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A REPORT

ON

A GROUND ELECTROMAGNETIC SURVEY

Burwash Area, Yukon Territory

for

Alice Lake Mines Limited

Vancouver, British Columbia

by

Eagle Geophysics Limited

Rexdale, Ontario.

September, 1967

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: $ 2174.42

R F Kerr
RESIDENT MINING ENGINEER

Accepted as representation work under Section 64(2) Yukon Quartz Mining Act.

COMMISSIONER OF YUKON

2174.

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Electromagnetic Survey (Ronka E.M. -16) Grid No. 2, 1" = 100 feet	Map No. E-113-10

INTRODUCTION

From 25th to 31st, August, 1967, Eagle Geophysics Limited carried out a ground electromagnetic survey on a property located in the Burwash area of the Yukon Territory and held by Alice Lake Mines Limited.

The survey was carried out over two line grids, the lines in which were turned off at right angles every 200 feet from N120^{o} E and east-west baselines respectively and chained and picketed at 50 foot intervals.

Readings were taken every 50 feet along the picket lines using both a Crone Electromagnetic unit and a Ronka E.M.16 electromagnetic unit. Possible anomalous readings were subjected to further surveying using the Crone unit as a vertical loop unit.

The results are shown on plan maps of the line grids, maps E-113-7 to 10, that accompany this report, with the data being plotted in profile form. The Scale of these maps is 1 inch to 100 feet.

PROPERTY AND LOCATION

The property consists of the adjoining groups of Mary and Teddy claims, only parts of which were surveyed. The claims are as follows:

Mary	1 to 24 inclusive
Teddy	1 to 8 inclusive

The property is situated in the Whitehorse Mining Division, Yukon Territory. It is located at an elevation of about 6,000 feet approximately a mile north of the junction of Burwash and Tetamagouche Creeks, and is about 15 miles northwest of the settlement of Burwash Landing in Kluane Lake. Access was obtained by means of helicopter from Burwash Landing.

PURPOSE

The purpose of the survey was to try and detect additional lenses of high grade bornite and chalcopyrite, the occurrences of several of which are already known.

GENERAL GEOLOGY

The reader is referred to G.S.C. Memoir 340, and Paper 58-59, Kluane Lake Map Area, and to a report by Mr. Lee Morrison of Roving Exploration Services Limited of Calgary, Alberta, who has partially mapped the property.

The property is two-thirds covered by thin soil with grassy vegetation, with outcrop occurrences mostly being on cliff faces. Sedimentary and plutonic rocks reportedly outcrop at the western extremity near Tetamagouche Creek, but the only rocks seen by the writer on E. M. traverses were dark green to purple amygdaloidal lavas, mostly basalts.

Several mineral occurrences have been reported on the property. These consisted mostly of small but high grade lenses of bornite and chalcopyrite.

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 both a Crone E. M. reconnaissance unit and a Ronka E. M. 16 unit. The former 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 horizontal) in turn while the other unit acts as the transmitter. On addition of the two measured angles the resultant reading obtained is independent of substantial differences in elevation, and is plotted midway between the two coils.

Readings with this instrument were taken every 50 feet along the picket lines 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, then detailed, by using the Crone unit as a vertical loop unit. This was done by transmitting from one coil held vertically in a fixed position while measurements of dip angles were made by the other on adjacent lines, with the receiver always being aligned in the field of the transmitter.

The Ronka E. M. 16 unit utilizes the VLF radio stations that exist for submarine communications. Their vertical antennae create concentric horizontal primary magnetic fields, and the receiver, i.e. the E. M. 16 unit, measures the vertical components of the secondary

fields that might be induced by the primary one. Readings with this instrument were taken every 50 feet along the picket lines.

In all 23,550 feet of duplicated reconnaisance electromagnetic surveying and 2,350 feet of detailed surveying were completed.

DISCUSSION OF RESULTS

Grid I.

Both E. M. surveys, as can be seen from maps E-113-7 and 8, failed to show the presence of any conductors, not even detecting the small showing on Line 22E. The Ronka E. M. 16, however, did indicate what is believed to be the trough of a northwesterly trending syncline (Map E-113-8).

