3746

Induced Polarization and Resistivity Survey

and

V.L.F. Electromagnetic Survey

on the

Brenda 1-7, Mayday 1-6, 9-11, 14, 15, Ted 1-6,

Maybe 1-8, Tell 1-4, Anchor 1A, 2B, 3, 4, Mayday 24 FR.

Brenda 1A FR., June 1 FR. & 2 FR., Mayday 24 FR.

MINERAL CLAIMS 93 B / 8E & W

52°27'N 122°14'W

NORANDA EXPLORATION COMPANY, LIMITED

CARIBOO MINING DIVISION

May 17, 1972 to June 5, 1972

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Maybe 1-8, Tell 1-4, Anchor 1A, 2B, 3, 4, Mayday 1A Fr.

Brenda 1A FR., June 1 FR. & 2 FR., Mayday 24 FR.

Mineral Claims

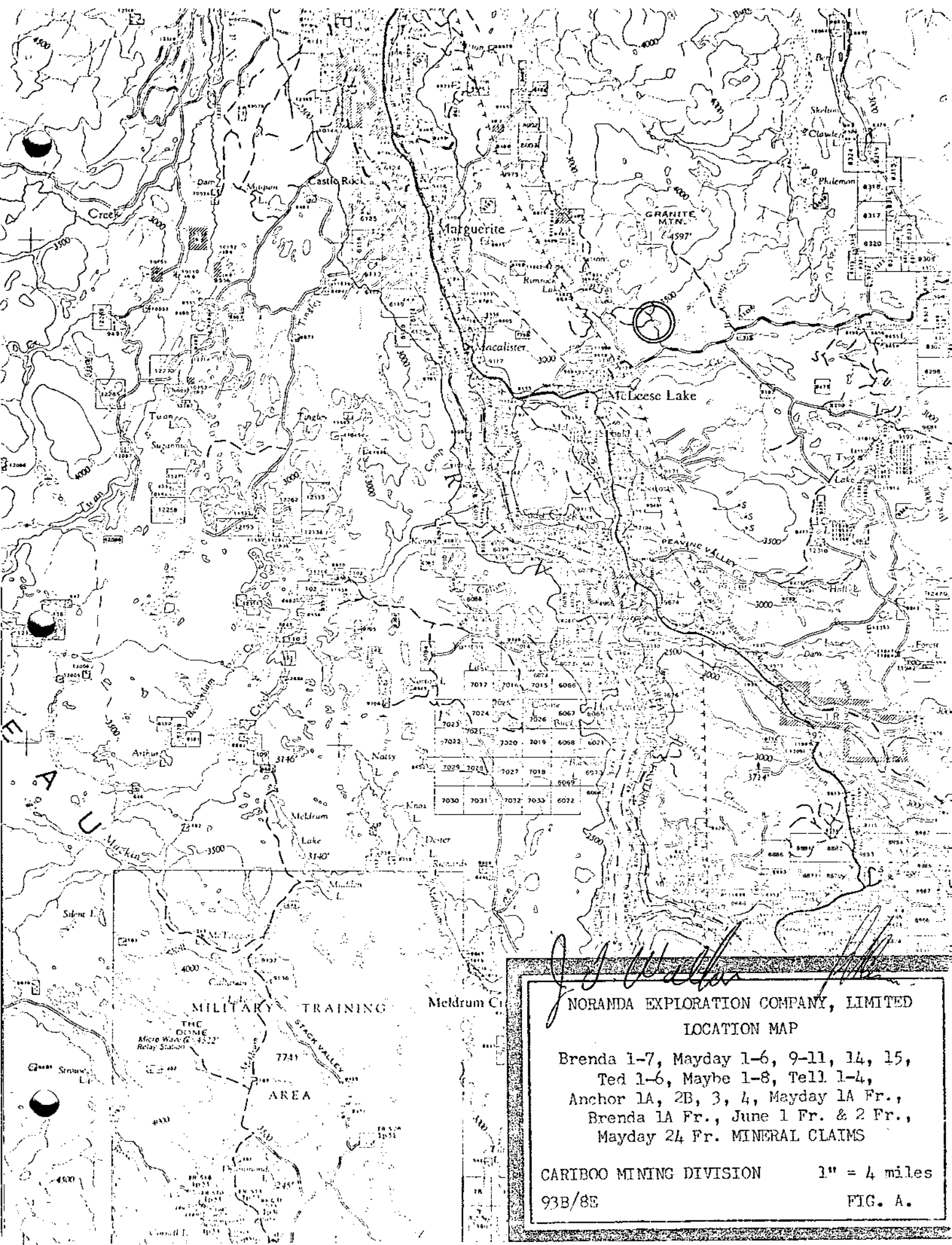
Noranda Exploration Company, Limited

INTRODUCTION:

The claims referred to in this report are registered in the name of Noranda Exploration Company, Limited (No Personal Liability), under option from Ensbrook Mines Limited (N.P.L.). The claim names and record numbers are listed.

Claim Name	Record Number
Brenda 1-7 inclusive	25129-25135 inclusive
Mayday 1-6 inclusive	20295-20300 inclusive
Mayday 9-11 inclusive	21075-21077 inclusive
Mayday 14 & 15	21193 & 21194
Ted 1-6 inclusive	46284-46289 inclusive
Maybe 1-8 inclusive	45519-45526 inclusive
Tell 1-4 inclusive	48321-48324 inclusive
Anchor 1A & 2B	51312 & 51313
Anchor 3 & 4	51314 & 51315
Mayday 1A FR.	52561
Brenda 1A FR.	52562
June 1FR. & 2 FR.	52563 & 52564
Mayday 24 FR.	52566

The surveys described in this report were conducted within the boundaries of the above listed mineral claims. Claim boundaries and claim names are shown on all plan maps (Drawings No. 1, 2, 3 & 4).



NORANDA EXPLORATION COMPANY, LIMITED

LOCATION MAP

Brenda 1-7, Mayday 1-6, 9-11, 14, 15,
Ted 1-6, Maybe 1-8, Tell 1-4,
Anchor 1A, 2B, 3, 4, Mayday 1A Fr.,
Brenda 1A Fr., June 1 Fr. & 2 Fr.,
Mayday 24 Fr. MINERAL CLAIMS

