UMEX

UNION MINIERE EXPLORATIONS
AND MINING CORPORATION LIMITED

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4676

GROUND MAGNETIC, INDUCED POLARIZATION, AND RESISTIVITY SURVEYS

MINERAL CLAIMS JO ANN
1, 2, 3, 4, 5, 6, 7,
8, 9, 10, 18, 20, 21,
22, 23, 24, 25, 26

Omineca Mining Division
British Columbia

N.T.S. 93N/14

55°56' North Latitude
125°29' West Longitude

by

Alfred A. Burgoyne, P.Eng.
Andre M. Pauwels, B.Sc.

Work Dates: June 22 - July 7, 1973

Date: October 26, 1973

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JO ANN CLAIMS

INTRODUCTION

The Jo Ann claims are located approximately twenty-six miles northwest of Germansen Landing, B.C. A gravel road connecting Germansen Landing with Johanson Lake comes within fifteen miles of the property (Usilika Lake). Access to the property was by helicopter from this point. A secondary gravel road from Germansen Landing terminates within three miles of the claims at Kennco's Lorraine property. Note Figure 1.

The Jo Ann claims were staked in April and recorded in May 1972 by Douglas Stelling of Germansen Landing, B.C. As some of the claims apparently overlap previously recorded claims, only the following are believed to be valid:

Name	Record Number
Jo Ann 1 - 10	111062 - 111071
Jo Ann 18	111079
Jo Ann 20 - 26	111081 - 111087

Assessment credits of one year were obtained for each of the above claims for geochemical work done in 1972[1].

The property was optioned by Union Minere Explorations and Mining Corporation Limited in June 1973. Consequently detailed ground magnetic and induced polarization surveys were undertaken from June 22 until July 7, 1973. The field work was under the supervision of Mr. A.M. Pauwels, who in turn was under the supervision of Mr. A.A. Burgoyne, P.Eng.

GEOLOGY

The claims lie within the Hogem Batholith, an Omineca intrusive of late Jurassic to early Cretaceous age. The property covers about one mile of contact between intrusive syenites (Duckling Creek Syenite) to the southwest and more basic, K-Feldspar Hybrid Monzonite to the northeast. The claims are entirely covered by overburden except for one outcrop near the confluence of two creeks on the northeast part of the claim group where some hybrid

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[1] Cooke, D.L., 1973, Assessment Report, Geochemical Report on Jo Ann Claims Fifteen Miles North of Old Hogem, April 2, 1973.

Figure No. 1

JO ANN CLAIMS

NTS: 93N

Scale: 0 2 4 miles

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Drawn by: G.B.
Date: June, 1973
Compiled by: A.P.

DWG. No 73-8

basic (dioritic) rocks are exposed.

GRID CONTROL

Using the southern claim line as a base line, cross-lines, at 400 foot intervals, were located with a compass in a N25°E direction. These cross-lines were chained and marked every 100 feet with a "Topofoil" chain. Four cross-lines were cleared with a chainsaw for the induced polarization survey.

INDUCED POLARIZATION AND RESISTIVITY SURVEYS

Field Procedures

McPhar model P 660 frequency domain induced polarization equipment has been employed in this survey. The transmitter operated on a constant alternating current output of approximately 0.08 - 1.0 amperes depending on electrode contact resistance, and the two current frequencies used were .3125 and 5.0 hz. Power for the transmitter was supplied by a motor generator with a rating of 1.0 kilowatts and an output of 125 volts. The receiver was of a remote variety which determined the resistivity at 5.0 hz as a detected voltage, and, as a second operation, compared the change in resistivity at 5.0 hz and .3125 hz by measuring the change in voltage. This change is a measure of the induced polarization phenomenon, termed the apparent Frequency Effect (in %). The definition of this parameter is as follows:

$$F.E.\ (a) = \frac{\rho a\ .3125\ hz - \rho a\ 5.0\ hz}{\rho a\ 5.0\ hz}$$

where Pa is resistivity.

The most common array used with the frequency domain technique, the dipole-dipole array was utilized on this survey since it provides both the advantages of low inductive coupling and symmetrical anomalies. In the field, measurements are made as follows. Current is applied to the ground at two points a distance (X) apart. Potential differences are measured at two other points (X) feet apart, in line with current electrodes but separated from it by an integer, number of times (N) times the basic distance (X). In this detailed survey the electrode separation (X) equalled 100 and 400 feet for N = 1, 2, 3, 4.

High current electrode contact resistances were overcome by utilizing aluminum foil soaked in brine solution as electrodes. Non-polarizing porous pots were used for the detection of potential differences.

Data Processing and Presentation of Results

The voltage detected by the receiver at the higher frequency were recorded along with the constant current output of the transmitter and the apparent resistivity in ohm-feet/2 π calculated using the following formula:

$$\frac{\rho a}{2\pi} = \frac{V}{I} \; (G.X)$$

where V is the detected voltage in volts

I is the current output of the transmitter in amperes

X is the dipole electrode separation

G is a constant function of the geometry of the array:

for N = 1, G = 3, N = 2, G = 12 ....

