

REPORT ON
A GROUND ELECTROMAGNETIC AND GROUND
MAGNETOMETER SURVEY
WATSON LAKE MINING DIVISION, YUKON TERRITORY

This report has been examined by
the Geological Evaluation Unit.
Approved as to technical worth by:

D. C. Yonilley
RESIDENT GEOLOGIST

BY

Approved as to cost in the amount
of: \$ 4000.00

A. E. Redden
RESIDENT MINING INSPECTOR

Accepted as representation work
under Section 53(4) Yukon Quartz
Mining Act.

[Signature]
COMMISSIONER OF YUKON

EAGLE GEOPHYSICS LIMITED

TORONTO, ONTARIO

AUGUST, 1967

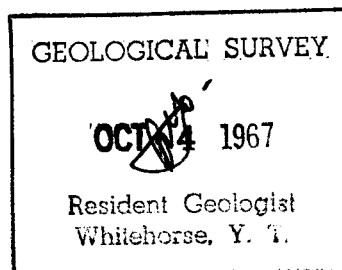


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INTRODUCTION

From 30th June, 1967, to 19th July, 1967, Eagle Geophysics Limited carried out a combined ground electromagnetic and magnetometer survey over part of a property held jointly by Quatsino Copper-Gold Mines Limited, New Privateer Mines Limited and Buchanan Mines Limited. The property is located on the north side of Pelly River in the Watson Lake Mining Division, Yukon Territory.

The property discussed in this report comprises a group of 16 contiguous mineral claims. These mineral claims are recorded with the Department of Northern Affairs and National Resources as

Cow 7 to Cow 14 inclusive
and Cow 21 to Cow 28 inclusive.

These claims form part of the total group (Cow 1 to Cow 40), held jointly by the three previously mentioned companies.

Results of the survey are shown on two maps accompanying this report. Firstly, the ground magnetometer survey map (No. E114-1), contoured at an interval of 250 gammas. Secondly, the ground electromagnetic survey map (No. E114-2) showing profiles of the recorded dip angles. Both these maps are at a horizontal scale of 1 inch represents 200 feet.

PROPERTY LOCATION AND ACCESS

The property is situated in the Watson Lake Mining Division, Yukon Territory. It is located on the Pelly River some 35 miles southeast of the settlement of Ross River. Access to the property at the time of carrying out the survey was as follows. By driving some 35 miles southeast from Ross River towards Watson Lake a point was reached where the road comes within a few hundred feet of the Pelly River. This point is about one-quarter of a mile west of where the Hoole River enters the Pelly River. From here the property is finally reached by a one-half mile boat trip downstream.

GEOLOGY

For a general description of the rocks found in the vicinity of the property the reader is referred to Memoir 200, "A Reconnaissance of Pelly River Between Macmillan River and Hoole Canyon, Yukon," by J. R. Johnson (1936), published by the Bureau of Economic Geology, Geological Survey of Canada. In addition the property is located on the Geological Survey of Canada's geological map number 8-1960 (sheet 105G), Finlayson Lake, Yukon Territory.

The claim group lies about 10 miles northeast of the northwest-southeast trending Tintina fault zone. This fault zone separates two distinctively different geological areas. To the southwest of the fault zone the rocks are relatively unmetamorphosed, folded and faulted rocks of Palaeozoic age. To the northeast of the fault zone metamorphic and granitic rocks predominate.

Certain geological boundaries have been interpreted from the magnetic data as have a number of faults. The significance of this information is discussed in a later section.

SURVEY SPECIFICATIONS

A baseline running approximately east-west was established across the property. Traverse lines were turned off at 400 foot intervals and at right angles to the baseline. The traverse lines were cut, chained and picketed at 100-foot intervals.

For the magnetic survey a Sharpe MF-1 fluxgate magnetometer was used, measuring variations in the vertical component of the earth's magnetic field to an accuracy of ± 10 gammas. Corrections for diurnal variations were made by tying-in to previously established base stations at intervals not exceeding two hours. Readings for the magnetometer survey were taken every 100 feet with fill-in readings every 50 feet on steep magnetic gradients.

