

1879

GEOCHEMICAL SOIL SURVEY;

MAGNETOMETER AND ELECTROMAGNETIC SURVEYS

EMPRESS #6 (Record No. 10355) AND

MINERAL LEASE M-1 (lot nos. 1804, 1805, 1806 & 1807)

49° 121° SW

B.O. BRYNELSEN, P.ENG.

J.D. KNAUER

J.T. WALKER

NORANDA EXPLORATION COMPANY, LIMITED

NEW WESTMINSTER MINING DIVISION

MARCH 8, 1969 TO MAY 6, 1969

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
GENERAL GEOLOGY	2
GRID PREPARATION	2
GEOCHEMISTRY	2
Sampling Method	3
Laboratory Determination Methods	3
Presentation of Results	3
Discussion of Results	4
MAGNETOMETER SURVEY	4
Method	4
Presentation of Results	4
Discussion of Results	4
ELECTROMAGNETIC SURVEY	5
Method	5
Presentation of Results	6
Discussion of Results	6
RECOMMENDATIONS AND CONCLUSIONS	6
REFERENCES	6

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO.

1879

MAP

Geochemical Soil Survey;
Magnetometer and Electromagnetic Surveys
of the
Empress #6 and
Mineral Lease M-1 (lot nos. 1804, 1805, 1806 & 1807)
Noranda Exploration Company, Limited

INTRODUCTION:

The Empress property, owned by Noranda Exploration Company, Limited, is located approximately four miles east of Agassiz, B.C. and north of Seabird Island and includes one full-sized mineral claim and one mineral lease. Access to the property is by paved road from Agassiz and one mile of four wheel drive road which extends to the northeast part of the property. An additional four wheel drive road extends along the southern boundary of the property. A four wheel drive vehicle was used to transport men and equipment during the course of the surveys.

Topography ranges from gentle to steep slopes with local cliffs. Elevation ranges from 100 to 1,000 feet above sea level. Cliffs and steep slopes prevent access in some sections on the western portion of the property.

Part of the property has been logged. First and second growth and thick underbrush are abundant.

Early work and development on the property during 1915-1916 resulted in shipment of five car loads of chalcopryite and bornite totalling 200 tons from the west zone. The reported net return of this shipment was \$40.00 per ton. Old workings consist of an open-cut and 60 foot tunnel at the 500-foot level. There are three tunnels within 75 vertical feet, at the 1,000-foot level. The longest tunnel is 125 feet long.

The eastern zone, consisting of two open cuts at the 800-foot level, produced an unknown quantity of chalcopryite and bornite.

During March 1965 Noranda Exploration Company, Limited drilled 10 EX diamond drill holes and put in three trenches on the eastern zone to test exposed molybdenite mineralization. On March 8, 1969 a grid was established and Geochemical and Geophysical surveys were performed on the Empress #6 and Mineral Lease M-1 (lot nos. 1804, 1805, 1806 & 1807).

Survey points, topography, creeks and tie lines were used in plotting the location of the grid.

Work was done under the direction of B.O. Brynelsen, P. Eng. with field supervision by J.D. Knauer (geochemical) and J.T. Walker (geophysical) and a crew of seven men. Results of the geochemical and geophysical surveys are plotted on 1 inch to 100 feet base maps. The surveys were carried out from March 8, 1969 through May 6, 1969.

GENERAL GEOLOGY:

The area is underlain by sedimentary rocks and granodiorite. The sedimentary rocks are metamorphic equivalents of limestone. Bedding strikes approximately E-W and has consistent dips of 80° to the north. Chalcopyrite, bornite, malachite and azurite are associated with the wollastonite and garnet skarn. Molybdenite occurs with wollastonite skarn.

GRID PREPARATION:

A control base line was blazed and flagged at 100-foot intervals in a north 35° east direction. Grid lines perpendicular to the base line were established by chain and compass and marked by flagging and blazing. The east-west lines were spaced at 200-foot intervals north and south along the base line with the exception of a detailed area in the north-eastern part of the property where they were spaced at 100-foot intervals.