Grid 2.

Three possible conductors were indicated by the Crone survey (Map E-113-9) but these were not substantiated by the E. M. 16 survey (Map E-113-10). Conductor A appears to coincide with the main showing on the property, located at 3+50N, 7W on the grid.

The conductors were then subjected to further surveying using the Crone as a vertical loop unit. Conductor A was located on two lines, Line 6W and Line 8W, by weak crossovers (Map E-113-9) and possibly extends to Lines 4W and 10W. It appears to be a narrow body dipping to the north. Conductors B and C were not located by the ~~actual~~ detail survey.

SUMMARY AND RECOMMENDATIONS

From August 25th to 31st, 1967, Eagle Geophysics Limited carried out a ground electromagnetic survey over part of the Mary and Teddy claim groups held by Alice Lake Mines Limited and located in the Burwash area of the Yukon Territory.

The reconnaisance survey, run over two grids, failed to detect any conductors on Grid 1, but detected three possible conductors on Grid 2.

These conductors were subjected to further surveying using the vertical loop method and Conductor A was delineated whereas Conductors B & C were not detected.

Conductor A, as indicated by weak crossovers on the dip angle profiles, appears to be a narrow body dipping to the north and has an apparent strike length of some 200 feet. Its location coincides with the main high grade copper showing on the property.

A major drilling programme cannot be recommended under the circumstances as the results of the survey are too inconclusive to justify this expense. However Conductor A could be initially investigated by a small portable drill, and if results prove encouraging then by a major drilling programme, if it is felt that a small tonnage high-grade operation would be economic at its location.

Respectfully submitted

EAGLE GEOPHYSICS LIMITED

Peter E. Walcott, P.Eng.
Geophysicist.

Rexdale, Ontario.

September, 1967.

APPENDIX

COST OF SURVEYS

Eagle Geophysics Limited provided a geophysicist, two geophysical operators, instruments and camp for 7 days at $160.00 per day, and charged extra for interpretation, draughting and report preparation. Therefore the total cost of services provided by Eagle Geophysics Limited was $1,495.00.

PERSONNEL EMPLOYED ON SURVEY

Name	Occupation	Address	Survey Dates
Peter E. Walcott	Geophysicist	Eagle Geophysics Ltd, P. O. Box 125, Rexdale, Ontario.	25th to 31st August, 1967. 19th September, 1967.
V. Pashniak	Geophysical Operator	"	25th to 31st August, 1967.
V. R. Fallstrom	"	"	29th to 31st August, 1967.
D. Grant	Draughting	"	24th, 25th, 26th, 29th, September, 1967.
Mrs. D. Longman	Typist	"	28th September, 1967

Caldwell ??

CERTIFICATION

I, Peter E. Walcott, of the city of Weston, Ontario, hereby certify that:

1. I was born in Barbados, W.I. on March 22nd, 1939.

2. I am a graduate from the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.

3. I have been practising my profession for the last five years.

4. I am a member of the Association of Professional Engineers of Ontario, the Society of Exploration Geophysicists and the European Association of Exploration Geophysicists.

5. I have no shares of Alice Lake Mines Limited, nor do I expect to receive any.

Peter E. Walcott, P.Eng.

September 19th, 1967.

N

TRUE

MAG.

30°35'

MARY-8

MARY-7

MARY-1

MARY-2

MARY-3

MARY-4

MARY-5

MARY-6

STEEP SLOPE

LINE NO.-6+00 EAST

LINE NO.-8+00 EAST

LINE NO.-10+00 EAST

LINE NO.-12+00 EAST

LINE NO.-14+00 EAST

LINE NO.-16+00 EAST

LINE NO.-18+00 EAST

LINE NO.-20+00 EAST

LINE NO.-22+00 EAST

LINE NO.-24+00 EAST

LINE NO.-26+00 EAST

LINE NO.-28+00 EAST

LINE NO.-30+00 EAST

BASELINE-"0+00"