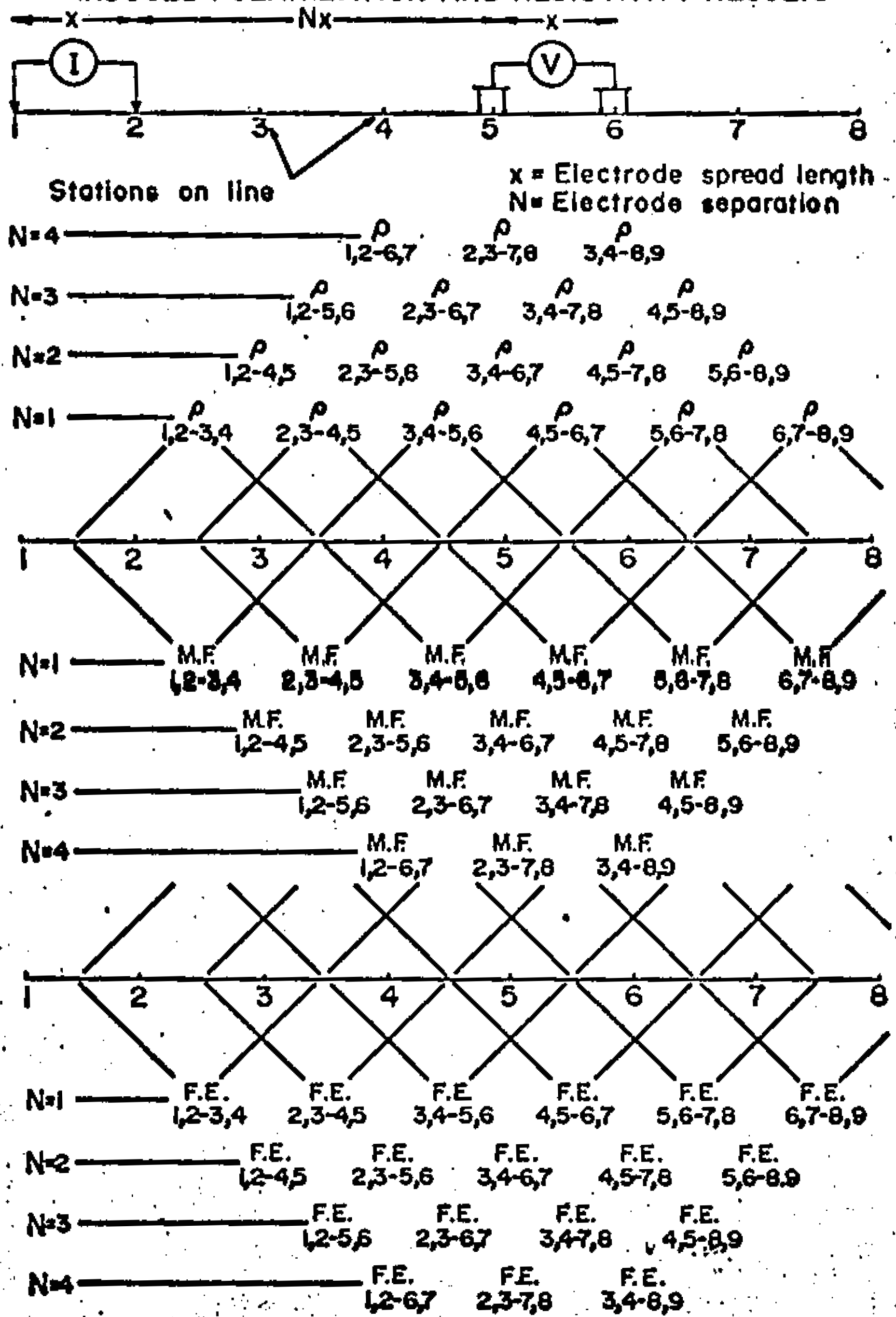
The apparent Frequency Effect is measured directly from the receiver as in the section on Field Procedure.

Another quantity utilized in the presentation is a normalized parameter called the apparent Metal Factor. Since the measurement of the degree of polarization is related to the apparent resistivity of a rock mass, this parameter may in fact be more important than the apparent Frequency Effect parameter. The Metal Factor is obtained by normalizing the apparent Frequency Effect for varying resistivities.

$$M.F(a) = \frac{F.E.(a)}{\rho a} \times 100$$

In presenting the results, the three parameters are plotted at the intersection of grid lines for each set of electrode positions, one from the center point of the current electrodes and the other from the center point of the potential electrodes (see page 4). Apparent resistivity values are plotted above the apparent Metal Factor as a mirror image. In general, the plots are designated as pseudo-sections and not true depth sections. The separation between sender and receiver electrodes is only one factor which determines the depth to which the ground is being sampled for any measurement.

METHOD USED IN PLOTTING DIPOLE-DIPOLE INDUCED POLARIZATION AND RESISTIVITY RESULTS



The operator for the induced polarization and resistivity surveys was H. Holm. Helpers included W. Bepple, B. Wong, and L. Mamoser.

Results

Induced polarization surveys covered parts of lines 20W, 8W, line 0 and line 4E. The pseudosections of the four lines are presented in Figures 4 to 7. The location of the I.P. lines with respect to the claims is shown on Figure 2.

No significant results were obtained over line 20W. Slightly higher frequency effects and lower resistivities were found on line 8W from 6W to 60N, coincident with higher magnetic values. Lower resistivities with slightly higher frequency effects were measured over line 0 from 4N to 6N. A similar pattern, but less pronounced, was found on line 4E, 3N at depth n = 3.

Although this survey did not disclose any anomalies, the results should be interpreted in view of the magnetic and geochemical surveys.[1]

MAGNETOMETER SURVEY

Method

A ground magnetic survey was completed over thirteen line miles with a McPhar M700 Fluxgate Magnetometer measuring the vertical component of the geomagnetic field. The inherent sensitivity is maximal 2% of the scale. All measurements are relative to a base station and corrections of diurnal variations of the geomagnetic field were based on base station readings several times a day. Readings were taken every 100 feet on the grid lines. The magnetometer operator was L. Mamoser.

Results

Two main features can be seen on the magnetic map - a long linear low along the northerly flowing creek on the east side of the claim group, and higher magnetic readings (>2000 gammas) on the northern and eastern part of the claim group.

The general trend of these magnetic highs is N20°W. The contrast between the lower magnetic values in the western and southern part of the property and the higher readings in the northern and eastern part can be geologically explained; low values reflecting low susceptibility-syenite and high values corresponding to magnetite-rich basic hybrid dioritic rocks.

