although at least

TABLE OF FORMATIONS FOR THE MT. REESOR AREA

GROUP	FORMATION	LITHOLOGY	APPROXIMATE THICKNESS
NHOP	COMMOTION	SANDSTONE, SILTSTONE, CONGLOMERATE SHALE AND COAL SEAMS; PREDOMINATELY NONMARINE, ERODED SECTIONS OF COMMOTION FM. STRATA ARE THE YOUNGEST SEDIMENTS ON THE MT. REESOR PROPERTY.	INCOMPLETE SECTION
FORT SAINT	MOOSEBAR	DARK GREY MARINE SHALES CONTAINING SIDERITIC CONCRETIONS; UPPER PORTION INTERBEDDED WITH SANDSTONE & SLIT- STONE; GRADATIONAL CONTACT WITH COMMOTION FM.	200 m
((●	BLUESKY	GLAUCONITIC SANDSTONE & PEBBLE CONGLOMERATE.	lm
(TA)	GETHING	SANDSTONE, SHALE (INCLUDING ONE MARINE BAND), SILTSTONE, AND CONGLOMERATE; MAJOR COAL SEAMS IN UPPER PORTION.	300 m
BULLHE	CADOMIN	WELL-INDURATED PEBBLE CONGLOMERATE WITH CHERT AND QUARTZITE CLASTS & QUARTZOSE SAND MATRIX, INTERBEDDED WITH SANDSTONE, SHALE, AND COAL SEAMS.	VARIABLE, UP TO 30 M
	UNCONFORMITY		
MANES		THIN INTERLAYERED BEDS OF NONMARINE SANDSTONE, SILTSTONE AND SHALE; SOME COAL SEAM DEVELOPMENT IN THIS AREA; MARINE SEDIMENTS IN LOWER PORTION.	1,000 m

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one marine horizon of dark gray shale has been identified. The main seams of interest on the two Mt. Reesor licences were found to be contained in the upper Gething Formation in the syncline which runs through the summit of Mt. Reesor. Hand trenching confirmed one of these seams to be 2 metres thick, underlying a resistant grey sandstone roof. Attempts to expose other seams known to be present in the upper Gething strata of neighboring properties were unsuccessful due to the depth of weathering and colluvium cover. The coal potential of the underlying Gething strata was also explored by hand trenching, but no seams thicker than 1.5 metres were found, and most of the seams were 1 metre or less in thickness.

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The Moosebar Formation overlies the Gething Formation and consists of a thick sequence of dark grey marine mudstones and siltstones which are exposed near the summit of Mt. Reesor and in a tributary to Bullmoose Creek. The Bluesky Formation, a thin but distinctive glauconitic unit lying between the Gething and Moosebar Formations was not exposed but should be present in the Mt. Reesor area.

The Commotion Formation conformably overlies the Moosebar Formation. The basal unit of the Commotion Formation is a thick sandstone sequence which makes up the summit of Mt. Reesor. That sandstone is overlain by a sequence of sediments containing major coal seams, but those strata have been removed from the summit by erosion. Other partial sections of Commotion Formation strata are located on the northern portion of Coal Licence 4473, as shown on Attachment 7. No Commotion Formation coal seams were trenched during the 1979 exploration program.

4.2 STRUCTURE

The Mt. Reesor Property covers an area of complex geologic structure. The main folds of the property are a northwest plunging syncline which runs through the summit of Mt. Reesor, and an anticline running through the centre of Licence 4472. The anticline is truncated by a thrust fault which repeated a sequence of folded Cadomin and Gething Formation strata in the southwest corner of that licence.

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A second thrust fault runs parallel to the Mt. Reesor syncline through the centre of Licence 4473. This fault moved the strata of the Mt. Reesor syncline over the block of more intensely folded strata that forms the northeast half of Licence 4473.



