

# MAR 19700022: BOQUENE RIVER

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ECONOMIC MINERALS  
FILE REPORT No.  
U-AE-100(1)

GROUND MAGNETOMETER SURVEY

PERMIT NO. 146, BOCQUENE

RIVER AREA, ALBERTA

**GROUND MAGNETOMETER SURVEY**

**PERMIT NO. 146, BOCQUENE**

**RIVER AREA, ALBERTA**

**Prepared for**

**LARIAT OIL AND GAS LTD.**

**by**

**G. V. Lloyd Exploration Ltd.  
Calgary, Alberta**

**August, 1970**

## GROUND MAGNETOMETER SURVEY

PERMIT NO. 146, BOCQUENE

RIVER AREA, ALBERTA

### Summary

This report presents the results of the magnetometer survey carried out on Permit No. 146, Bocquene River Area, Alberta, and includes our interpretation of the data. The survey was made to determine the locations and extent of the magnetic anomalies on the property, as shown in published aeromagnetic maps of the area. Mineralization has not been reported from the area previously.

### Properties and Their Location

Permit No. 146 consists of about fifteen sections, or 9,600 acres. The Permit is in the shape of a rectangular block. No examination of the ownership of the subject properties or of the claim boundaries was undertaken by us, and those relating facts given to us by Lariat Oil and Gas Ltd. were accepted without further examination.

The subject Permit is situated near the junction of Bocquene River and Slave River, or about 42 miles upstream on the Slave River from Fort Smith, N.W.T. This places it about 40 miles north of Fort Chipewyan, Alberta. It also lies mainly in Township 120, Range 8, West of the Prime Meridian.

### Accessibility

The subject Permit was reached by flying from Fort Smith, N.W.T. to a small lake directly north of the Permit, and then walking into the Permit. The Bocquene River was fairly shallow and could be crossed on foot in several places. The Permit should be easily accessible by snowscooter in the wintertime.

### History

The geology of the area was mapped on a scale of four miles to one inch in 1960 by G. C. Riley of the Geological Survey of Canada, and is shown on the Fort Fitzgerald Sheet (Map 12-1960).

Aeromagnetic maps of the area have also been prepared by the Department of Mines and Minerals, Ottawa. These are Geophysics Paper 2886 (Sheet 74<sup>M</sup>/<sub>6</sub>), Geophysics Paper 7161, and Map 1255A. The first of these is at a scale of one inch to one mile, the second at one inch to four miles, and the latter at one inch to 80 miles.

### OPERATIONAL DATA

#### Instrument Used

The survey was carried out with a Sharpe MF-2 Flux gate magnetometer, which had the serial number 002129. The sensitivity at 10,000 gammas f.sc. is 200 gammas per scale division. The temperature coefficient is less than one gamma per degree centigrade, or  $\frac{1}{2}$  gamma per degree fahrenheit. The instrument is extremely sensitive to variations of the intensity of the magnetic field.

#### Operator

All measurements with the instrument were made by the operator. The field crew consisted of four men: J. Young, R. Boyle, T. O'Neill and D. Beaumont. A base camp was established near the subject Permit. The field survey was inspected by G. V. Lloyd.

#### Period of Survey

The survey was conducted during July 17, 18 and 19, 1970. This time includes the time spent in moving to and from the area.

#### Survey Control

The survey was conducted along a single line 7,000 feet long (see Map No.

1.) The line was measured and a station established each 200 feet.

#### Frequency of Measurements

Measurements of the intensity of the magnetic field relative to a base station with an arbitrary intensity of 59,000 gammas were made every 200 feet along the baseline. At least one station was rechecked every hour in order to determine the magnetic drift. Diurnal variations were obtained by taking measurements of the base station several times daily.

#### GEOLOGY

Maps prepared by the Geological Survey of Canada (Map 12-1960) show the Permit to be in a contact area between three Precambrian map units, although only two are found within the Permit. The western half consists of pink and grey granite. The eastern half consists of foliated pink granite. The latter unit is reportedly porphyroblastic and porphyritic, and partly gneiss.