The projected contact between these two rock types on the preliminary geological map published by Garnett[2] coincides with this magnetic boundary.

The long linear low referred to above is flanked by high magnetic values and coincides with a northerly flowing creek. The overburden cover is thin (less than 20 feet as determined by drilling) and this linear magnetic low is believed to be caused by the topographic effect of the narrow and deep creek valley in this zone of high susceptibility rock.

CONCLUSIONS AND RECOMMENDATIONS

The results of the geophysical surveys have to be seen in conjunction with the anomalous soil copper geochemical results obtained in 1972.[1] The possibly anomalous induced polarization results coincide with high magnetic values (line 8W, line 0, and line 4E to a lesser extent). Although the magnetic content of the bedrock can account for these I.P. effects, anomalous Cu soil values in the same places raise the possibility of low grade copper mineralization.

Subsequently two short drill holes of 202 and 154 feet at line 8W, 8N and line 0, 5N, respectively, were completed. The rock intersected in both drill holes was magnetite-biotite-pyroxene-diorite. No sulphides or copper mineralization was visible in the drill core.

No further work is recommended on this part of the claims.

Respectfully submitted,

Alfred A. Burgoyne

Alfred A. Burgoyne, P.Eng.

Andre M. Pauwels, B.Sc.

André Pauwels

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2 Garnett, T.A., 1972, Preliminary Geological Map of Part of the Hogem Batholith, Duckling Creek Area, B.C. Dept. of Mines Map No. 9.

APPENDIX I

STATEMENT OF EXPENDITURES

1. Line cutting (for induced polarization and resistivity)

Labour, field costs

L. Mamoser, June 28 - June 30, 1973	@ $24.00/day	$ 72.00
B. Walker, June 28 - June 30, 1973	@ $20.00/day	60.00
B. Wong, June 28 - June 30, 1973	@ $20.00/day	60.00

2. Induced polarization and resistivity surveys

Labour, field costs

H. Holm, June 30 - July 7, 1973	@ $33.00/day	264.00
W. Bepple, June 30 - July 7, 1973	@ $25.00/day	200.00
B. Wong, July 1 - July 6, 1973	@ $20.00/day	140.00
L. Mamoser, July 1 - July 6, 1973	@ $24.00/day	144.00
A. Pauwels, June 30, 1973	@ $47.00/day	47.00

Equipment

Equivalent rental I.P. receiver, transmitter, and generator	8 days @ $70.00/day	560.00

3. Magnetic survey

Equipment

Equivalent rental of McPhar M700 Magnetometer	6 days @ $ 9.00/day	54.00

Labour, field costs, magnetic survey

A. Pauwels, June 22 - June 24, 1973	@ $47.00/day	141.00
L. Mamoser, June 22 - June 26, and July 7, 1973	@ $24.00/day	144.00

Line chaining (for magnetic survey)

B. Walker, June 24 - June 26, 1973	@ $20.00/day	60.00
B. Wong, June 24 - June 26, 1973	@ $20.00/day	60.00

4. Personal maintenance

53 days food	@ $ 8.00/day	424.00

5. Transportation

Helicopter rental, June 22 - July 7, 1973 6 hours	@ $215.00/hour	1,290.00
Fuel - 180 gallons	@ $ 0.56/gallon	100.80

Declared before me at the

of , in the

Province of British Columbia, this VANCOUVER, B. C.

day of OCT 29 1973 , A.D.

Sub - Mining Recorder
A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

APPENDIX I (cont'd)

STATEMENT OF EXPENDITURES

6. Labour, office

A. Burgoyne,	Oct. 19, 1973	@ $75.00/day	$ 75.00
A. Pauwels,	Oct. 10-12, Oct. 14, 15, 1973	@ $47.00/day	235.00
G. Bandura,	Oct. 15 - Oct. 19, 1973	@ $33.00/day	165.00
B. Woodworth,	Oct. 26, 1973	@ $25.00/day	25.00
Reproductions and Miscellaneous			100.00
		TOTAL	$4,420.80

Declared before me at the

of VANCOUVER, B. C., in the

Province of British Columbia, this

day of OCT 29 1973, A.D.