B/L-"0+00"

6+00N

5+00N

4+00N

3+00N

2+00N

1+00N

1+00S

2+00S

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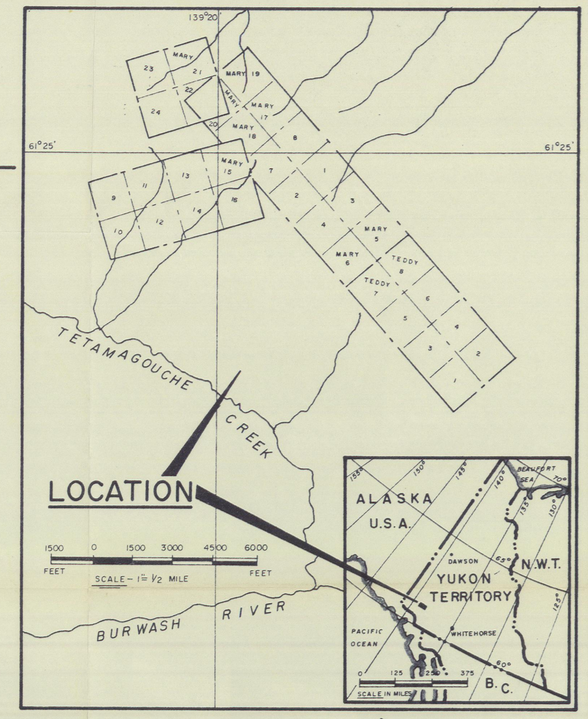
6+00S

7+00S

SHOWING



LEGEND

E.M. SURVEY

Dip Angle Profile
Frequency = 1800 c.p.s.

-5%

+5%

1" = 10%

SYMBOLS

Located Claim Post and Boundary

REGISTERED PROFESSIONAL ENGINEER
P. E. WALCOTT
PROVINCE OF ONTARIO

TO ACCOMPANY REPORT BY P.E. WALCOTT - P.Eng., DATED SEPTEMBER - 1967

ALICE LAKE MINES LTD. (NPL)