For the electromagnetic survey a Crone Electro-magnetic reconnaissance unit was used. This E.M. unit measures the direction (in degrees) of the total field resulting from energising the ground with a primary alternating signal of known frequency. When the total field differs from the primary field over a number of readings then the presence of a conductor is indicated, since the secondary magnetic field produced by the conductor has brought about changes in the total field. This E.M. system uses a technique known as

the "shoot-back" technique. In this technique both coils in turn are used to transmit and receive. By adding together the two measured dip angles, the resultant or final reading is independent of any elevation differences between the two coils. This technique is also independent of receiver to transmitter alignment and also independent of the separation of the coils. Readings for the electromagnetic survey were taken every 100 feet using a frequency of 1800 cycles per second. Where anomalous readings were obtained the traverse was re-run using a frequency of 480 cycles per second.

DISCUSSION OF RESULTS

The magnetometer survey indicated the existence of at least one contact between magnetically different rocks. This contact has also been inferred as a contact between two geologically different rock types. Rocks collected from 38/00N on line No. 6 west, from 3/00N on line No. 5 west, from 10/00S on line No. 1 west and from 8/00S on line No. 7 east have been identified as coarse grained basic rocks most probably of gabbroic composition. Since both nickel and asbestos have been found very close to the area the other possibility is that these rocks could be ultrabasics. The rocks mentioned at the above locations are almost identical with those mapped by the Geological Survey of Canada as dark brown and black Tertiary basaltic flows. These rocks were examined by both the writer and Mr. L.G. Morrison, P. Eng., of Roving Explorations, Calgary, and they are in fact believed to be intrusive gabbros.

At about 26/00N between lines No. 2 east and No. 3 east some fair sized rock bluffs were observed. These rocks are coarsely crystalline limestones and dolomites. At about 25/00N on line No. 7 east rock outcrops have been identified as metamorphic schists.

Based on these observations and the magnetic data a contact between the intrusives and the metamorphic rocks has been interpreted and is shown on map No. E114-1.

The electromagnetic survey indicated the presence of four conductors, A, B, C and D. All four conductors were detailed using the low frequency. As a result of this, conductors A, B and C are not considered worthy of further investigation, as a result of their low conductivity. However, conductor D, which is a flat lying conductor whose upper surface is most probably 80 to 100 feet deep, has a conductivity within the realm of disseminated sulphides. Of course such conductivity may also be caused by carboniferous sediments or graphite. These conductors are indicated on map No. E114-2.

SUMMARY AND RECOMMENDATIONS

From 30th June, 1967, to the 19th July, 1967, Eagle Geophysics Limited carried out a combined ground electromagnetic and magnetic survey over 16 claims, located on the Pelly River, Yukon Territory and held jointly by Quatsino Copper-Gold Mines Limited, New Privateer Mines Limited and Buchanan Mines Limited.

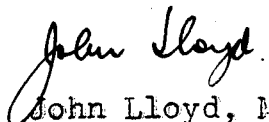
The magnetic survey delineated an area of what are most probably basic intrusives from an area of limestones and metamorphic schists.

The electromagnetic survey indicated four conductors namely A, B, C and D. Only conductor D is in the opinion of the writer worthy of further investigation.

It is recommended that an additional line be run between lines No. 7 west and 8 west over parts of claims Cow 21 and Cow 22. In addition further lines should be read with the electromagnetic unit to the west of line No. 8 west in the region of conductor D to delineate its western extremity.

Respectfully submitted

EAGLE GEOPHYSICS LIMITED


John Lloyd, M.Sc.,

Geophysicist.

Toronto
August, 1967

A P P E N D I X

(i)

PERSONNEL EMPLOYED ON SURVEY

<u>Name</u>	<u>Occupation</u>	<u>Address</u>	<u>Dates</u>
J. Lloyd	Geophysicist	Eagle Geophysics Limited P. O. Box 125 Rexdale, Ontario	30th June to 19th July, 1967 (inclusive)
N. Frost	Geophysical Helper	Quatsino Copper Gold Mines Ltd. 326-736 Granville Street Vancouver 2, B.C.	30th June to 11th July, 1967 (inclusive)
V. Pashniak	Geophysical Helper	Quatsino Copper Gold Mines Ltd. 326-736 Granville Street Vancouver 2, B.C.	11th July to 19th July, 1967 (inclusive)
D. Grant	Drafting	Eagle Geophysics Limited P. O. Box 125 Rexdale, Ontario	July 24, 25, 26, 28, 30, 1967
Mrs. Caldwell	Typing	Quatsino Copper Gold Mines Ltd. 326-736 Granville Street Vancouver 2, B.C.	August 14, 1967