Sub - Mining Recorder

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

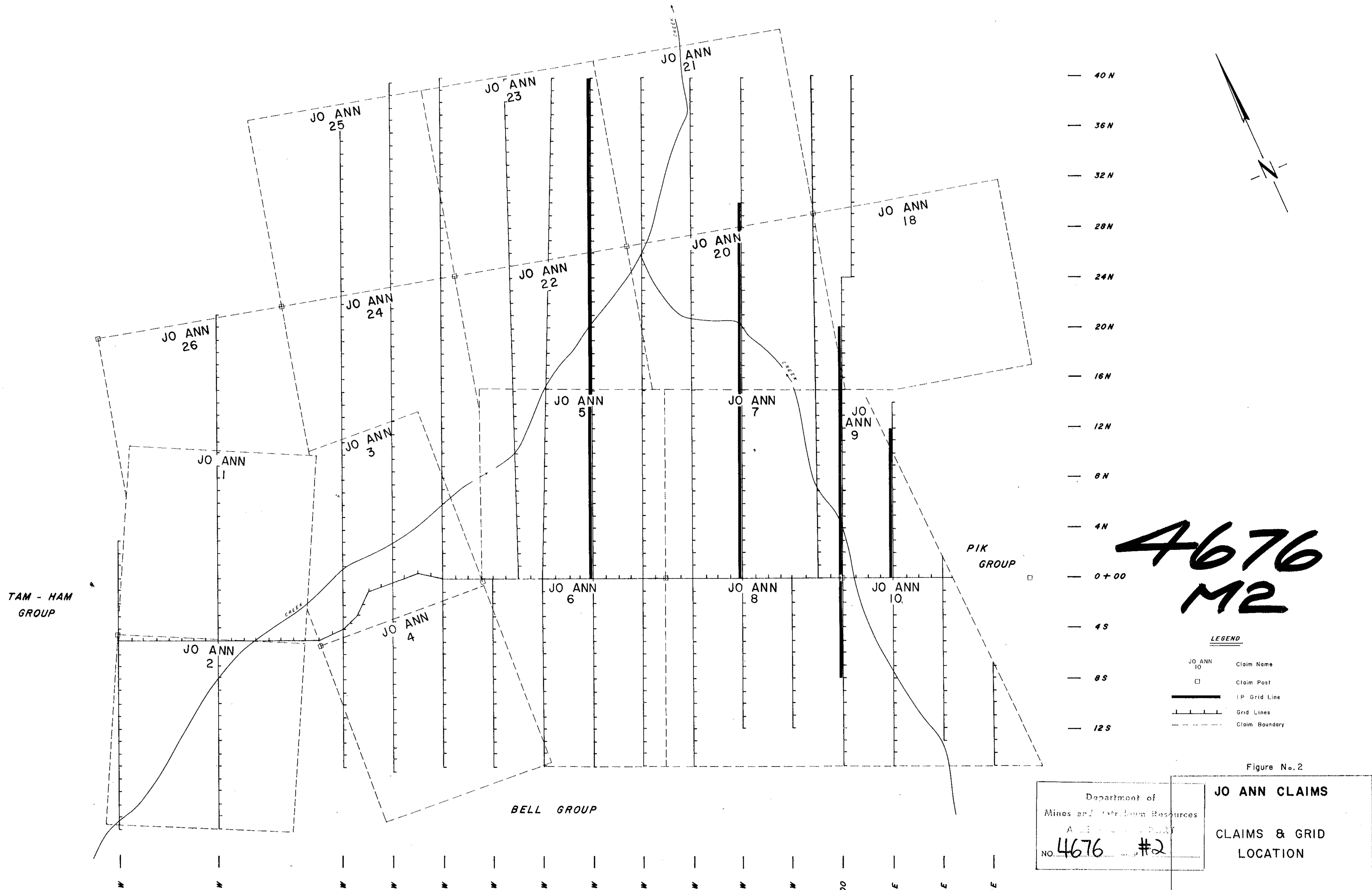

Figure No. 2

Department of Mines and Petroleum Resources
NO. 4676 #2

J Burgoyne
A Pauwels

To accompany report by Alfred A. Burgoyne, P.Eng. and Andre M. Pauwels, B.Sc., on Jo Ann claims twenty-six miles northwest of Germansen Landing, Omineca Mining Division, B.C. June 1973.

JO ANN CLAIMS

CLAIMS & GRID LOCATION

NTS: 93N/14

Scale: 0 400' 800'

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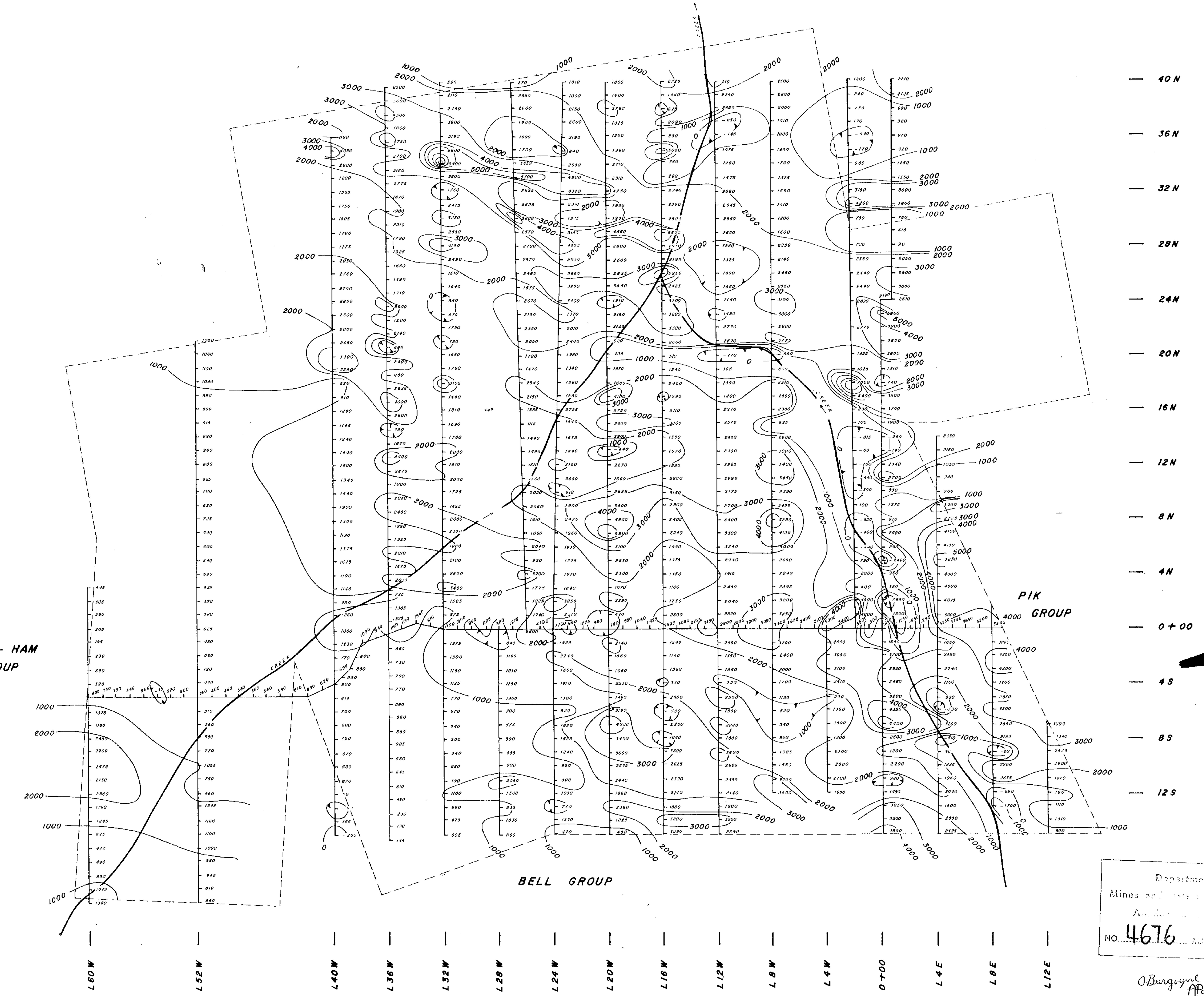
DRAWN BY: G. Bandura
DATE June 1973
SURVEYED BY:

