

REPORT ON
GROUND ELECTROMAGNETIC AND MAGNETOMETER SURVEYS
WHITEHORSE MINING DIVISION, YUKON TERRITORY

BY

This report has been examined by
the Geological Evaluation Unit.
Approved as to technical worth by:
D. C. Findlay
RESIDENT GEOLOGIST

Approved as to cost in the amount
of: \$ 9955.00
D. S. Hedden
RESIDENT MINING ENGINEER

Accepted as representation work
under Section 53(4) Yukon Quartz
Mining Act.
[Signature]
COMMISSIONER OF YUKON

EAGLE GEOPHYSICS LIMITED

REXDALE, ONTARIO

AUGUST, 1967



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INTRODUCTION

From July 23rd to August 12th, 1967, Eagle Geophysics Limited carried out combined ground electromagnetic and magnetometer surveys over two adjoining properties, located in the Ross River area of the Yukon Territory and held jointly by Buchanan Mines Limited, New Privateer Mines Limited and Quatsino Copper-Gold Mines Limited.

The surveys were carried out over hand-cut lines, which were turned off at 400 foot intervals from established baselines, and chained and picketed at 100 foot intervals.

Readings were taken every 100 feet along the picket lines using both a Crone Electromagnetic Unit and a Fluxgate Magnetometer.

The results are shown on plan maps of the line grid that accompany the report, the E.M. data being plotted in profile form while the magnetic data are presented in contoured form. The scale of these maps is 1 inch to 200 feet.

PROPERTY AND LOCATION

These properties consist of adjoining POW groups of mineral claims which are divided into Property "A" and Property "B" as follows:

Property "A"

Pow 17 to 40 inclusive

Property "B"

Pow 1 to 16 inclusive
Pow 41 to 46 inclusive

The properties are situated in the Whitehorse Mining Division, Yukon Territory. They are located four miles north of the north bank of the Pelly River near its junction with the Lapie River, and are about 11 miles northwest of the settlement of Ross River. Access is obtained by means of helicopter from Ross River.

PURPOSE

The purpose of the survey was to try and detect the presence of mineralization on the property that could occur due to its proximity to known mineralization in the general area.

GEOLOGY

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, and to the Geological Survey of Canada's geological map number 13-1961 (Sheet 105K), Tay River, Yukon Territory.

The claim group lies about 4 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 of Palaeozoic age while to the northeast metamorphic and granitic rocks predominate.

The property itself is mostly covered by Quaternary unconsolidated deposits but some outcroppings of metamorphic schists have been located.

SURVEY SPECIFICATIONS

The basic principle of any electromagnetic survey is that when conductors are subjected to primary alternating fields secondary magnetic fields are induced in them. Measurements of these secondary fields give indications as to the size, shape and conductivity of conductors. In the absence of conductors no induced secondary fields are obtained.

The electromagnetic survey was carried out using a Crone E.M. reconnaissance unit. This E.M. system utilizes the "shoot back" technique, which requires a receiver and transmitter in each unit.

Each unit measures the direction of the total magnetic field (in degrees from the vertical) in turn while the other unit acts as the transmitter. On addition of the two measured angles the resultant reading is independent of substantial differences in elevation, and is plotted midway between the two coils.

Readings with this instrument were taken every 100 feet along the picket line using a frequency of 1800 cycles per second and a coil separation of 200 feet. Possible anomalous readings were subjected to further surveying with a second frequency of 480 cycles per second.

The magnetic survey was carried out using a Sharpe MF-1 Fluxgate Magnetometer. This instrument makes measurements of the vertical component of the earth's magnetic field to an accuracy of ± 10 gammas. Corrections for variations due to drift were made by tying-in to previously established base stations at intervals not exceeding two hours. Measurements were made every 100 feet along the picket lines with this instrument.

In all 15.9 miles of electromagnetic surveying and 18.3 miles of magnetometer surveying were completed on Property "A", while 12.0 miles of electromagnetic surveying and 13.7 miles of magnetometer surveying were done on Property "B".

DISCUSSION OF RESULTS

Property "A"

The magnetometer survey indicated the property to exhibit very flat magnetic relief as can be seen from map E-114-4.

The E.M. Survey as performed with frequency of 1800 cycles per second gave dip angle profiles that were relatively flat with the indication of three weak broad conductive trends. These are shown on the map (E-114-3) as trends A, B. & C.

