

PR- MT. SPIEKER 79(1)A.

OPEN FILE

RANGER OIL (CANADA) LIMITED

GEOLOGICAL REPORT ON COAL

LICENCES 3930, 3931 and 3932

PEACE RIVER M.D.

55° 10' N, 121° 22' 30" W

by

MARVIN A. MITCHELL, P. ENG.
EXPLORATION MANAGER - COAL

October 21st, 1979

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 557

INDEX:Page Nos.

1.	<u>Summary</u>	1
2.	<u>Introduction</u>	1
2.1	Location and Access	1 - 2
2.2	Description of Fieldwork	2
2.3	Previous Investigations	2
3.	<u>Geology</u>	3
3.1	Stratigraphic and Structural Setting	3 - 4
3.2	Economic Geology	4 - 5
4.	<u>Estimated Costs</u>	5

MAPS - FIGURES

- Figure 1 Location Map 1:500,000
- Figure 2 Stratigraphic Column
- Figure 3 Geology Map 1:10,000 (in Pocket)

BIBLIOGRAPHY

1. SUMMARY

Coal licences 3930, 3931 and 3932 are located in the foothills of the Rocky Mountains approximately 65 km. south of Chetwynd, B.C., in the Peace River Mining District. These licences were issued to Ranger Oil (Canada) Limited on July 5th, 1978.

An investigative geological exploration program consisting of 1:10,000 scale geological mapping and general reconnaissance was performed on the licences during the last two weeks of August, 1978.

The exploration program indicated that the licence area has low potential for minable coal reserves when current mining techniques and economic conditions are taken into consideration. Therefore, notice was given of Ranger Oil's intention to relinquish the licences as of July 5th, 1979.

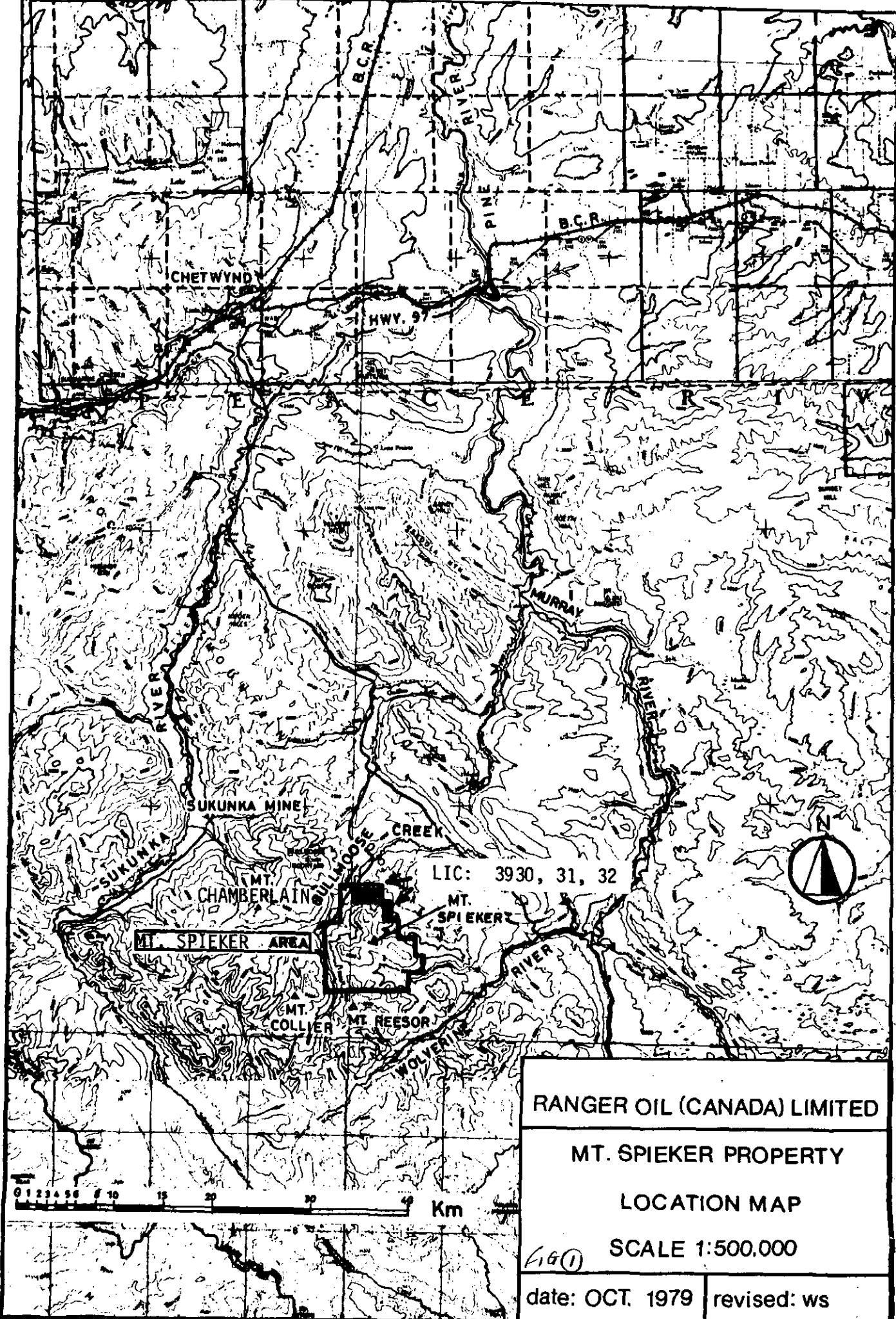
The following technical information report is hereby submitted as required under Section 12(2) of the Coal Act.