DWG. No. 73-9



4676
M3

LEGEND

Magnetic Values in Gammas
Grid Lines
Claim Boundary
Contour Interval : 1000 gammas

Figure No. 3

JO ANN CLAIMS

MAGNETOMETER SURVEY
McPHAR M-700

NTS: 93N/14

Scale: 0 400' 800'

O. Burgoyne
A. Pauwels

UMEX CORPORATION LTD.

DRAWN BY: G. Bondura
DATE: June 1973
SURVEYED BY: L. Mamoser

DWG. No. 73-10

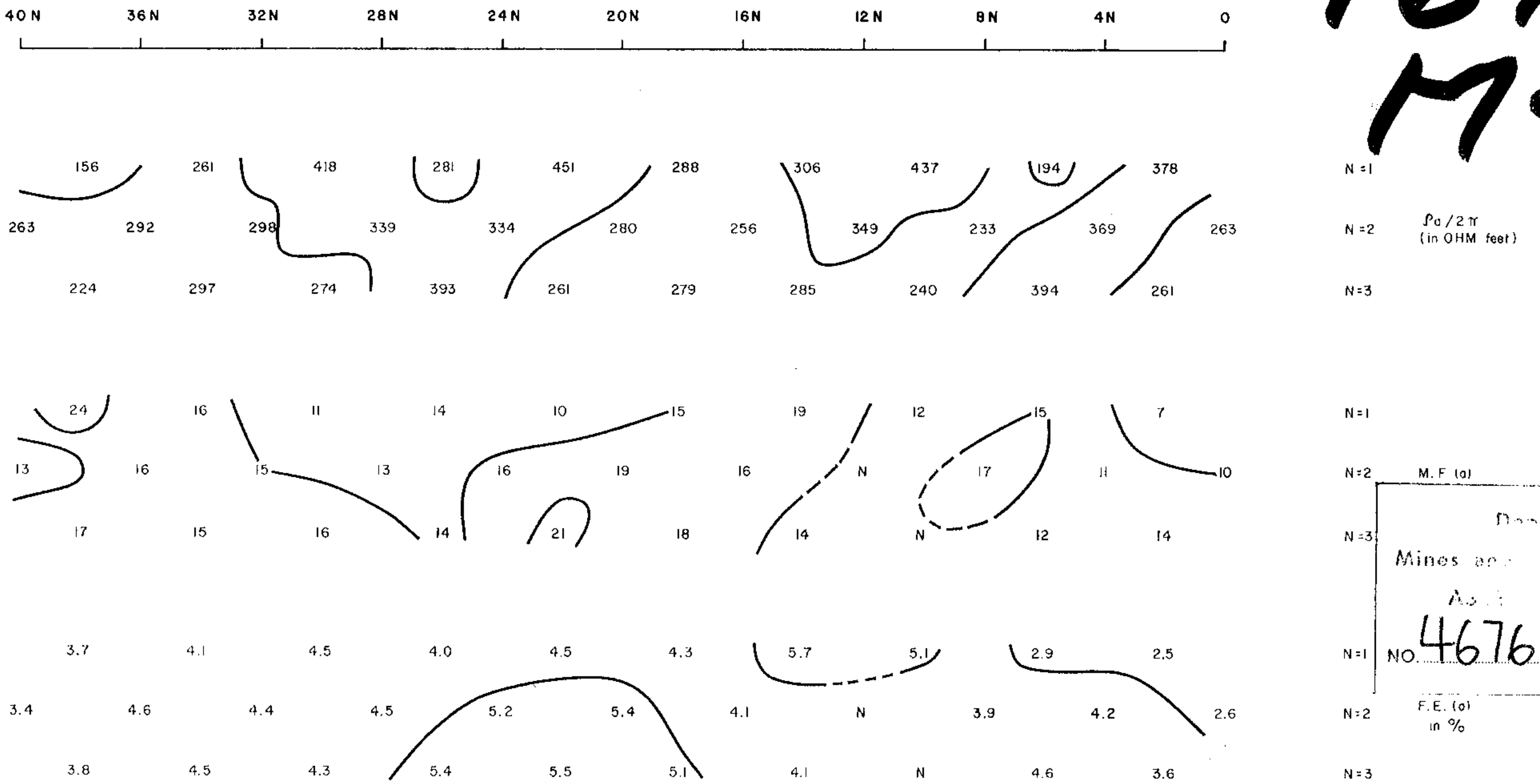
To accompany report by Alfred A. Burgoyne, P.Eng. and Andre M. Pauwels, B.Sc., on Jo Ann claims twenty-six miles northwest of Germansen Landing, Omineca Mining Division, B.C. June 1973.