(ii)

COST OF SURVEY

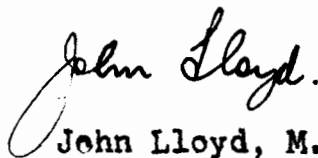
Eagle Geophysics Limited provided a geophysicist and instruments at \$95.00 per day for 20 days, while the cost of a helper and the camp were borne by the respective mining companies. The cost of interpretation, report writing and draughting were extra so that the total cost of services provided by Eagle Geophysics Limited was \$2,795.00.

CERTIFICATION

I, John Lloyd of 45 Dunfield Avenue, Toronto, Ontario, hereby certify that

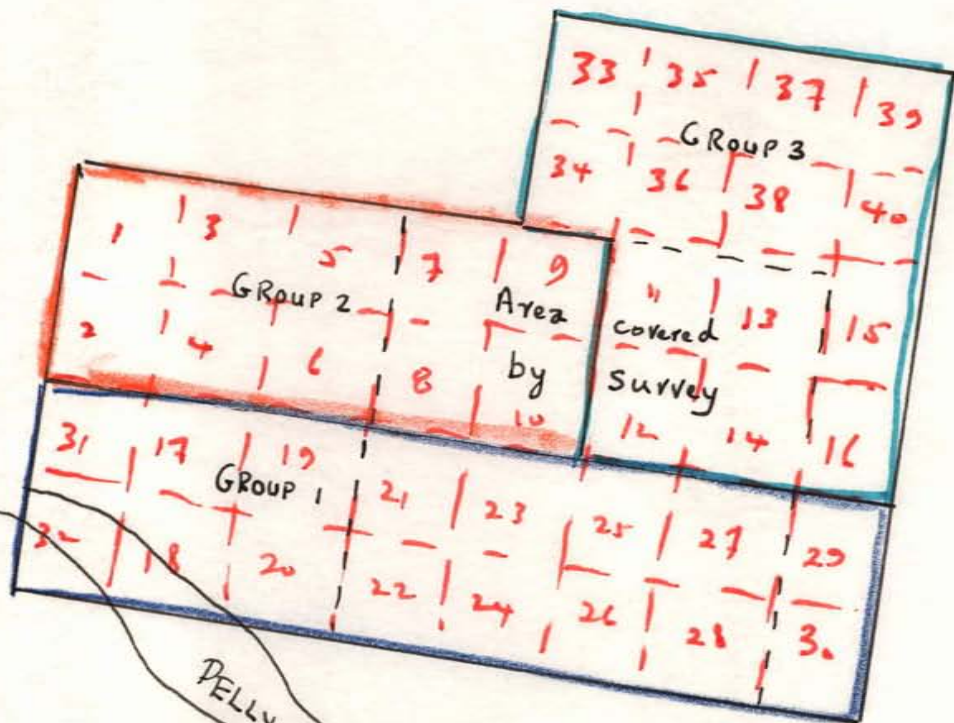
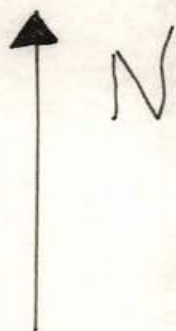
- (1) I was born in Wales on May 10, 1938
- (2) I am a graduate of the University of Liverpool, England in 1960 with a B.Sc. in Physics and Geology and a graduate of the Royal School of Mines, University of London with a M.Sc. in Geophysics in 1962.
- (3) I have been practising my profession for the last seven years.
- (4) I have no interest or shares in Buchanan Mines Limited, Quatsino Copper Gold Mines Limited, New Privateer Mines Limited, nor do I expect any.