2. INTRODUCTION

2.1 LOCATION AND ACCESS

Coal licences 3930, 3931 and 3932 are located approximately 65 km. south of Chetwynd B.C. and extend north into the bottom of the Bullmoose Creek Valley from the steep north and east flanks of Mt. Spieker. Elevations on the licences range between 1050 and 1350 m. A.S.L.

The south and east portions of the licences form an upland area with moderate topographic relief and occasional northeast trending deeply incised streams.



LIC: 3930, 31, 32

MT. SPIEKER AREA

RANGER OIL (CANADA) LIMITED

MT. SPIEKER PROPERTY

LOCATION MAP

SCALE 1:500,000

date: OCT. 1979

revised: ws

0 10 20 30 40 Km

The northwest part of the licences have high topographic relief with cliff lines and ridges that reflect the degree of resistance to weathering of the underlying sedimentary units.

Although the main Bullmoose Creek road cuts through the corner of Licence No. 3930 and there are numerous seismic tracks across the licences, the rugged topography on the northwest makes helicopter the best means of access to the central and eastern parts of the licences. Foot access to these areas may be gained from the north end of Mt. Spieker, a distance of 1 to 3 km. respectively.

2.2 DESCRIPTION OF FIELDWORK

A program consisting of geological reconnaissance and 1:10,000 scale geological mapping was performed on the licences during the last two weeks of August, 1979.

The personnel involved in the program were F.M. Dawson, P. Geol., Robertson Research (N.A.) Limited of Calgary, Alberta and M.A. Mitchell, P. Eng., Ranger Oil (Canada) Limited, Vancouver, B.C.

Field mapping was done with the aid of aerial photographs and the data obtained in the field was transferred to a 1:10,000 scale enlargement of the 1:50,000 NTS topographic sheet for the area.

Unfortunately, the original 1:10,000 scale map sheet was misplaced during the past year, therefore, the map submitted with this report is an accurate re-interpretation of the field data but is deficient in bedding attitudes although the geology was confirmed in the field.

2.3 PREVIOUS INVESTIGATIONS

The licence area was included in 1:50,000 scale mapping performed in 1977 by the British Columbia Ministry of Energy Mines and Petroleum Resources.

3. GEOLOGY

3.1 STRATIGRAPHIC AND STRUCTURAL SETTING

The licence area is located in the eastern edge of the Rocky Mountain orogenic belt and is underlain by sedimentary rocks of lower Cretaceous age. A stratigraphic section of these rocks is presented in figure 2.