LEGEND

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FAULT

	Kcm	COMMOTION FORMATION
	Kmb	MOOSEBAR FORMATION
	Kbh	BULLHEAD GROUP
	JKmi	MINNES GROUP
-		COAL LICENCE; 4473, 4472
		AIR PHOTO APPROXIMATE BOUNDARIES, 1:25 000
_	+	ANTICLINE
-	1	SYNCLINE
	1.1	

Crows Nest Resources Limited

EXPLORATION

NORTHEASTERN B.C. PEACE RIVER LAND DISTRICT MOUNT REESOR

REGIONAL GEOLOGY MAP

SHELL - CNRL LICENCES: MT. REESOR NTS: 93-P-3 BLK: D MAP 1 OF 1

AUTHOR G. HOFFMAN	SCALE: 1:50 000	ENCLOSURE N	0 7	
DATE MAR, 1980	REVISED	DRAWING NO	44-10	
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LEGEND

Ksh SHAFTESBURY FORMATION Kcm(b) Kcm(h) Kcm(g) Kmb MOOSEBAR FORMATION Kgt GETHING FORMATION Kcd CADOMIN FORMATION JKmi MINNES GROUP

ANTICLINE SYNCLINE FAULT Crows Nest Resources Limited EXPLORATION MT. REESOR N.E.B.C. PHOTO GEOLOGY, RECONNAISSANCE FIELD GEOLOGY (PHOTO No. BC 2115:77) AUTHOR: HOFFman SCALE: 1:25000 ENCLOSURE No: 8 DATE: 80.03 25 INEVIBED: TO Accompany



LEGEND

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Kcm(g)_)
Kmb	MOOSEBAR FORMATION
Kgt	GETHING FORMATION
Kcd	CADOMIN FORMATION
JKmi	MINNES GROUP

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5.0 CONCLUSIONS

The 1979 program of geologic mapping confirmed the presence of Gething Formation coal seams on the Mt. Reesor Property and defined the geologic structure of the area. The presence of Cadomin Formation and upper Minnes Group seams was also established. Commotion Formation strata were mapped on the property, but the Commotion Formation coal seams were not investigated during the 1979 program.

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The upper Gething Formation coal seams appear to have the best potential for exploitation because they are probably the thickest seams of the Mt. Reesor property and they may contain good quality metallurgical coal. More work will be needed to provide coal quality data and to establish seam thickness variations.



DEPARTMENT OF MINES AND PETROLEUM RESOURCES

Coal Act (Sec 19)

APPLICATION TO EXTEND TERM OF LICENCE

1	I	BOLTON AGNEW	agent for SHELL CANADA RESOURCES LIMITED
	-,——	(Name)	(Name)
		400 - 4th Avenue S W.	400 - 4th Avenue S W.
		(Addres)	(Address)
		Calgary, Alberta T2P 0J4	<u>Calgary, Alberta T2P 0J4</u>
			Valid FMC No 171929

hereby apply to the Munister to extend the term of Coal Licences No(s) <u>4472 and 4473</u> <u>Two licences covering 594 hectares in the Peace River Land District, Mt Reesor</u> Prost for a further period of one year

2 I have performed, or caused to be performed, during the period _____ December 29, 1978 to

CATEGORY OF WORK

		LICINE PO(I)	
Geological mapping -		4472 and 4473	8,639
Surveys Geophysical		·	
Geochemical			
Other			<u></u>
Road construction -		·	
Surface work	.	·	
Underground work -		·	<u> </u>
Drilling			
Logging, sampling, and ter	sting -	•	
Reclamation			
Other work (specify)		·	-
3 I wish to apply \$8,639		of this value of work on Coal Lic	ence(s) - 4472 and 447
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Underground			
Other (specify)			
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Crosscutting			
Other		·····	
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EOLOGICAL MAPPING Yes No Cost S 8,635	<u> </u>
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Detail Surface	
Underground	
Other (specify)	
EOPHYSICAL OR GEOCHEMICAL SURVEYS Yes No 2 Method Lane mules	Cost \$
Grid Topographic	Other
Length On Lycences	
URFACE WORK Yes No Cost \$	Licence Number(s)
Trenching	
Seam tracing	
Crosscutting	
Other	
Test adits Number Average length Other workings Area WRILLING Yes No Cost \$	Total footage
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^{*} If reclamation work reported in separate report give details of report identification

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			\$
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