CARIBOO MINING DIVISION — 1" = 4 miles

93B/8E — FIG. A.

The claims are located approximately 3 miles northeast of McLeese Lake, B.C. Access to the property is by a gravel secondary road departing from highway No. 97 at McLeese Lake.

Elevation of the claim group ranges between 3,000 and 3,500 feet. Topographic relief is gentle. Several old logging roads provide good working access within the claim group.

The Induced Polarization Survey and the V.L.F. Electromagnetic Survey were carried out during the period May 17, 1972 and June 5, 1972. Both surveys were carried out by four employees of Noranda Exploration Company, Limited under the direction of R.C. Heim, P.Eng. and J.T. Walker, Geophysicist.

GENERAL GEOLOGY:

A description of the geology within and surrounding the claim group is found on G.S.C. preliminary map 93B, Quesnel, by H.W. Tipper, 1959.

The property is underlain mainly by altered volcanics and sediments of the Cache Creek Group. These are intruded by Granite Mountain Intrusives.

GRID PREPARATION:

A previously prepared grid on the property has been extended where necessary to provide control for the Induced Polarization and V.L.F. Electromagnetic Surveys. The existing grid, where necessary, has been rechained and picketed to control the VLF-EM survey. All grid line and base line preparation was carried out by Noranda Exploration Company, Limited field personnel.

INDUCED POLARIZATION AND RESISTIVITY SURVEY:

The Induced Polarization and Resistivity Survey was carried out utilizing Variable Frequency I.P. equipment owned by Noranda Exploration Company, Limited. Frequencies employed are 0.30 Hz and 10 Hz. The theory of Variable Frequency Induced Polarization is fully described in the literature and will not be described in this report.