The base of the stratigraphic section in the licence area is formed by the Bullhead group of rocks. The Gething Formation, the upper part of this group, is exposed in the western half of Licence No. 3930. Possible exposures of the underlying Cadomin Formation to the north west are obscured by the river gravels of Bullmoose Creek. The height of land rises very rapidly from creek elevation to the south east up a series of cliffs formed of the soft Moosebar Formation. The cliffs are capped by the rolling, weather resistant Gates Member rocks which form an upland area extending to the south east of Licences 3930 and 3931.

The Gates, Hulcross and Boulder Creek Members of the Fort St. John Group are exposed as a series of ridges trending north west through the centres of licences Nos. 3931 and 3932. These ridges are the erosional remnants of an anticline and syncline that form two of the major structural elements underlying the licence area. The Shaftesbury formation is not only found as erosional remnants capping the Boulder Creek Member in the valley between the two ridges along the main synclinal element but as the main formation underlying the north east portions of licences nos. 3931 and 3932. The Shaftesbury formation in this latter area forms the footwall of a major thrust fault that trends to the north west through this area and along the eastern border of the Mt. Spieker property to the south and represents the top of the stratigraphic section for the licence area.

FIGURE 2

STRATIGRAPHIC COLUMN

PERIOD	GROUP	FORMATION	LITHOLOGY	UNIT THICK'N (m)	
LOWER CRETACEOUS	Fort St. John	Shaftesbury	Dark grey marine mudstone; sideritic concretions; some sandstone grading to silty dark grey marine mudstone, siltstone and sandstone in lower part, minor conglomerate at base.	+ 250	
		Compton	Boulder Creek	Fine-grained, well-sorted, non-marine sandstone, mudstone carbonaceous claystone, and conglomerate; few thin coal seams towards base.	200
			Hulcross	Dark grey marine mudstone inter-layered with strongly bioturbated fine-grained sandstone and siltstone.	130
			Gates	Fine-grained non-marine sandstone; conglomerate, major coal seams, siltstone, and mudstone.	170
			Moosebar	Dark grey marine mudstone with sideritic concretions; gradational increase in sandstone and siltstone at top.	220
		Bluesky	Glauconitic fine-grained sandstone.		
		Bullhead	Gething	Fine to coarse brown calcareous sandstone, coal, carbonaceous mudstone and conglomerate.	300
	Cadomin		Massive conglomerate containing chert and quartzite pebbles interbedded with quartzose sandstone.	50	
	Minnes	Nikanassin	Conglomerate, carbonaceous, claystone, thin-bedded grey and brown sandstone; contains numerous coal seams.	+ 2000	

The structural setting for the licence area is a belt of highly deformed rocks sandwiched between two thrust faults; the Bullmoose Thrust which may be found below the east edge of the Mt. Spieker mesa and the thrust fault which is found along the eastern boundary of the Mt. Spieker property.

The vertical components of the throws for these faults are estimated to be in the order of 500m and 350m respectively.

Deformation within the belt of rocks is mainly disharmonic with some overturned folds suspected near the western margin. The two major folds passing through the central and eastern portions of the area are relatively harmonic but the anticline has a southerly plunge and the syncline has a slight northly plunge.

3.2 ECONOMIC GEOLOGY

The Gething Formation and the Gates Member of the Compton Formation are the principal coal-bearing units in the area. The upper and lower Bird Seams are found at the top of the Gething Formation and the Gates A, B, C, and D seams are found approximately mid unit in the Gates Member. No outcrops of coal were found within the Licence area. The outcrop area for the Bird Seams is at the base of a cliff and is talus covered. Most of the outcrop area for the Gates seams is covered by glacial drift. The exposures of Gates coal nearest the licence area are in the core of the major anticline approximately 500m south of Licence No. 3931.

An inspection of the Gates seams in this area indicated that while there has been no obvious reduction in the thickness of the seams as compared to the seam reserve areas on the Mt. Spieker property, there has been an increase of claystone, boney coal, and carbonaceous shale within the seams. (Personal

communications, G.R. Jordan, F.M. Dawson). The poor coal quality, the complex folding and high depth of burial of the seams indicate that the licence area has a low potential for minable Gates coal.