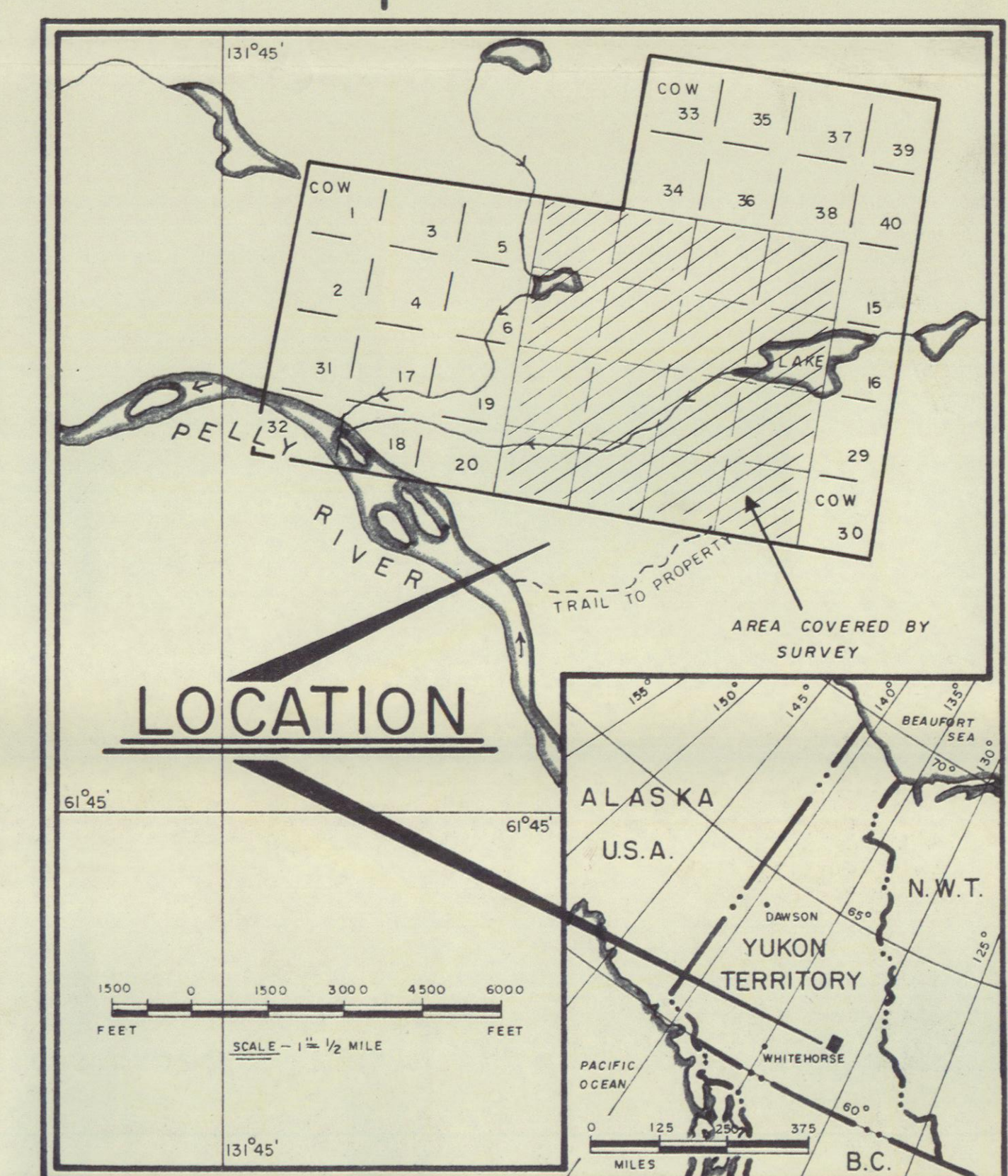
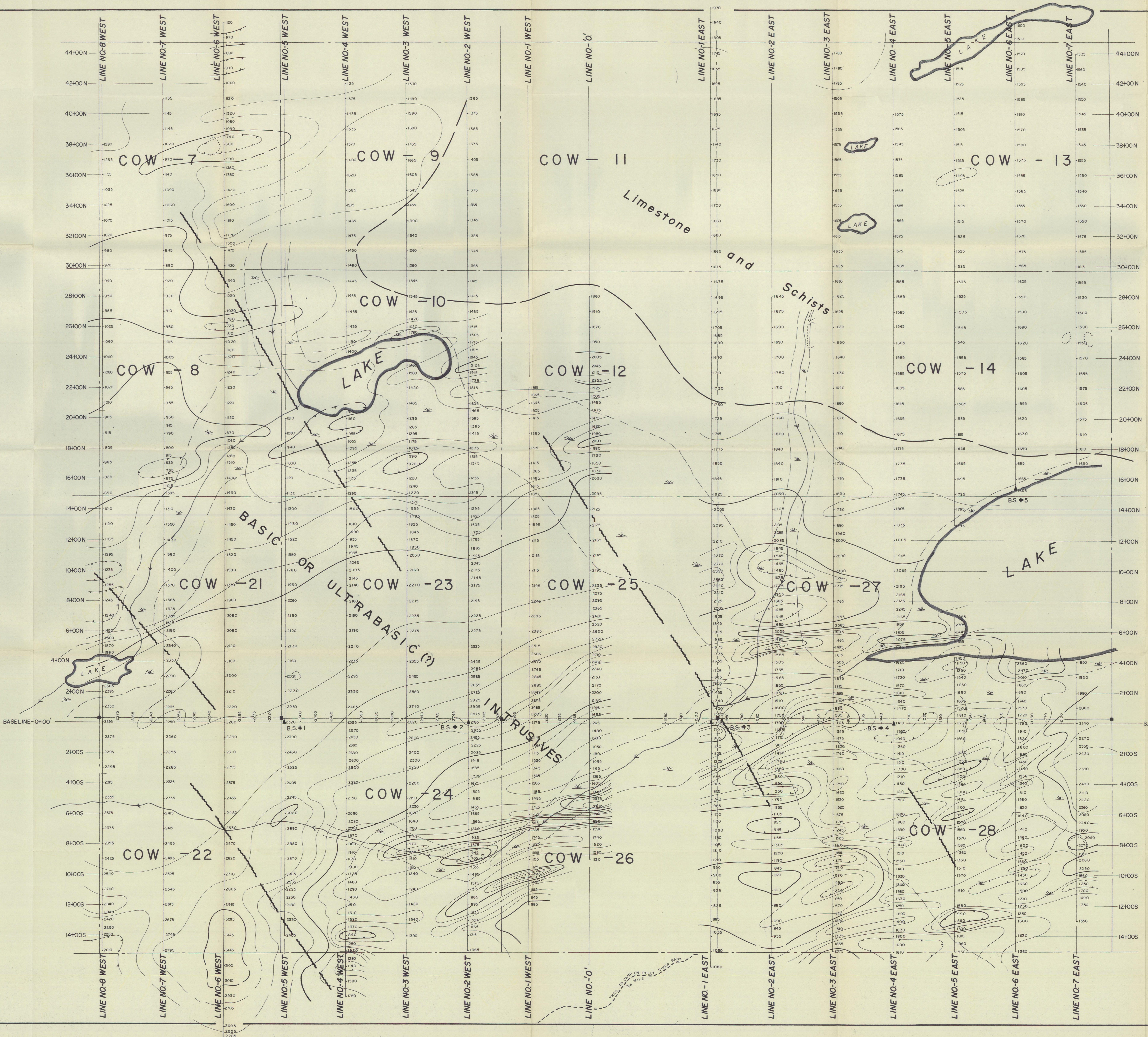