GEOCHEMISTRY:

All samples were analyzed for copper and molybdenum in the Noranda Exploration Company, Limited laboratory located at 1050 Davie Street, Vancouver 5, B.C.

Sampling Method:

Samples were obtained by digging holes with a mattock and shovel, to a depth at which the visible grey C Horizon was encountered. The C Horizon was sampled and the lower part of the B Horizon, where visible, was also sampled. Profiles were taken at specific locations on the grid. The sampled material was placed in "Hi Strength Kraft, 3 1/2" by 6 1/8" Open End" envelopes and the grid station locations were marked on the envelopes with indelible felt pens.

Soil samples were taken at 200-foot intervals east and west except for the detailed area and the western end of line 92N where they were taken at 100-foot intervals.

Laboratory Determination Methods:

The samples are first hung in a dry cabinet for a period of 24 hours to 48 hours. They are then mechanically screened and sifted to obtain a -80 mesh fraction.

The determination procedure for total copper is as follows: 0.125 grams of -80 mesh material is fused with potassium bisulfate. This is dissolved in .5 ml. of 0.5N hydrochloric acid. A 2ml. aliquot is shaken with 10 ml. acetate buffer and 1 ml. biquinolin solution. The samples are then compared with colorimetric standards.

The determination procedure for total molybdenum is as follows: 0.1 gram sample of the -80 mesh material is fused with a sodium carbonate mixture. It is then dissolved in water (demineralized) and diluted to 10 ml. A 2 ml. aliquot is shaken with 2 ml. hydroxylamine hydrochloride solution and 0.5 ml. dithiol solution. The samples are then compared with colorimetric standards.

Presentation of Results:

Results of this survey are presented in Figure 1 of this report, a plan map showing copper and molybdenum determinations in parts per million. Copper values greater than 150 p.p.m. are contoured by dotted lines and molybdenum values greater than 10 p.p.m. are contoured by solid lines.

Discussion of Results:

Values for total copper range from a background of less than 60 p.p.m. to anomalous values greater than 150 p.p.m. Molybdenum values showed a background of 0-2 p.p.m. to a maximum intensity of 50 p.p.m. Results for copper as well as molybdenum outlined an area of known mineralization within the detailed grid on the northeastern zone. Smaller anomalies occur to the west near the western mineralized zone, but due to steep terrain some stations were not sampled and a more complete coverage was not possible.

MAGNETOMETER SURVEY:

Method:

The magnetometer survey on the property was carried out using a Fluxgate magnetometer, Model G-100, manufactured by Sabre Electronics Ltd., Burnaby, B.C. The instrument has a sensitivity of 20 gammas per vernier dial division.

A magnetometer reading is obtained by adjusting a nulling potentiometer until an audio null is observed in the attached earphone and recording the reading of potentiometer dial. The vertical component of the actual magnetic field is measured. Multiplying the dial reading by 10 converts the reading to gammas.

For this survey a base station was established at hub 100N on the 100E base line and subsequent readings were corrected for magnetic variation.

Throughout this survey readings were taken at 100-foot intervals along the grid lines for a total of 28,200 feet.

Presentation of Results:

Results of this survey are plotted in Figure 2 of this report; a magnetic contour map at a scale of 1 inch to 100 feet. The readings are plotted in gammas relative to a 54,000 gamma magnetic datum. Magnetic contour lines are drawn at 200-gamma intervals.

Discussion of Results:

Magnetic relief in the grid area shows a close correlation with the known underlying geology. Magnetic "highs" appear to be closely associated with igneous rocks and magnetic lows with metamorphic sedimentary equivalents.

ELECTROMAGNETIC SURVEY:

Method:

The electromagnetic survey was carried out on this property using the "shootback" method utilizing J.E.M. equipment which is owned by Noranda Exploration Company, Limited and manufactured by Crone Geophysics Ltd., Toronto.