Trend A was subjected to further surveying using a frequency of 480 cycles per second but gave no response.

As a result the anomalous readings are believed to be attributable to poor flat-lying conductors in the overburden and in the writer's opinion are unworthy of further investigation.

Property "B"

The magnetometer survey indicated the property to have a very flat magnetic background above which a small magnetic high is easily discernible. This high is located in the south corner of the map (E-114-5).

The E.M. survey as performed with a frequency of 1800 cycles per second gave relatively erratic dip angle profiles, from which one weak conductor (A) and

several weak broad conductive trends (B etc.) can be interpreted.

The weak conductor, A, when subjected to further surveying using a lower frequency of 480 cycles per second produced no response leading to the conclusion that it is a very weak conductor possibly caused by overburden effects.

No correlation was obtained between the magnetic and E.M. data with the exception that a very weak trend C could be associated with the magnetic high.

SUMMARY AND RECOMMENDATIONS

From July 23rd to August 12th, 1967, Eagle Geophysics Limited carried out combined electromagnetic and magnetometer surveys over two adjoining properties located on the north side of the Pelly River, Yukon Territory near the settlement of Ross River in the Whitehorse Mining Division. These properties are held jointly by Buchanan Mines Limited, New Privateer Mines Limited and Quatsino Copper-Gold Mines Limited.

The magnetometer survey showed both properties to exhibit very flat magnetic relief with the exception of a small magnetic high on Property B.

The electromagnetic survey indicated the presence of a number of weak conductive trends on the properties, none of which were considered worthy of further investigation by the writer.

The surveys failed to indicate the presence of massive sulphide mineralization down to a depth of at least 100 feet.

No further work is recommended on the properties at this time but as the properties are overburden

covered they should be held in abeyance until deeper penetrating geophysical techniques negate the possibility of mineralization at a depth in the general area.

