# MAR 19700019: LA BUTTE CREEK

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# GROUND MAGNETOMETER SURVEY

# PERMIT NO. 144, LABUTTE

# CREEK AREA, ALBERTA

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Prepared for

LARIAT OIL AND GAS LTD.

by

G. V. Lloyd Exploration Ltd.

Calgary, Alberta

August, 1970

# GROUND MAGNETOMETER SURVEY

# PERMIT NO. 144, LABUTTE CREEK AREA, ALBERTA

## Summary

This report presents the results of the magnetometer survey carried out on Permit No. 144, LaButte Creek 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

The Permit No. 144 consists of some 9,600 acres (or 240 mineral claims). The Permit is in the shape of a rectangular block. No exmmination of the ownership of the subject properties or of the claim boundaries was undertaken by us, and those relating facts given us by Lariat Oil and Gas Ltd. were accepted without further examination.

The Permit is situated near the junction of LaButte Creek and Slave River, or about forty-eight miles upstream on the Slave River from Fort Smith, N.W.T. This places it also about thirty-four miles north of Fort Chipewyan, Alberta. It also lies in Township 118, Range 7, West of the Prime Meridian.

## Accessibility

The subject Permit is not easily accessible from Fort Smith, N.W.T. There are no roads or trails in vicinity of the Permit. A first attempt to reach the Permit from a camp set out by float plane on Darwin Lake ended

in failure when it was found not possible to reach the Permit and return to camp in the same day. A canoe was then flown into LaButte Creek, and the survey group made their way up LaButte Creek and into the Permit. Probably the easiest method of getting into the Permit would be by snowmobile 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 $74\frac{M}{6}$), 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 eighty 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 ½ 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 commenced on June 19 and completed on July 4, 1970, a period of two weeks. This includes the time spent in establishing the grid control and in moving the base camp.

Survey Control

The survey was conducted along lines spaced 2,000 feet apart, and having a bearing of east. A north-south baseline was established through the central part of aeromagnetic anomaly, in order to establish and control the crosslines. The picket lines were chained and a station was established every 100 feet. A total of 27,000 feet of lines, including 11,000 feet of baseline were marked through the Permit, or established by pickets and ribbons.

Frequency of Measurements

Measurements of the intensity of the magnetic field relative to a base station with an arbitrary intensity of 58,000 gammas were made every 100 feet along the crosslines and on 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, al-

though only two are found within the Permit. The eastern half consists of pink and grey granite. The western half consists of foliated pink granite. The latter unit is reportedly porphyroblastic and porphyritic, and partly gneiss. Our field personell described this unit as a gneissic granite.

The third unit mentioned above occurs a short distance west of the Permit. This is described as undivided granites, with minor gneisses and metasediments.

Some northwesterly striking faults, or fault systems were observed in the Permit area, but no attempt was made to map them. There are fairly extensive outcrops in the Permit.

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 airborne geophysical maps (Geophysics Paper 2886) show an ovoid-shaped magnetic anomaly that trends south-south easterly through the central western part of Permit 144. It is about 1½ miles long and one mile wide. The variation in magnetic intensity across the anomaly is about 200 gammas.

The ground magnetometer survey supports the presence of the airborne

anomaly. On line BL60S, for example, the maximum variation in intensity is 680 gammas. A somewhat lesser amount is recorded on line BL80S. Smaller, localized variations in intensities can be seen on both the base and cross lines.

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

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

The fluxgate magnetometer survey results show a magnetic high in the central western part of the subject Permit. The results obtained, in general, support those obtained previously by airborne methods.

There were no outcrops in vicinity of the anomaly.

The reasons for the anomaly, as expressed by the magnetic intensity 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 a conductor is present.

The first line should trend northeasterly through BL+60S. It is recommended that this work be done during the wintertime, or early Spring, when the area can be reached by Skidoo or similar vehicle.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ALBERTA
PERMIT NUMBER
P 126

G. V. LLOYD EXPLORATION LTD.,

G. V. Lloyd, P. Geol.

Calgary, Alberta
August 20, 1970.

G. V. LLOYD
EXPLORATION LTD.

# QUARTZ MINERAL EXPLORATION PERMIT No. 144

(74m/6)

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