The theory of the method and operation of the equipment is described by Duncan Crone in Mining Geophysics, Volume I, Society of Exploration Geophysicists, pp. 151-155. This method is patented. A brief description of the equipment and operating method is given here.

The equipment consists of two identical units, each unit consisting of a coil with attached inclinometer, amplifier box with battery and earphones. Each unit is capable of transmitting and receiving electromagnetic signals. A variety of frequencies are available. For this particular survey the frequency used was 5000 Hz. Two operators are required to carry out a survey, one operator is designated "chief", the other "helper". Each operator carries one unit, the only difference being the alignment of the inclinometers on the units.

To take a reading the operators maintain a constant separation along the line (200 ft. for this survey). The "chief" orients his coil in a plane 15 degrees off vertical and aimed coaxially along the line toward the "helper". The transmitter is turned on and while the chief is transmitting, the "helper", with his equipment on receive, determines direction of the transmitted signal. The receiver coil is then held in the horizontal plane and tilted about a horizontal axis perpendicular to the transmitter-receiver line until a signal null is observed in the earphones. The tilt angle at the null is recorded as the "Helper" reading in degrees positive or negative. To obtain the "Chief" reading, the above procedure is repeated with the "helper" transmitting and the "chief" receiving. The algebraic sum of the "Chief" and "Helper" readings is calculated and recorded as the reading for the station mid-point between the operators.

Readings are taken at 100-foot intervals along the grid lines with a constant coil separation of 200 feet for a total of 27,300 feet.

Presentation of Results:

Results of this survey are plotted in Figure 3 of this report, a plan map at a scale of 1 inch to 100 feet. The resultant dip angle of null in degrees is plotted at each station. The readings on each grid line are profiled using a vertical scale of 1 inch to 10 degrees. Zones of conductivity are outlined in dashed line.

Discussion of Results:

The results of the survey indicate two anomalous zones, A & B. The profile of zone A suggests a well-defined narrow conductor, while the profile over zone B indicates the source to be broad and very weakly conductive.

RECOMMENDATIONS AND CONCLUSIONS:

No further soil sampling or geophysics are recommended within the boundaries of this property. A study of detailed geologic mapping in conjunction with the geochemical, geophysical surveys and previous work will be done before any further work is recommended.

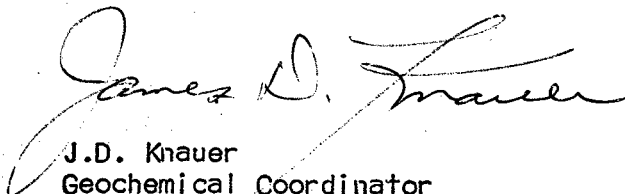
REFERENCES:

Botel, W.G., April 1965, Empress Property, Company Report.

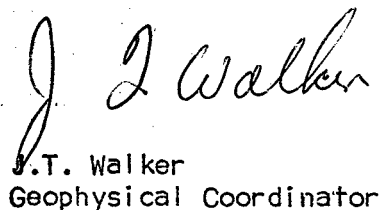
Respectfully submitted,



B.O. Brynelsen, P. Eng.