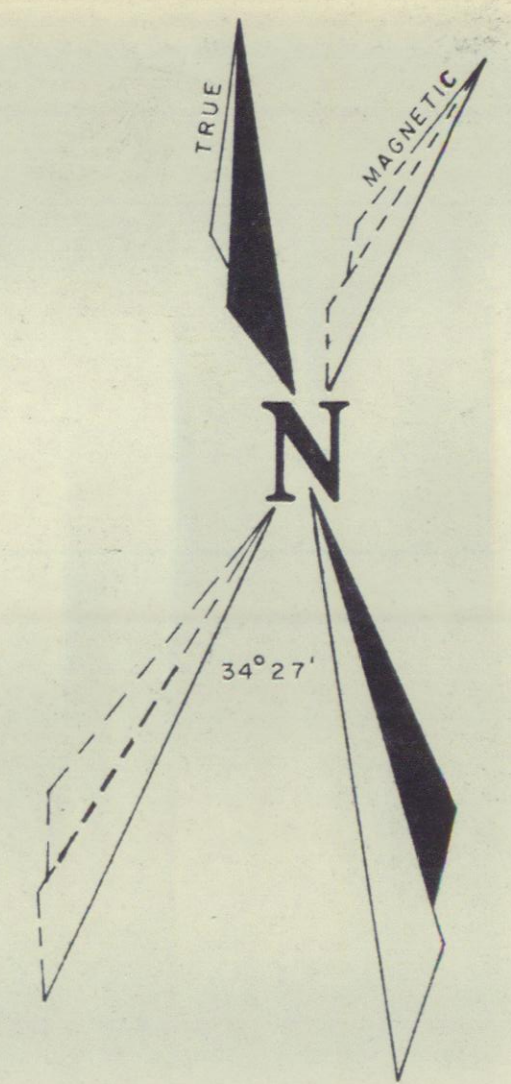
August 14, 1967.