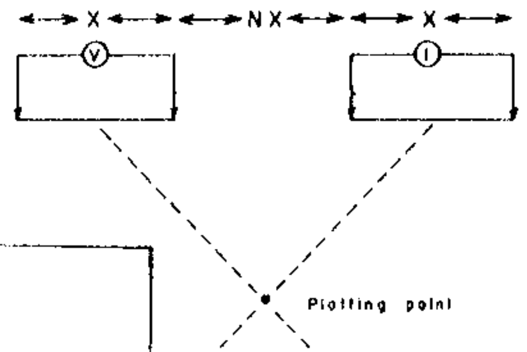
4676
M4

INDUCED POLARISATION AND RESISTIVITY SURVEY OF THE JO ANN CLAIMS

LINE 20 W

X= 400 ft.





FREQUENCIES 0.31 & 5.0 Hz

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

NOTE: Contours at logarithmic intervals 1, 1.5, 2, 3, 5, 7.5, 10.

A Burgoyne
A Pauwels

To accompany report by Alfred A. Burgoyne, P.Eng. and Andre M. Pauwels, B.Sc., on Jo Ann claims twenty-six miles northwest of Germansen Landing, Omineca Mining Division, B.C. June 1973.

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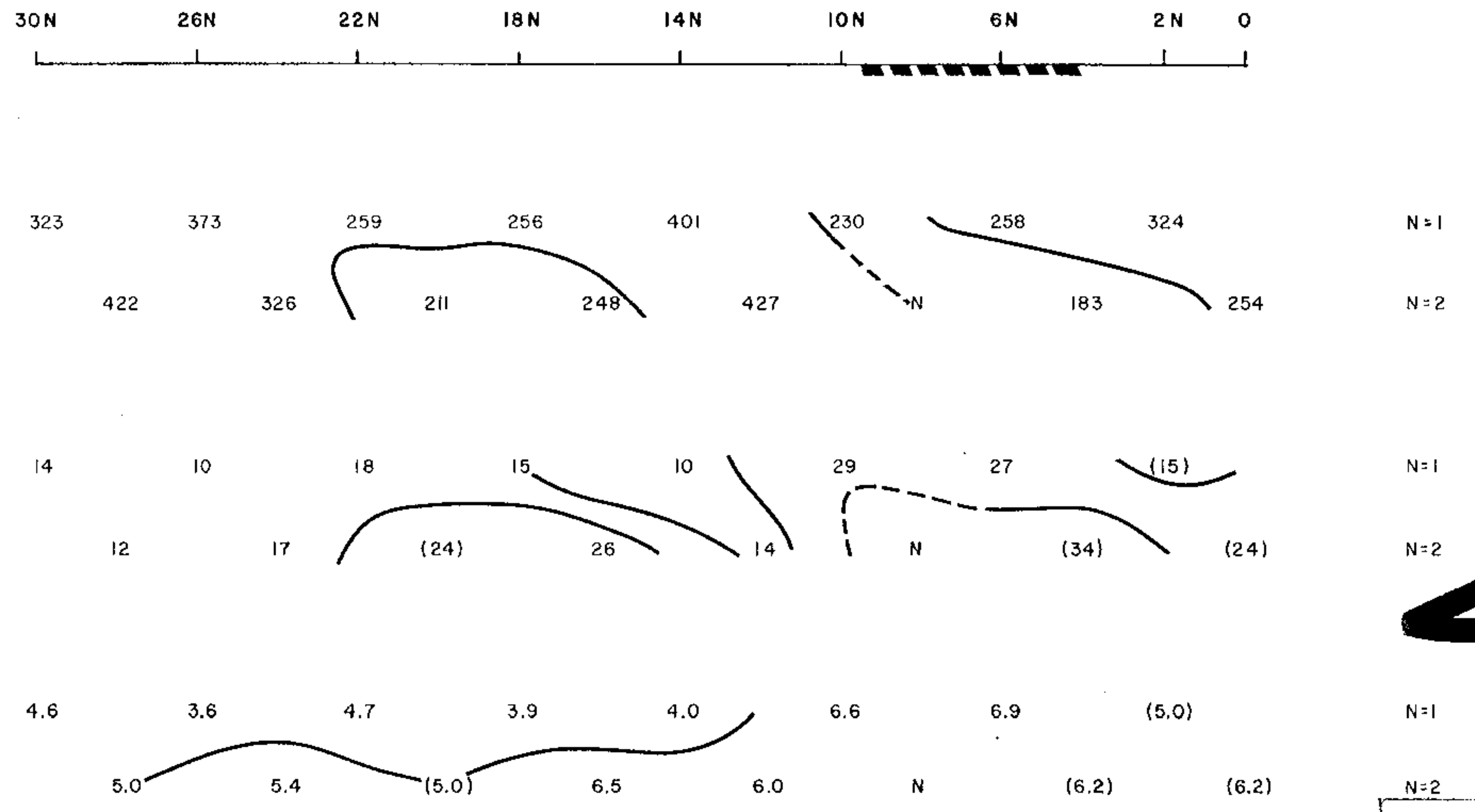
Operator: H. Holm

Date: July 1, 1973

Fig No. 4



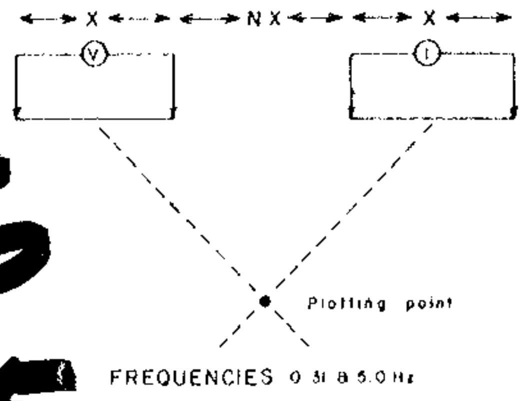
INDUCED POLARISATION AND RESISTIVITY SURVEY OF THE

JO ANN CLAIMS

LINE 8 W

X= 400 ft.