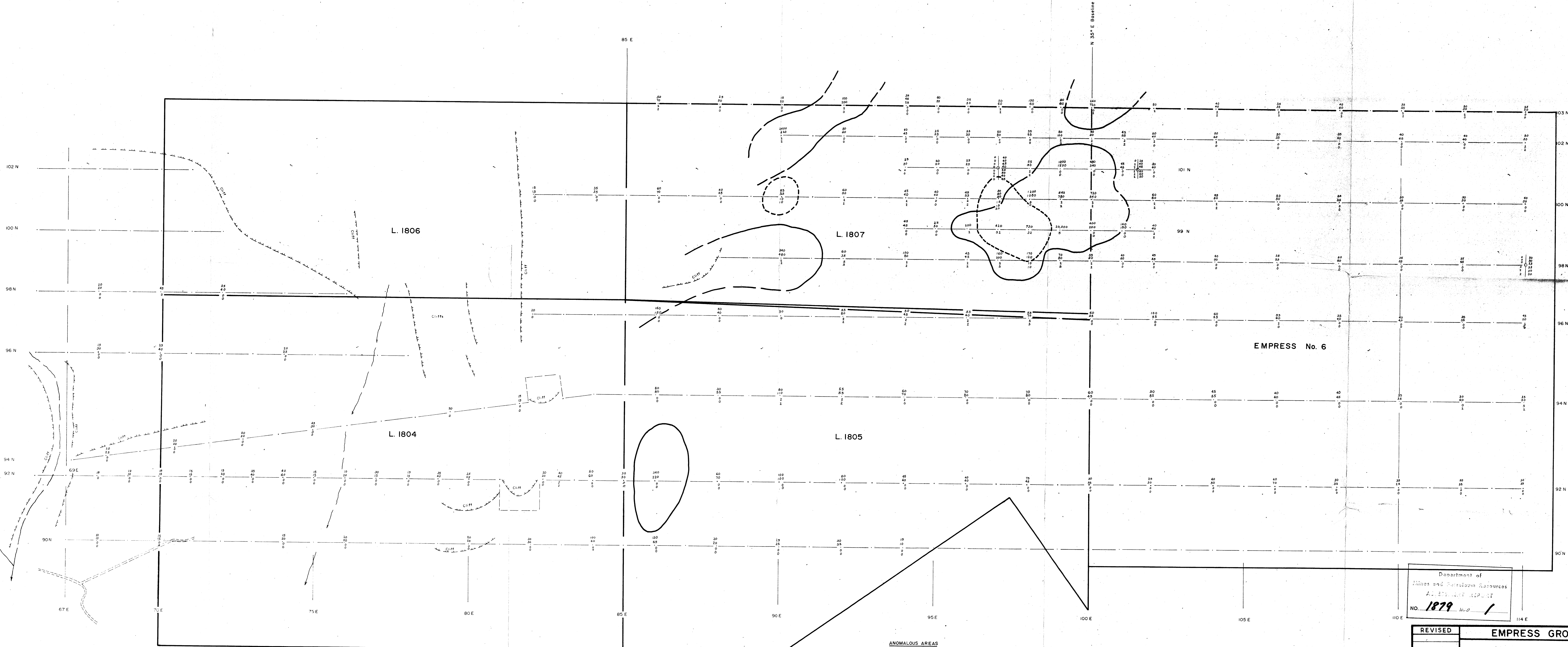
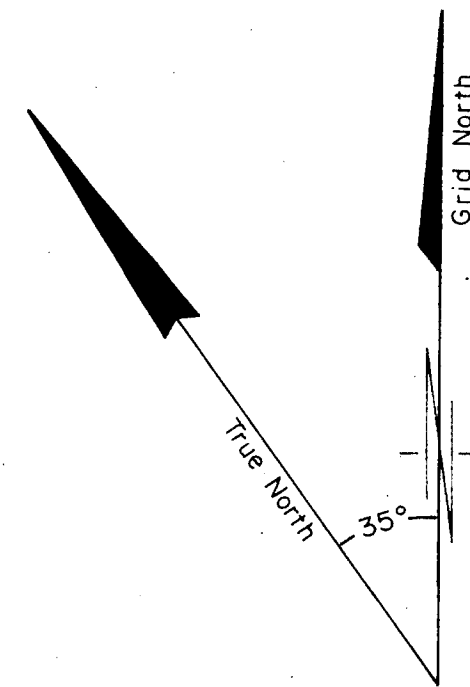


J.D. Khauer
Geochemical Coordinator



J.T. Walker
Geophysical Coordinator

June 3, 1969



Note: Mineral Lease No. 1 consists of Lots 1804, 1805, 1806 and 1807.