BURWASH PROPERTY - YUKON TERRITORY - WHITEHORSE MINING DIVISION

GRID NO. - 1

CRONE TYPE

ELECTROMAGNETIC SURVEY

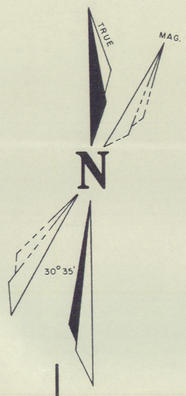
Scale - 1" = 100 Feet

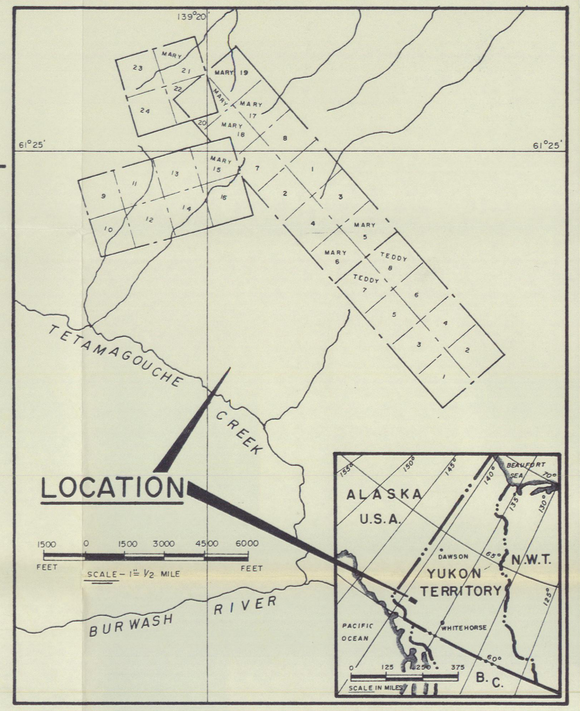
0 100 200 300 400 FEET

MAP NO. - E - 113 - 7

EAGLE GEOPHYSICS LIMITED

AUGUST - 1967





MARY-7

MARY-8

MARY-1

MARY-2

MARY-3

MARY-4

MARY-5

MARY-6

LINE NO-6+00 EAST

LINE NO-8+00 EAST

LINE NO-10+00 EAST

LINE NO-12+00 EAST

LINE NO-14+00 EAST

LINE NO-16+00 EAST

LINE NO-18+00 EAST

LINE NO-20+00 EAST

LINE NO-22+00 EAST

LINE NO-24+00 EAST

LINE NO-26+00 EAST

LINE NO-28+00 EAST

LINE NO-30+00 EAST

BASELINE-"0+00"

B/L "0+00"

7+00N
6+00N
5+00N
4+00N
3+00N
2+00N
1+00N
1+00S
2+00S
3+00S
4+00S
5+00S
6+00S
7+00S
8+00S

STEEP SLOPE

POSSIBLE TROUGH OF SYNCLINE

SHOWING

LEGEND

E.M. SURVEY

IN PHASE PROFILE
1"=10%

QUADRATURE PROFILE
1"=10%

+5% 70° -5%

TRANSMITTER
NPG - SEATTLE, WASHINGTON, U.S.A.

SYMBOLS

Located Claim Post and Boundary

REGISTERED PROFESSIONAL ENGINEER
P. E. WALCOTT
PROVINCE OF ONTARIO

TO ACCOMPANY REPORT BY P.E. WALCOTT-P.Eng., DATED SEPTEMBER-1967

ALICE LAKE MINES LTD. (NPL)

BURWASH PROPERTY - YUKON TERRITORY - WHITEHORSE MINING DIVISION

GRID NO.- 1

RONKA E.M.-16

ELECTROMAGNETIC SURVEY

Scale - 1"=100 Feet

0 100 200 300 400
FEET FEET

MAP NO.- E-113-8

EAGLE GEOPHYSICS LIMITED

AUGUST-1967

N

TRUE

MAG.

30°35'

LINE NO.-10+00 WEST

LINE NO.-8+00 WEST

LINE NO.-6+00 WEST

LINE NO.-4+00 WEST

LINE NO.-2+00 WEST

LINE NO.-"0+00"

MARY-17

MARY-18

MARY-8

MARY-7

MARY-1

MARY-2

6+00 N

5+00 N

4+00 N

3+00 N

2+00 N

1+00 N

BASELINE-"0+00"

1+00 S

2+00 S

3+00 S

4+00 S

5+00 S

6+00 S

7+00 S

8+00 S

9+00 S

10+00 S

11+00 S

B/L-"0+00"

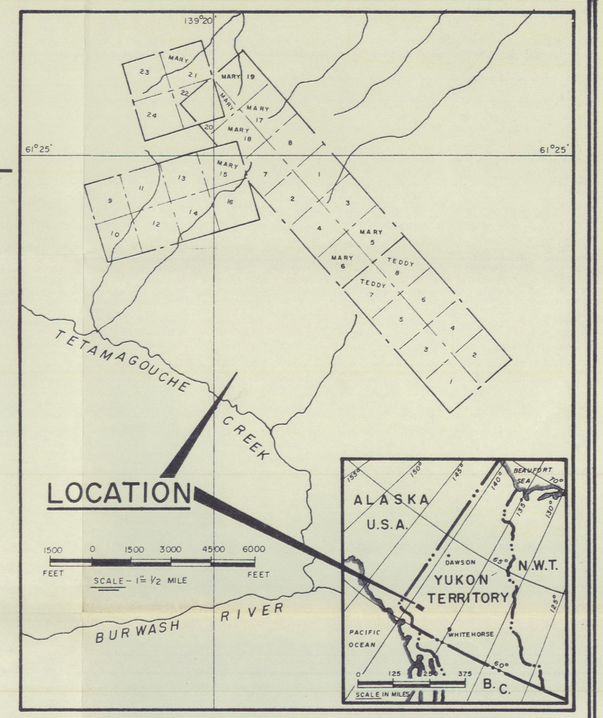
"A"

SHOWING

"B"

"C"

STEEP SLOPE



LEGEND

E.M. SURVEY

Dip Angle Profile Frequency = 1800 c.p.s.