Respectfully submitted,

EAGLE GEOPHYSICS LIMITED

Peter E. Walcott, P. Eng.
Geophysicist



Rexdale, Ontario

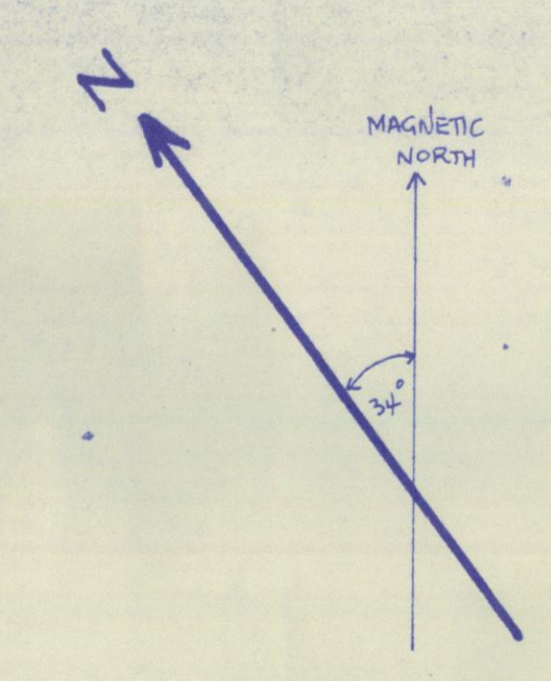
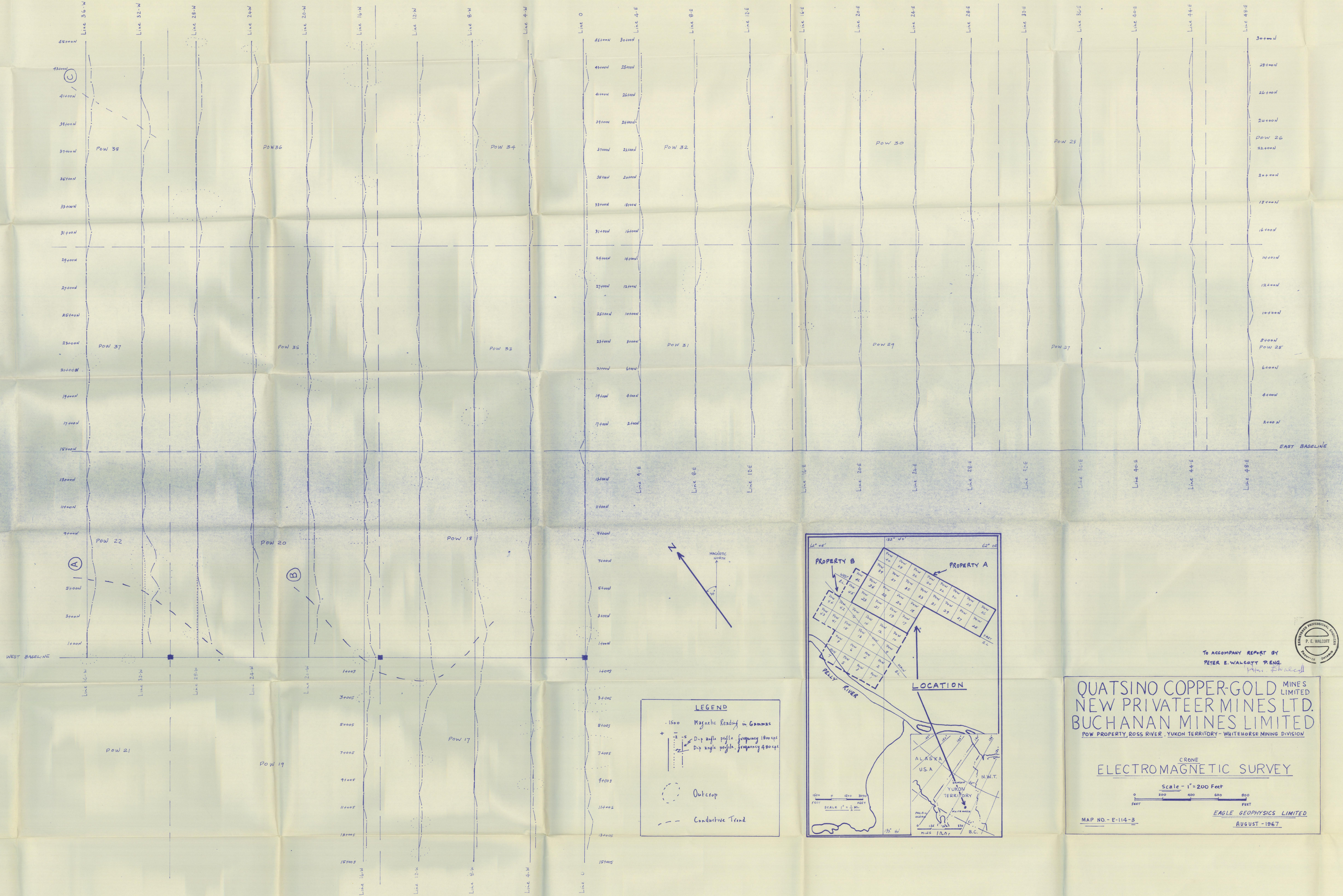
August, 1967

A P P E N D I X

(i)