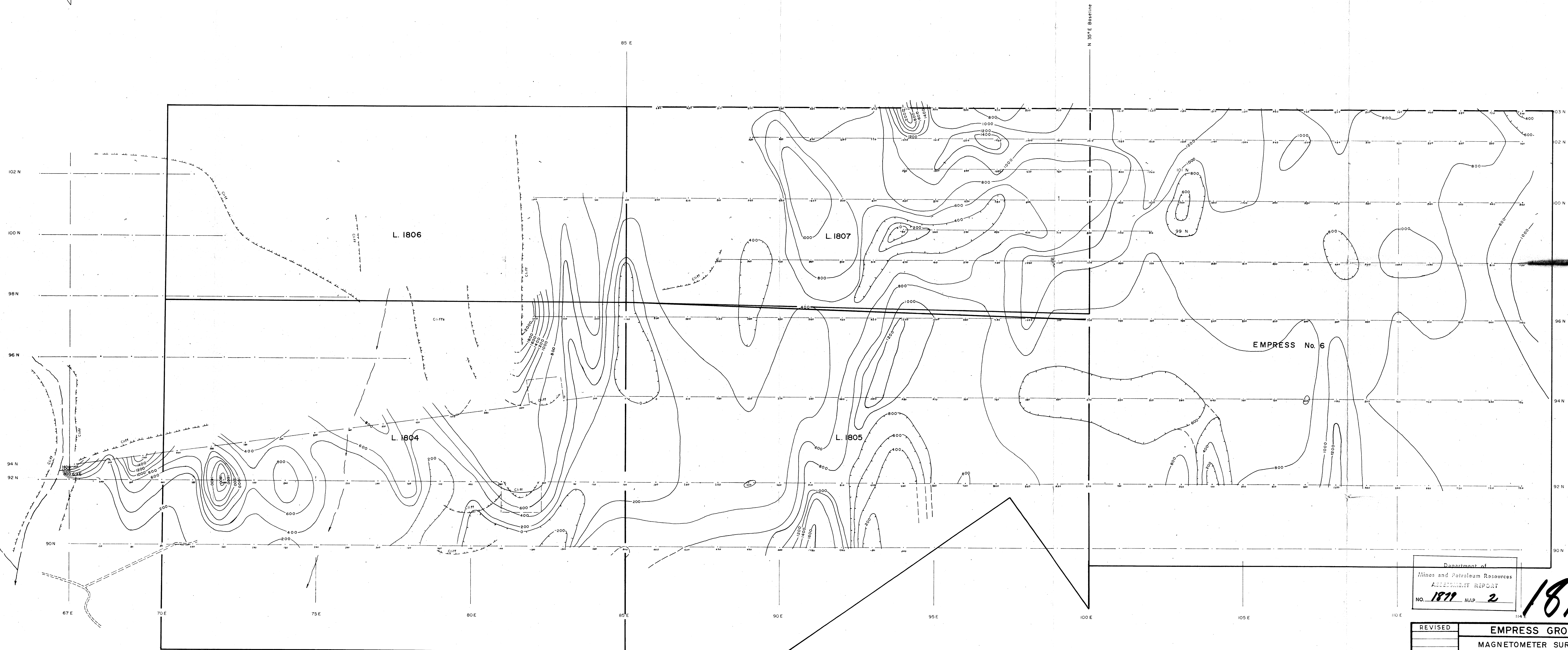
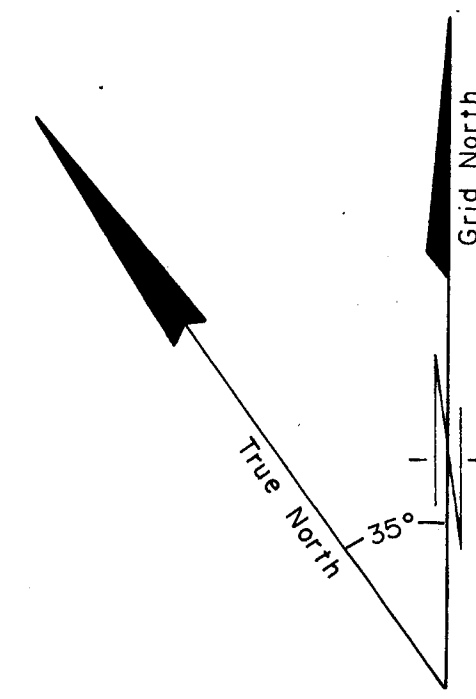
To accompany Geochimical Soil Survey Report by B.O. Brynensen, P. Eng.
and J. Knauer on Mineral Lease No. 1 and the Empress No. 6 M.C.
New Westminster Mining Division, B.C. Dated - June 3, 1969.