Dip Angle Profile Frequency = 480 c.p.s.

-5% +5%

1" = 10%

Transmitter Location (VERTICAL LOOP)

Fair to Good Conductor

Poor Conductor

Possible Conductor

Conductor Axis

SYMBOLS

Located Claim Post and Boundary

REGISTERED PROFESSIONAL ENGINEER P. E. WALCOTT PROVINCE OF ONTARIO

TO ACCOMPANY REPORT BY P.E. WALCOTT-PEng., DATED SEPTEMBER-1967

ALICE LAKE MINES LTD. (NPL)

BURWASH PROPERTY - YUKON TERRITORY - WHITEHORSE MINING DIVISION

GRID NO.-2

CRONE TYPE

ELECTROMAGNETIC SURVEY

Scale - 1" = 100 Feet

0 100 200 300 400

FEET FEET

MAP NO.-E-113-9

EAGLE GEOPHYSICS LIMITED

AUGUST-1967

LINE NO.-10+00 WEST

LINE NO.-8+00 WEST

LINE NO.-6+00 WEST

LINE NO.-4+00 WEST

MARY 17

MARY-18

MARY-7

6+00N

5+00N

4+00N

3+00N

2+00N

1+00N

BASELINE-"0+00"

B/L-"0+00"

1+00S

2+00S

3+00S

4+00S

5+00S

6+00S

7+00S

Tx1

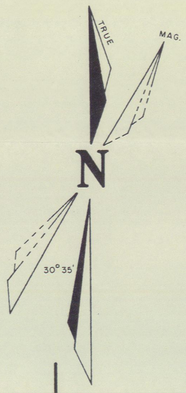
Tx2

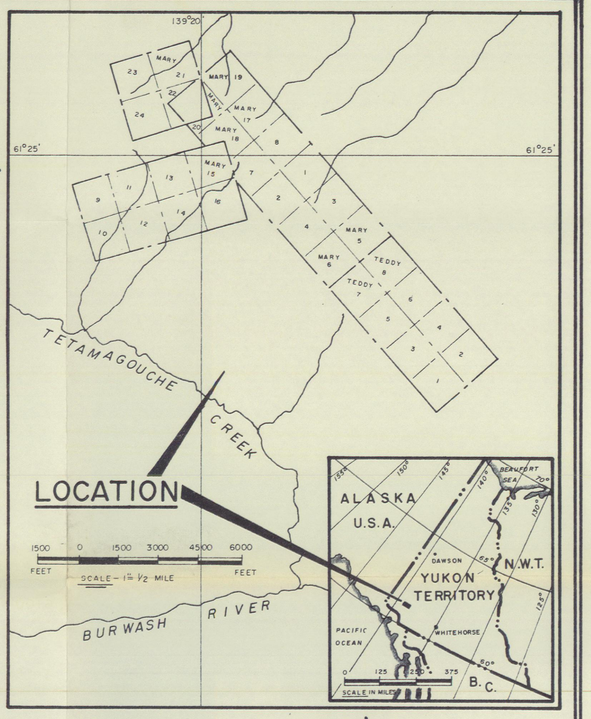
Tx3

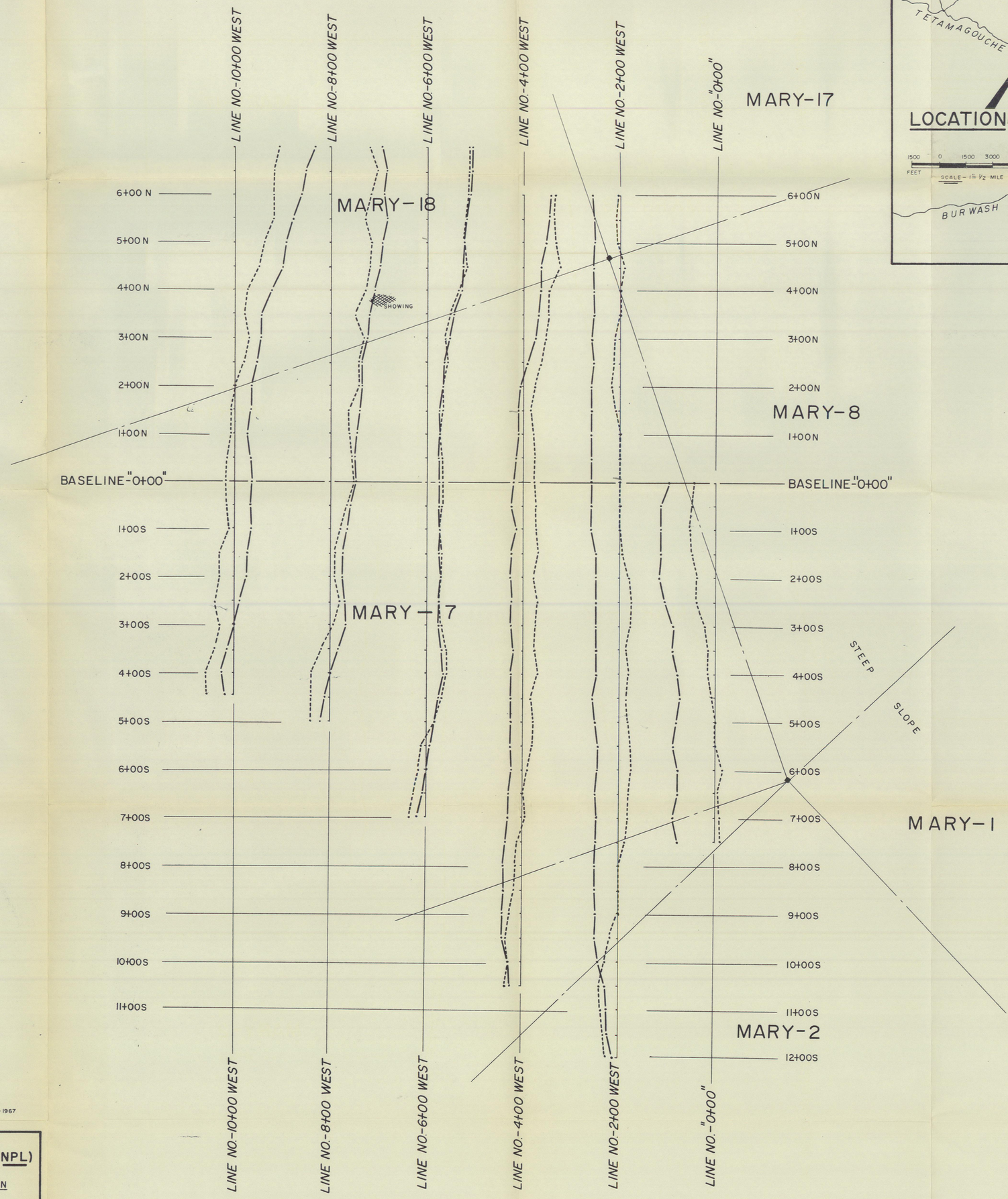
SHOWING

"A"

DETAIL - VERTICAL LOOP







LEGEND

E.M. SURVEY

IN PHASE PROFILE
1" = 10 %

QUADRATURE PROFILE
1" = 10 %

-5% +5%

+5%

TRANSMITTER
NPG - SEATTLE, WASHINGTON, U.S.A.

SYMBOLS

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BURWASH PROPERTY - YUKON TERRITORY - WHITEHORSE MINING DIVISION

GRID NO.- 2

RONKA E.M.-16

ELECTROMAGNETIC SURVEY

Scale - 1" = 100 Feet

0 100 200 300 400
FEET FEET

EAGLE GEOPHYSICS LIMITED

MAP NO.- E-113-10

AUGUST-1967