The third unit mentioned above occurs a short distance west and north of the Permit. This is described as undivided granites, with minor gneisses and metasediments. The published geological map also shows an easterly trending fault a short distance south of Bocquene Lake.

About thirty percent of the Permit is composed of discontinuous outcrops, mainly of medium grained granite. Some fine quartz veins and fine grained dark intrusive dykes are also present.

The general geology of the subject Permit is shown in the following table:

Table of Formations

Precambrian	Granite; pink, medium grained, porphyroblastic and porphyritic, foliated, in part gneiss
	Granite; pink and grey, fine to medium grained, equigranular, in part garnetiferous

GEOPHYSICS

The regional aeromagnetic geophysics map (Geophysics Paper 2886) shows a linear, easterly trending magnetic high extending across the central part of the subject Permit. It is, at least, five miles in length and about 1½ miles wide. The variation in intensity across this anomaly is about 400 gammas.

The ground magnetometer survey supports the presence of the airborne anomaly. There is, however, a narrow "low" near station BL+20S, which is not shown on the airborne map.

The values obtained during the ground survey are shown in Map No. 1.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The flux gate magnetometer survey results reveal a magnetic high in the central part of the Permit. The results obtained in general support those obtained previously by airborne methods. The "low" readings in vicinity of station BL+20S could be due to a zone of alteration along a fault contact.

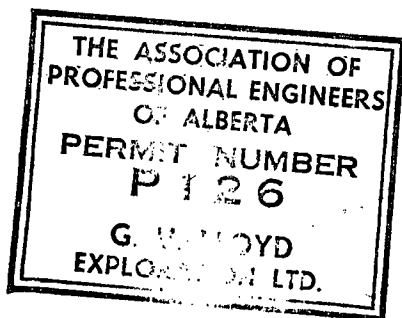
The reasons for the main anomaly, as expressed by the magnetic inten-

sity values, remains obscure. It is likely that they are due to magnetic minerals, or basic rocks, at unknown depths.

Recommendations

The magnetic anomaly should be checked with an electromagnetic unit to determine if any conductors are present.

If conductors are discovered, then a baseline should be established along their trace, and cross lines cut every 300 feet, to extend at least 1,500 feet on each side. This grid should then be surveyed by a ground electromagnetic unit.



G. V. LLOYD EXPLORATION LTD.

A handwritten signature in cursive script, appearing to read "G. V. Lloyd".

G. V. Lloyd, P. Geol.

Calgary, Alberta

August 25, 1970

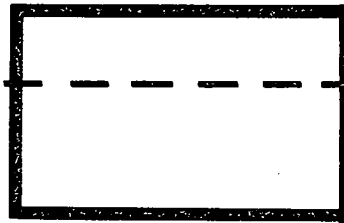


# QUARTZ MINERAL EXPLORATION PERMIT No.146

(74m/6)