ELECTRODE CONFIGURATION
DIPOLE – DIPOLE



FREQUENCIES 0.31 & 5.0 Hz

SURFACE PROJECTION OF ANOMALOUS ZONES

- DEFINITE
- PROBABLE
- POSSIBLE

NOTE: Contours at logarithmic intervals 1, 1.5, 2, 3, 5, 7.5, 10.

4676
M5

A. Burgoyne A. Pauwels

To accompany report by Alfred A. Burgoyne, P.Eng. and Andre M. Pauwels, B.Sc., on Jo Ann claims twenty-six miles northwest of Germansen Landing, Omineca Mining Division, B.C. June 1973.

UMEX CORPORATION LTD.

Operator: H. Holm
Date: July 2, 1973

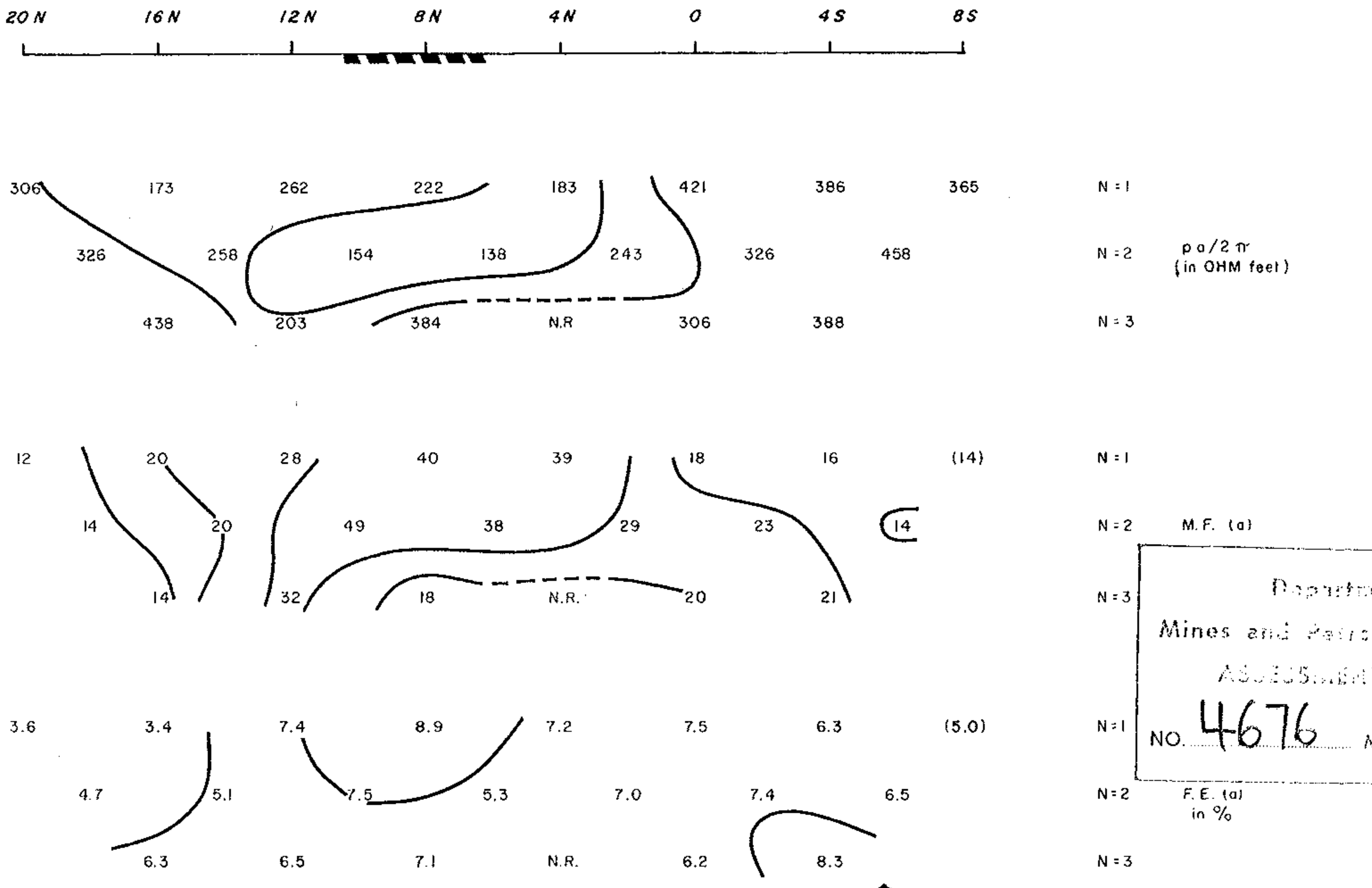
Fig No. 5

INDUCED POLARISATION AND RESISTIVITY SURVEY OF THE

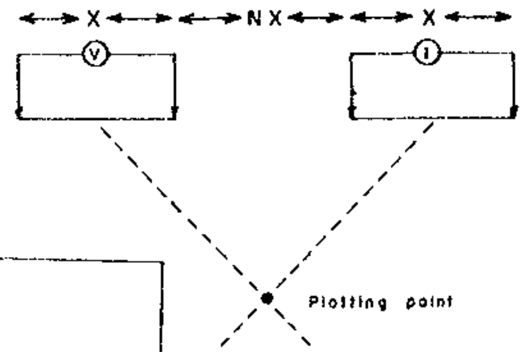
JO ANN CLAIMS

LINE O

X= 400 ft



ELECTRODE CONFIGURATION
DIPOLE – DIPOLE



FREQUENCIES 0.31 & 5.0 Hz

SURFACE PROJECTION OF ANOMALOUS ZONES

- DEFINITE
- PROBABLE
- POSSIBLE

NOTE: Contours at logarithmic intervals 1, 1.5, 2, 3, 5, 7.5, 10.