Similarly, the potential for minable Bird coal was also indicated to be low as the Bird seams have a high sulphur content throughout the area and are found over 300m stratigraphically lower than the Gates seams.

4. ESTIMATED COSTS

<u>Geology</u> - 8 man-days @ \$250.00/day -----	\$ 2,000.00
<u>Helicopter Support</u> - 12 hours @ \$325.00/hour -----	3,900.00
<u>Accommodations</u> - 12 man-days @ \$50.00/day -----	600.00
<u>Report Preparation</u> -----	<u>150.00</u>
TOTAL -----	<u>\$ 6,650.00</u>

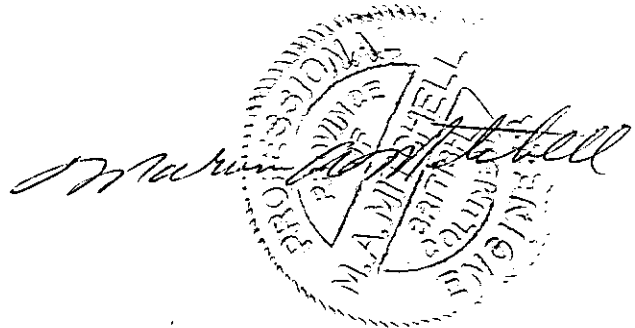
Total Area - 4512.08 Hectares

Expenditure per Hectare - \$1.50

Respectively submitted,

MARVIN A. MITCHELL, P. Eng.
Exploration Manager - Coal
Ranger Oil (Canada) Limited