FIESTA OIL AND GAS LTD.,  
201-627-6th. AVENUE S.W.,  
CALGARY 1, ALBERTA

DATE OF ISSUE - NOVEMBER 10, 1969  
AREA - 9,600 ACRES



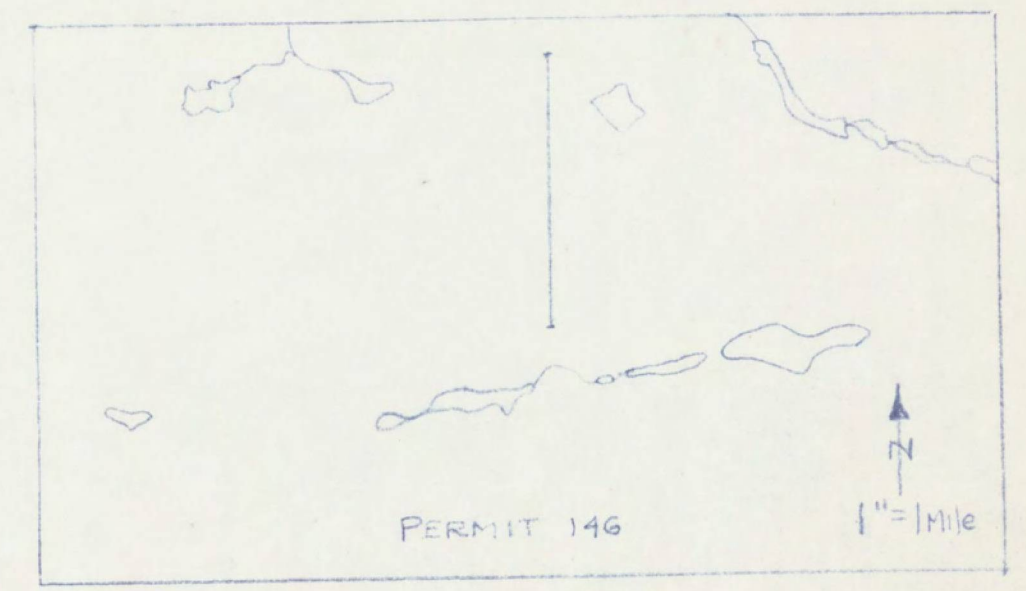
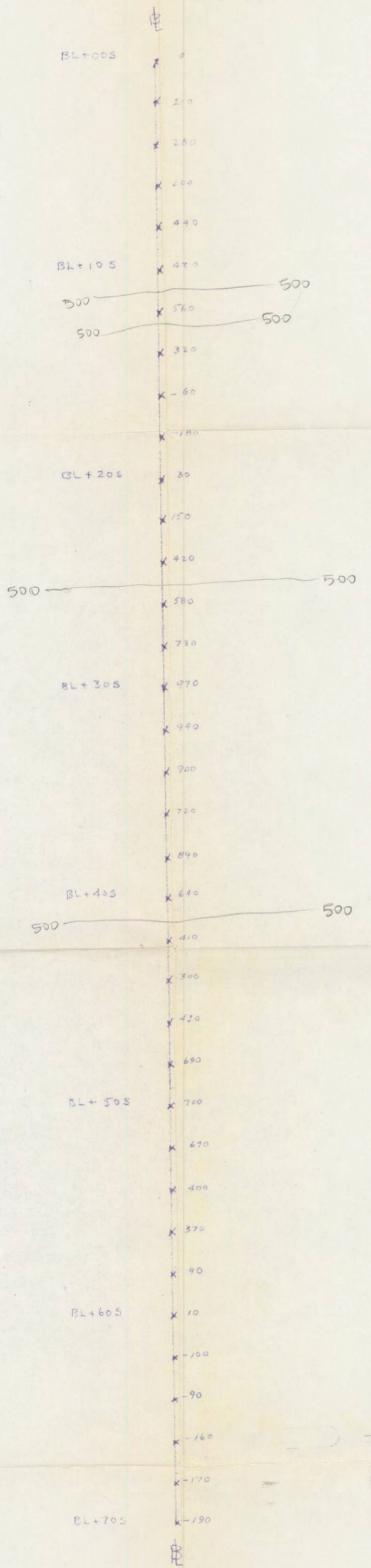
TP. 121

TP. 120

R. 8

R. 7 W. 4 M.





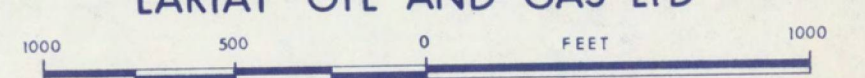
LEGEND

Station - x

Instrument - Sharpe MF-2 Fluxgate

Magnetic intensities in gammas

MAP NO. 1  
 MAGNETIC INTENSITY MAP  
 PERMIT NO.146  
 BOCQUENE RIVER AREA  
 ALBERTA  
 PREPARED FOR  
 LARIAT OIL AND GAS LTD



Values by J. YOUNG Interval \_\_\_\_\_

Interpretation by \_\_\_\_\_ Datum \_\_\_\_\_

Drawn by \_\_\_\_\_ Date AUGUST 1970

G.V. LLOYD EXPLORATION LTD.

2600071  
 J.H. Timms