4676 M6

To accompany report by Alfred A. Burgoyne, P.Eng. and Andre M. Pauwels, B.Sc., on Jo Ann claims twenty-six miles northwest of Germansen Landing, Omineca Mining Division, B.C. June 1973.

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Operator: H. Holm
Date: July 4, 1973

Fig No. 6

To accompany report by Alfred A. Burgoyne, P.Eng. and Andre M. Pauwels, B.Sc., on Jo Ann claims twenty-six miles northwest of Germansen Landing, Omineca Mining Division, B.C. June 1973.

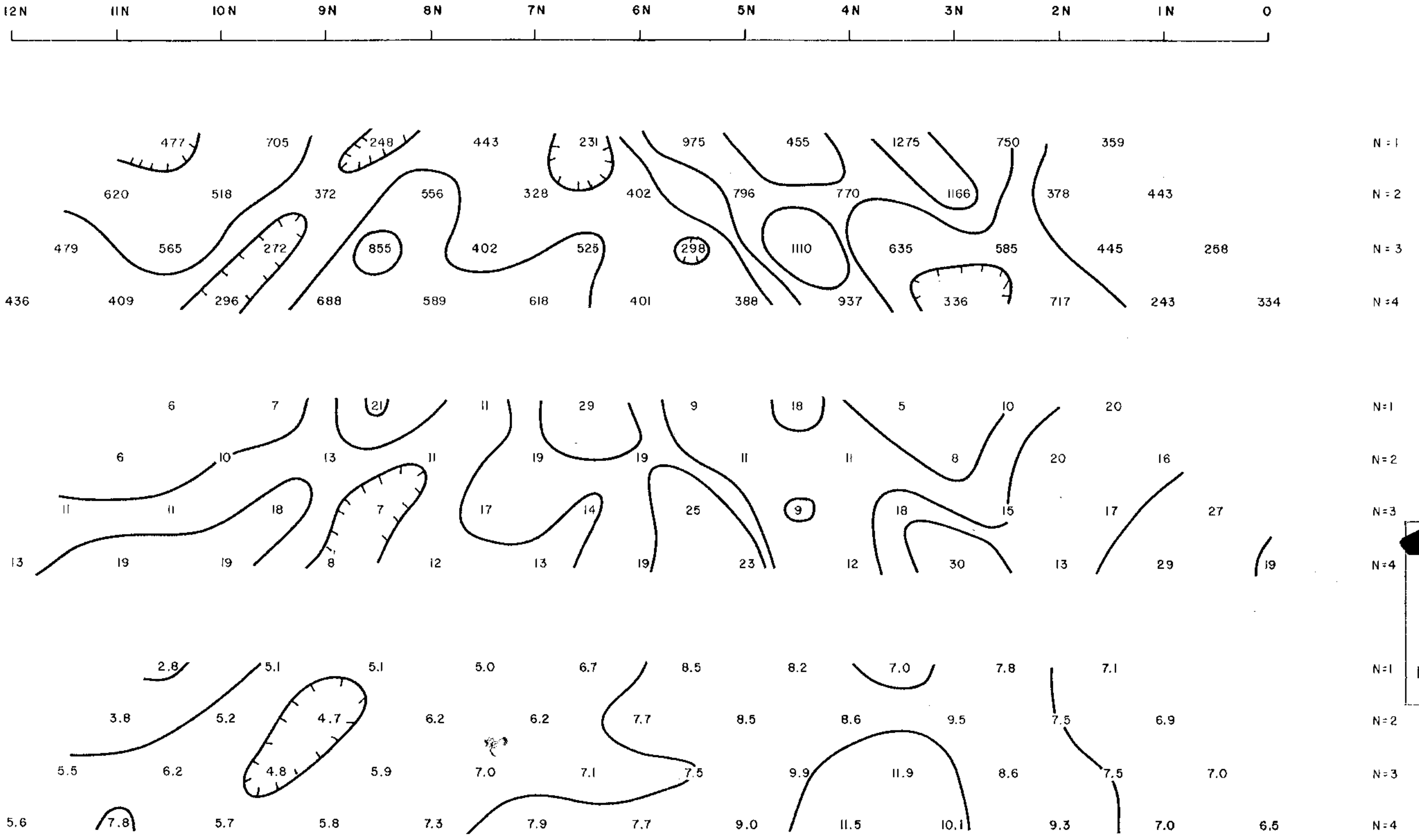
A Burgoyne
A Pauwels

INDUCED POLARISATION AND RESISTIVITY SURVEY OF THE

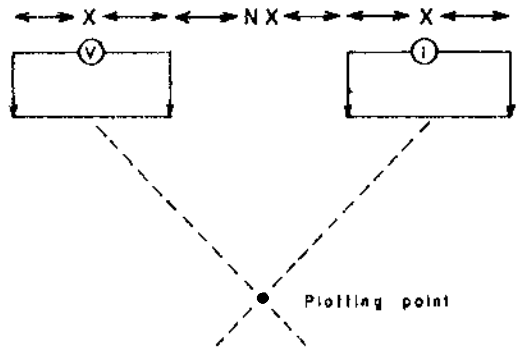
JO ANN CLAIMS

LINE 4E

X= 100 ft.



ELECTRODE CONFIGURATION
DIPOLE – DIPOLE



FREQUENCIES 0.31 & 5.0 Hz

SURFACE PROJECTION OF ANOMALOUS ZONES
DEFINITE
PROBABLE
POSSIBLE

NOTE: Contours at logarithmic intervals 1, 1.5, 2, 3, 5, 7.5, 10.

UMEX CORPORATION LTD.

Operator: H. Holm
Date: July 6, 1973

Fig No. 7