John Lloyd, M.Sc.

COW CLAIMS

WATSON LAKE MINING DIVISION.





LEGEND

MAGNETOMETER SURVEY

- Contour Interval 250 Gammas
- 1000 Gamma Contour
- 250 Gamma Contour
- Magnetic Low
- Base Station

Geological Contact

- Inferred From Magnetic Data
- Fault Interpreted From Magnetic Data

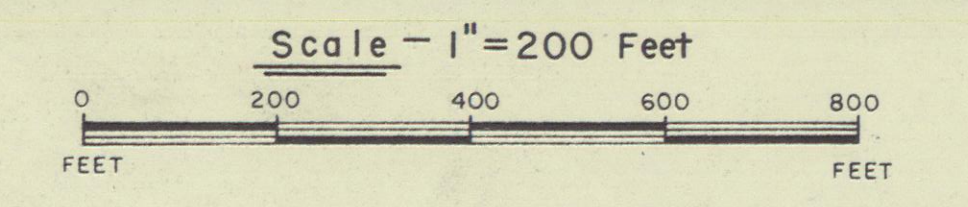
SYMBOLS

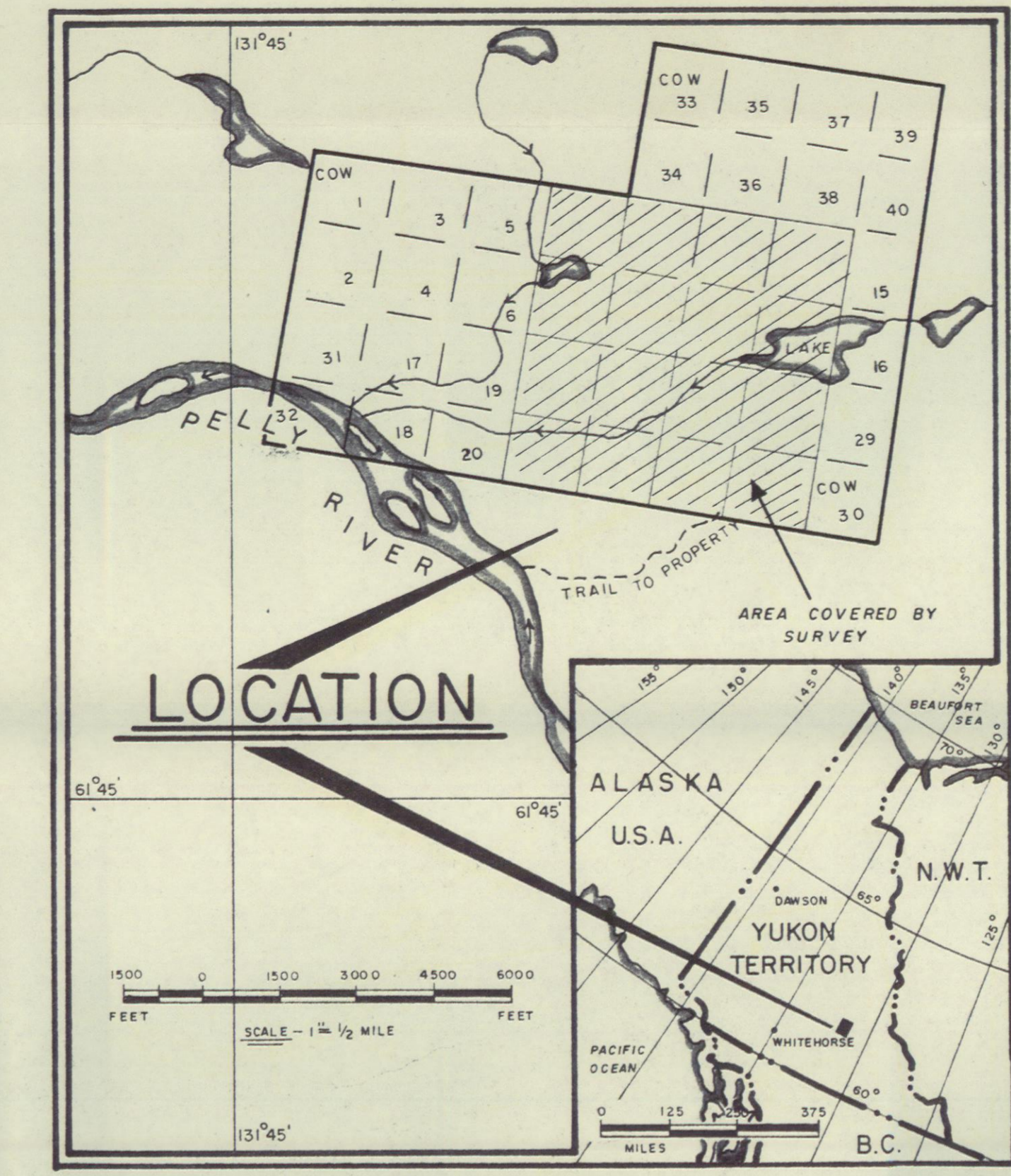
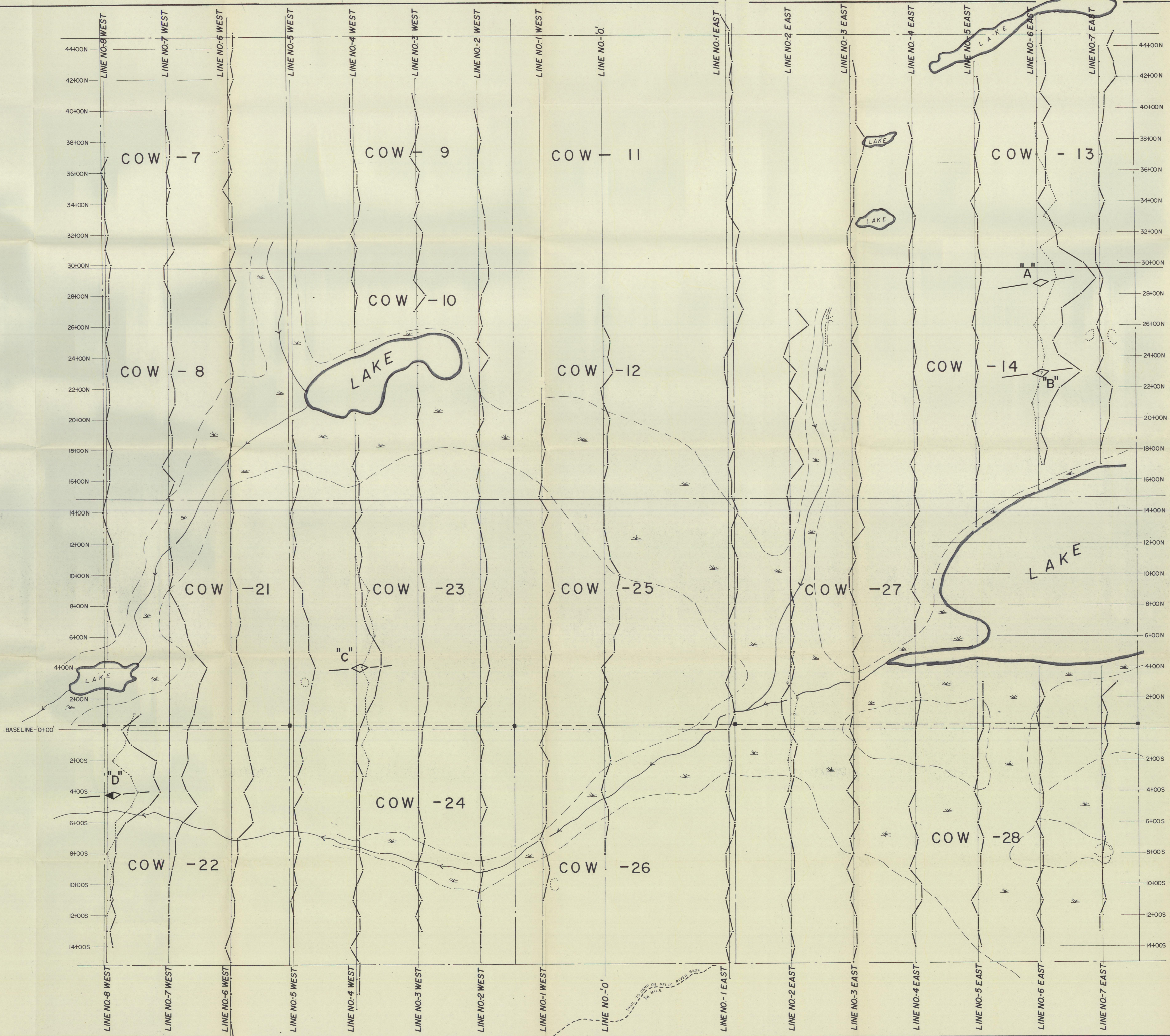
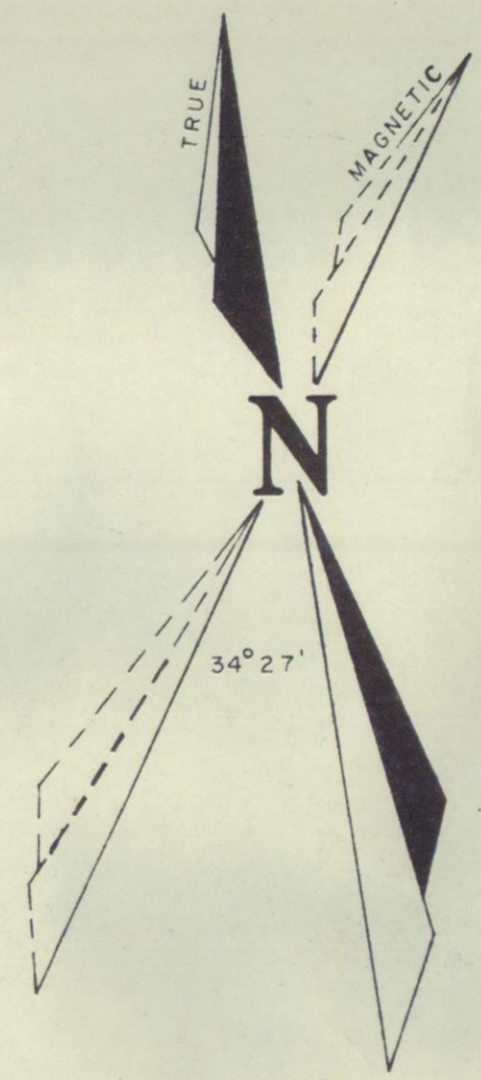
- Claim Post and Boundary
- Outcrop
- Swamp Outline
- Swampy Lake Outline
- Creek
- Trail