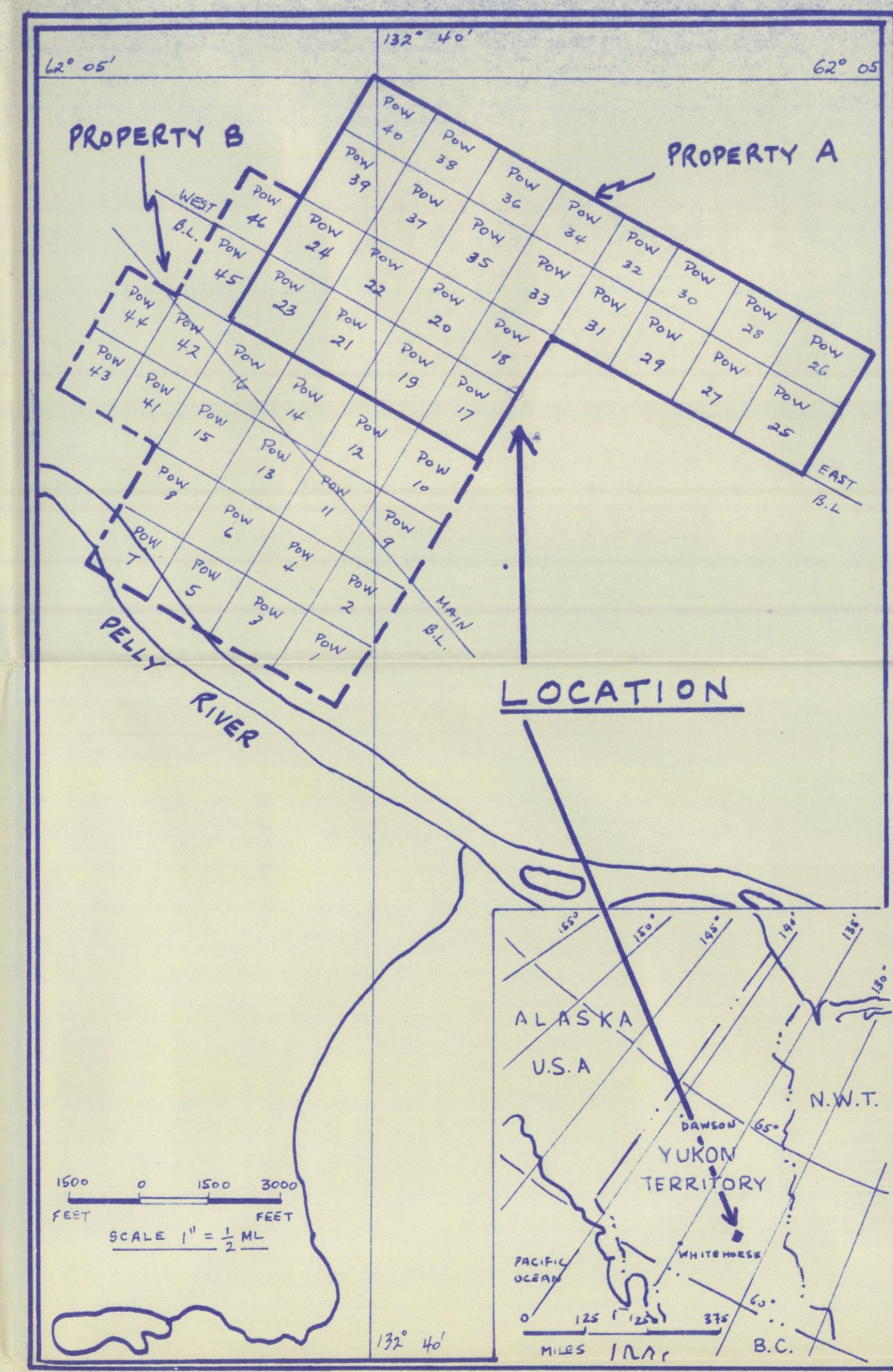
PERSONNEL EMPLOYED ON SURVEY

<u>Name</u>	<u>Occupation</u>	<u>Address</u>	<u>Dates</u>
V.R. Fallstrom	Geophysical Operator- Technician	Eagle Geophysics Limited P. O. Box 125 Rexdale, Ontario	23rd July to 12th August, 1967 (inclusive)
G. MacMillan	Geophysical Operator	Eagle Geophysics Limited P. O. Box 125 Rexdale, Ontario	23rd July to 12th August, 1967 (inclusive)
Peter Walcott	Geophysicist	Eagle Geophysics Limited P. O. Box 125 Rexdale, Ontario	16th to 18th August, 1967
John Lloyd	Draughting	Eagle Geophysics Limited P. O. Box 125 Rexdale, Ontario	16th to 18th August, 1967
V. Pashniak	Draughting	Quatsino Copper Gold Mines Limited #326-736 Granville Street, Vancouver 2, B. C.	16th to 18th August, 1967
Mrs. Caldwell	Typing	Quatsino Copper Gold Mines Limited #326 - 736 Granville Street, Vancouver 2, B. C.	18th August, 1967



LEGEND

- 1500 Magnetic Reading in Gamma
- + Dip angle profile frequency 180 cps
- Dip angle profile frequency 400 cps
- Outcrop
- - - Conductive Trend



TO ACCOMPANY REPORT BY
 PETER E. WALCOTT P. ENG.
Peter E. Walcott

QUATSINO COPPER-GOLD MINES LIMITED
NEW PRIVATEER MINES LTD.
BUCHANAN MINES LIMITED
 POW PROPERTY, ROSS RIVER, YUKON TERRITORY - WHITEHORSE MINING DIVISION