James D. Lauer
B. Brynensen

SOIL VALUES Ppm - Total Cu
Ppm - Total Mo
SOIL PROFILE VALUES Ppm - Total Mo Ppm - Total Cu

Department of Mines and Technical Resources ANALYTICAL REPORT NO. 1879	
EMPRESS GROUP SOIL SURVEY 1879	
PROJECT:	SURVEYED BY: DATE: JUNE 3, 1969.
PROJ. NO.	N.T.S. 92 H/5 SCALE: 1" = 100'
DWG. NO.	NORANDA EXPLORATION CO. LTD. OFFICE: VANCOUVER

Fig. 1



Note: Mineral Lease No. 1 consists of Lots 1804, 1805, 1806 and 1807.

To accompany Magnetometer Survey Report by B.O. Brynensen,
P. Eng. and J.T. Walker on Mineral Lease No. 1 and the Empress No. 6 M.C.,
New Westminster Mining Division, B.C. Dated - June 3, 1969.

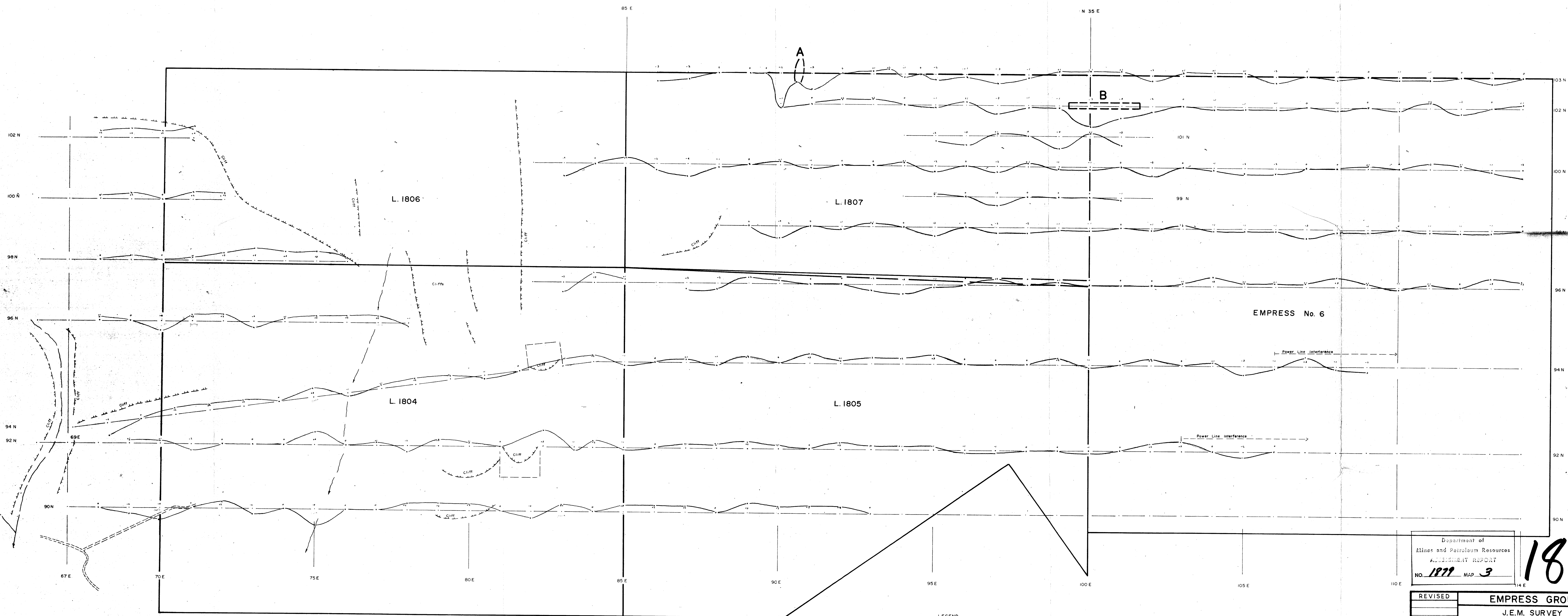
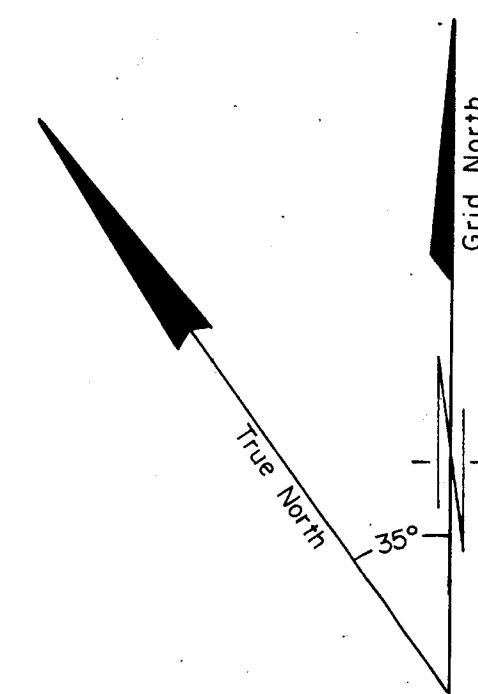
B. Brynensen
J.T. Walker

Fig. 2

Department of
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ASSESSMENT REPORT
NO. 1879 MAP. 2

1879

REVISED	EMPRESS GROUP	