TO ACCOMPANY REPORT BY JOHN LLOYD M.Sc.
DATED AUGUST 3rd, 1967. *John Lloyd*

QUATSINO COPPER-GOLD MINES LIMITED
NEW PRIVATEER MINES LTD.
BUCHANAN MINES LIMITED
 COW PROPERTY, ROSS RIVER, YUKON TERRITORY - WATSON LAKE MINING DIVISION

MAGNETOMETER SURVEY





LEGEND

CRONE E.M. SURVEY

- Dip Angle Profile Frequency = 1800 c.p.s.
- Dip Angle Profile Frequency = 480 c.p.s.
- +5 Weak Conductor
- 5 Fair Conductor

SYMBOLS

- Claim Post and Boundary
- Outcrop
- Swamp Outline
- Swampy
- Lake Outline
- Creek
- Trail

TO ACCOMPANY REPORT BY JOHN LLOYD M.S.C.
DATED AUGUST 31, 1967 *J.L. Lloyd*

QUATSINO COPPER-GOLD MINES LIMITED
NEW PRIVATEER MINES LTD.
BUCHANAN MINES LIMITED
COW PROPERTY, ROSS RIVER, YUKON TERRITORY - WATSON LAKE MINING DIVISION

CRONE ELECTROMAGNETIC SURVEY

Scale - 1" = 200 Feet

MAP NO. - E-114-2

EAGLE GEOPHYSICS LIMITED
JULY-1967