CRONE
ELECTROMAGNETIC SURVEY

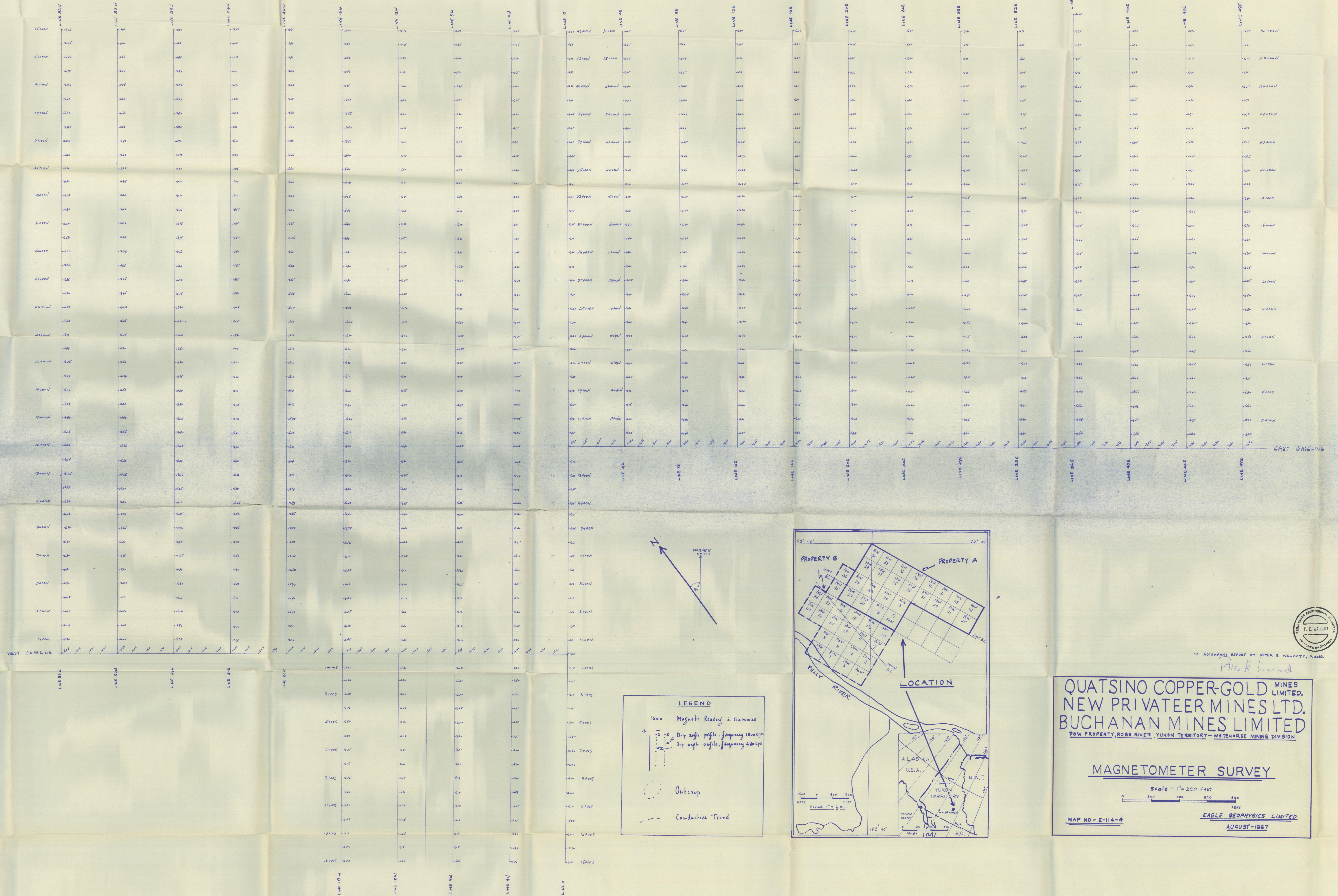
Scale - 1" = 200 Feet

0 200 400 600 800
 FEET

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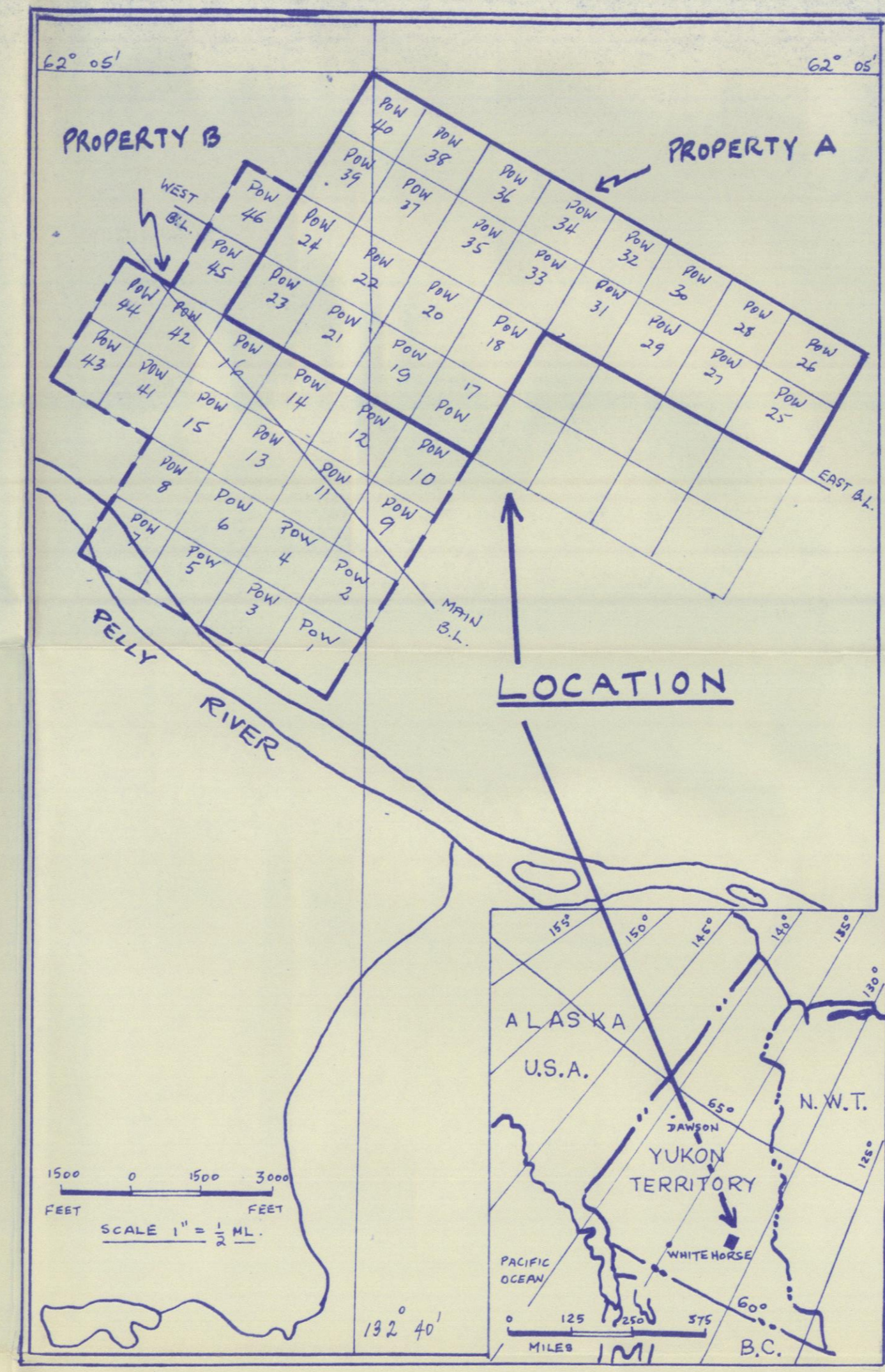
MAP NO. - E-114-3

REGISTERED PROFESSIONAL ENGINEER
 P. E. WALCOTT
 GEOPHYSICS DIVISION



LEGEND

- + 1500 Magnetic Reading in Gammas
- + 25 Dip angle profile, frequency 1800 cps
- + 102 Dip angle profile, frequency 480 cps
- Outcrop
- - - Conductive Trend



TO ACCOMPANY REPORT BY PETER E. WALCOTT, P. ENG.