October 21st, 1979

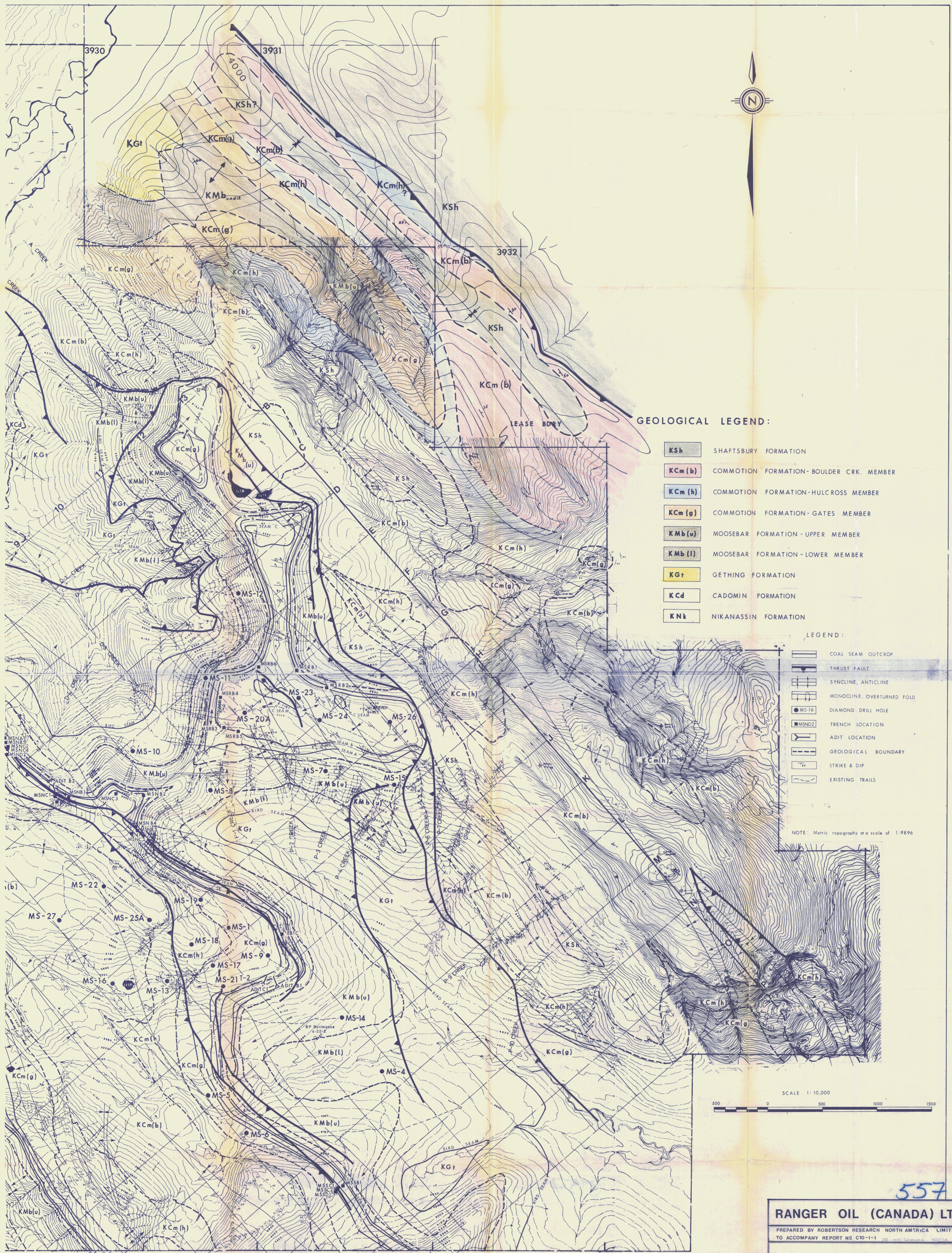


BIBLIOGRAPHY

JORDAN, G.R., DAWSON, F.M., (1978). Mt. Spieker Coal Project, 1978 Exploration Programme

Report No. C10-1/1

Robertson Research (N.A.) Limited



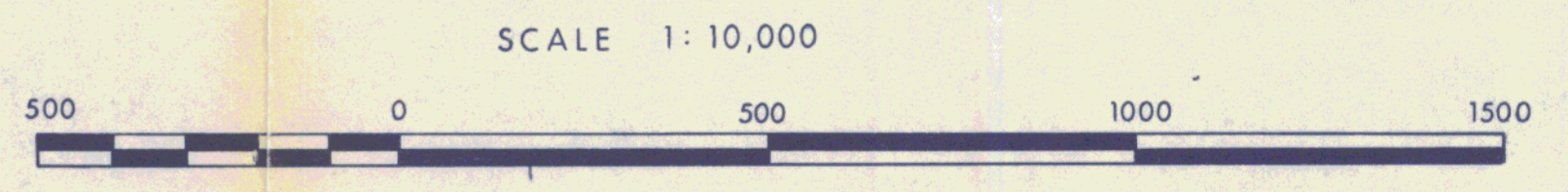
GEOLOGICAL LEGEND:

- KSh** SHAFTSBURY FORMATION
- KCm(b)** COMMOTION FORMATION - BOULDER CRK. MEMBER
- KCm(h)** COMMOTION FORMATION - HULCROSS MEMBER
- KCm(g)** COMMOTION FORMATION - GATES MEMBER
- KMb(u)** MOOSEBAR FORMATION - UPPER MEMBER
- KMb(l)** MOOSEBAR FORMATION - LOWER MEMBER
- KGt** GETHING FORMATION
- KCd** CADOMIN FORMATION
- KNk** NIKANASSIN FORMATION

LEGEND:

- COAL SEAM OUTCROP
- THRUST FAULT
- SYNCLINE, ANTICLINE
- MONOCLINE, OVERTURNED FOLD
- DIAMOND DRILL HOLE
- TRENCH LOCATION
- ADIT LOCATION
- GEOLOGICAL BOUNDARY
- STRIKE & DIP
- EXISTING TRAILS

NOTE: Metric topography at a scale of 1:9896



557

RANGER OIL (CANADA) LTD.

PREPARED BY ROBERTSON RESEARCH NORTH AMERICA LIMITED
TO ACCOMPANY REPORT NO C10-1-1

**MT. SPIEKER PROJECT
GEOLOGY MAP**

ADDITIONS MAM. OCT. 79
DRAWN BY: G.R.J. DEC. 78 PLAN NO 1