	MAGNETOMETER SURVEY	
	INST. G-100 PORTABLE MAG.	
	CONTOUR INTERVAL - 200'	
	DATUM - 54,000'	
PROJECT:		
SURVEYED BY:	DATE: JUNE 3, 1969	
N.T.S. 32 HV 5	SCALE: 1" = 100'	
DWG. NO.	NORANDA EXPLORATION CO. LTD.	
	OFFICE: VANCOUVER	



Note: Mineral Lease No. 1 consists of Lots 1804, 1805, 1806 and 1807.

LEGEND
J.E.M. Conductor

B. Brynelsen
J. T. Walker

To accompany Electromagnetic Survey Report by B.O. Brynelsen, P. Eng. and J.T. Walker on Mineral Lease No. 1 and the Empress No. 6 M.C., New Westminster Mining Division, B.C. Dated June 3, 1969.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1879 MAP 3

1879

REVISED		EMPRESS GROUP	
		J.E.M. SURVEY	
		5000 Hz	
		COIL SEPARATION - 200 ft.	
		VERTICAL SCALE - 1" = 10'	
PROJECT:		DATE: JUNE 3, 1969	
PROJ. NO.	SURVEYED BY:	SCALE:	
N.T.S. 92 H/5	DRAWN BY:	SCALE: 1" = 100'	
DWG. NO.	NORANDA EXPLORATION CO. LTD.		
	OFFICE: VANCOUVER		

Fig. 3