Peter E. Walcott

**QUATSINO COPPER-GOLD MINES LIMITED,
NEW PRIVATEER MINES LTD.
BUCHANAN MINES LIMITED**

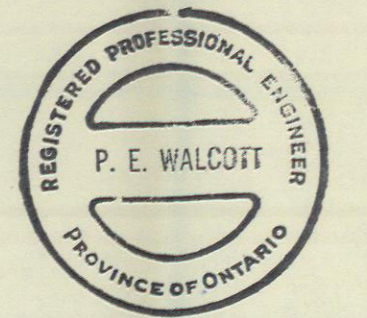
POW PROPERTY, ROSS RIVER, YUKON TERRITORY - WHITEHORSE MINING DIVISION

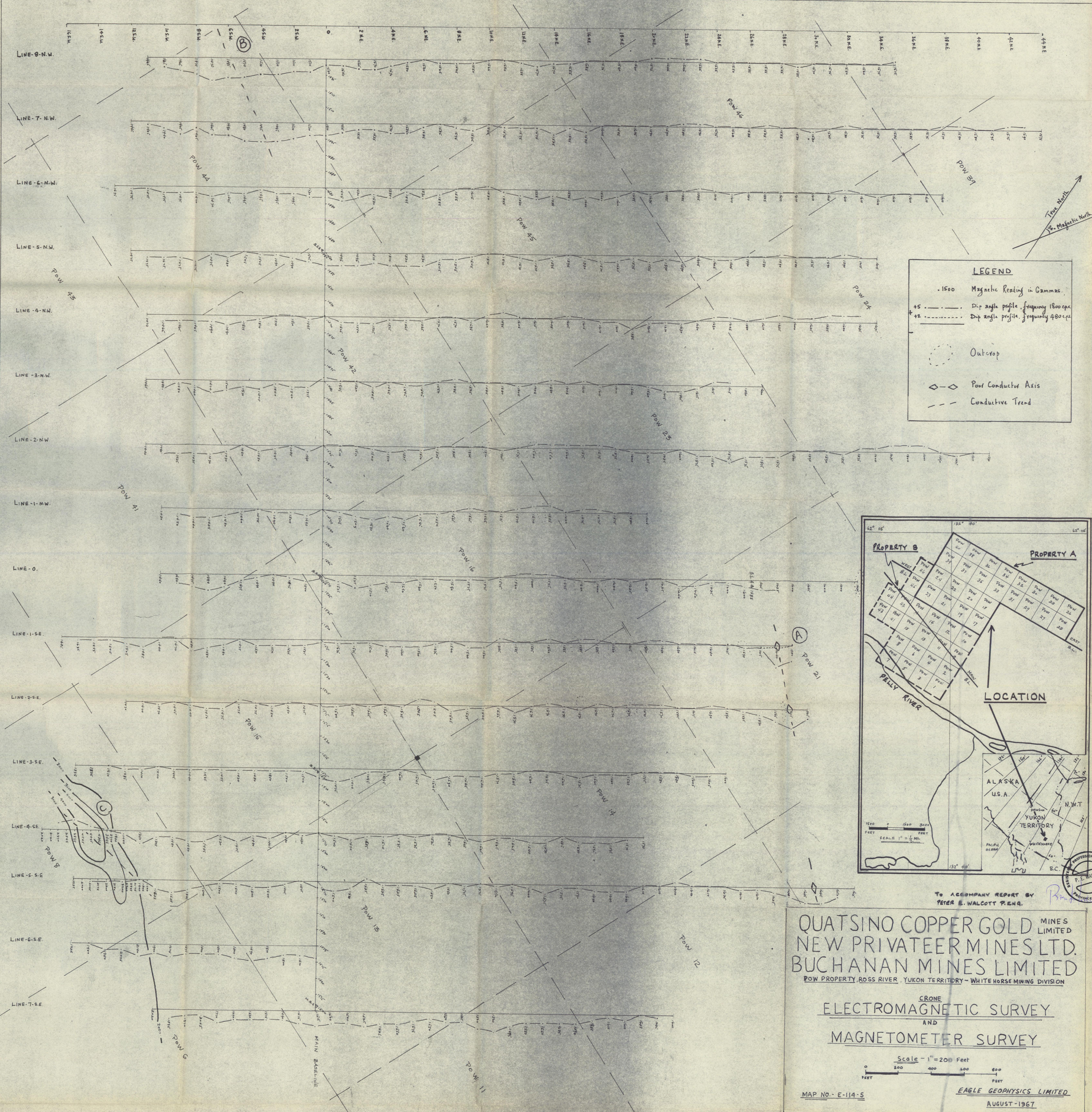
MAGNETOMETER SURVEY

Scale - 1" = 200 Feet

MAP NO - E-114-4

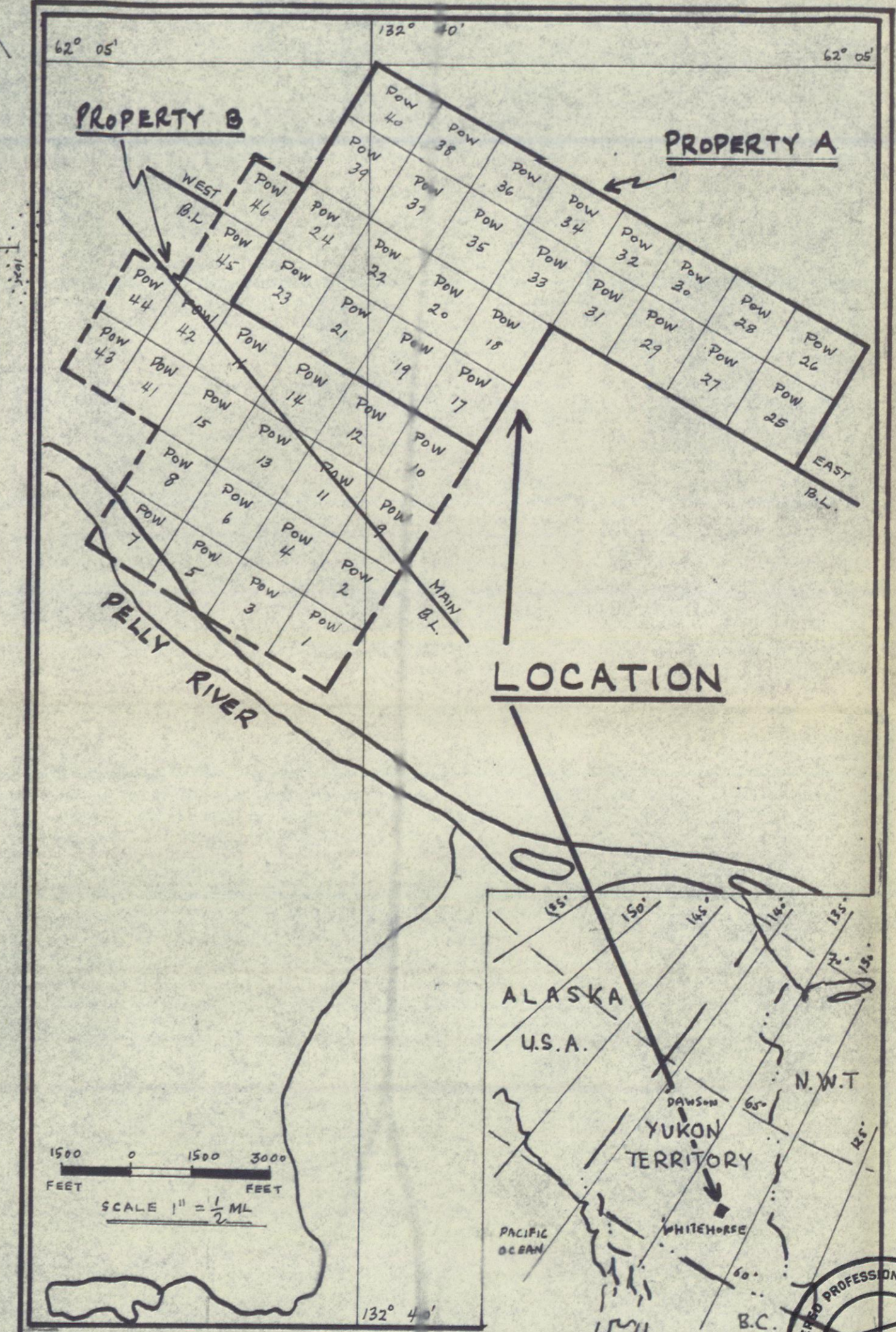
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LEGEND

- 1500 Magnetic Reading in Gammas
- +5 - - - Dip angle profile, frequency 1800 cps
- +2 - - - Dip angle profile, frequency 480 cps
- Outcrop
- ◇ Pool Conductor Axis
- - - Conductive Trend



TO ACCOMPANY REPORT BY
PETER E. WALCOTT P.E.N.G.

QUATSINO COPPER GOLD MINES LIMITED
NEW PRIVATEER MINES LTD.
BUCHANAN MINES LIMITED

POW PROPERTY, ROSS RIVER, YUKON TERRITORY - WHITE HORSE MINING DIVISION

CRONE
ELECTROMAGNETIC SURVEY
AND
MAGNETOMETER SURVEY

Scale - 1" = 200 Feet

MAP NO. - E-114-S

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