Method:

Throughout this I.P. and Resistivity Survey the following field procedure was carried out for the recorded readings at each 400 foot station along the prepared grid lines. A dipole-dipole electrode configuration (C_2 C_1 P_1 P_2) was employed with an electrode separation of 400 feet. Current is injected into the earth between electrodes C_1 and C_2. The Induced voltage developed between the porous pot electrodes P_1 and P_2 is measured. The four man field crew, one man stationed at each electrode, carried out the survey transporting electrodes and instruments station to station along the survey grid lines.

The following data are recorded at each station:

Grid location of current electrodes C_1 and C_2.
Grid location of potential electrodes P_1 and P_2.

In addition the following electrical measurements are made and recorded:

(1) Transmitter current on-Frequency 10 Hz (Current recorded in Milliampers.)
(2) Receiver measures developed voltage (recorded in millivolts.)
(3) Current maintained constant frequency changed to 0.3 Hz.
(4) Receiver measures percent change in voltage caused solely by the change in frequency of current.
(Percent change of voltage recorded as Percent Frequency Effect).

Note on Reading No. 4:

By definition Percent Frequency Effect is the percent change in Resistivity when the Resistivity is calculated for two frequencies. Resistivity is directly proportional to the voltage and inversely proportional to the current. Provided the current is constant for each frequency, the percent change in voltage equals percent change in resistivity and the voltage change in percent is read directly as Percent Frequency Effect.

The Resistivity for each electrode set up is calculated from the recorded voltage and current measurements and electrode separation in feet.

For this survey, a total of 23.8 miles of Induced Polarization and Resistivity was run.

Presentation of Results:

The results of the Induced Polarization and Resistivity surveys are presented on plan maps with a scale of 1 inch equals 400 feet. The Induced Polarization response, measured in Percent Frequency Effect is plotted and contoured on Drawing No. 1. Apparent Resistivity values in ohm feet divided by 2π are plotted and contoured on Drawing No. 2. Readings for each survey are plotted at mid-point between grid location of C_1 and P_1.

Discussion of Results:

Results of the Induced Polarization survey show a background of 1 to 2 percent Frequency Effect. Three anomalous areas with a response greater than 5% F.E. are indicated. One anomalous area, indicated on lines 4W and 4E confirms the results of an earlier I.P. survey on a part of the property. A second anomaly centred at approximately 56E + 14S has a response of 7.0% F.E. The third anomaly strikes approximately eastwest and is centred approximately 48W + 10S with a response of 11.5% F.E.

Resistivity results show a distinct resistivity "low" associated with the second and third I.P. anomalous areas.

VIF- ELECTROMAGNETIC SURVEY:

The Electromagnetic Survey was carried out utilizing a VLF-EM Receiver manufactured by Sabre Electronic Instruments Ltd., 4245 East Hastings Street, Burnaby, B.C.

The operation and theory of the VLF - Electromagnetic method is described fully in the literature. Only a brief outline of the method will be discussed here.

The VLF-EM method employs V.L.F. radio signals in the 15 - 25 KHz range as a primary field source. The normal field from these V.L.F. stations is horizontal. This normally horizontal electromagnetic field can be locally distorted by many factors, one of which is the presence of an electrical conductor either in or above the ground. The distortion by a conductor will cause the

normally horizontal field to tilt. This tilt of the field can be observed by measuring the angle of null (minimum signal) in a vertical plane, tangential to the wave front of the primary field.

For this survey, the tilt angle of null was recorded at each 100-foot station utilizing the V.L.F. signal from a transmitter near Cutler, Maine (frequency 17.6 KHz). A total of 32.5 line miles of survey were conducted.

Field Procedure:

(1) With the V.L.F. receiver held horizontally (receiver coil axis horizontal), rotate the instrument in a horizontal plane until a null is observed. In this null position, the coil axis points in the direction of the transmitter. The vertical plane perpendicular to the coil axis direction is now known. This vertical plane is tangential to the wave front of the primary field. The operator is now facing the transmitter.

(2) The receiver is now held upright in this vertical plane (receiver coil axis vertical) and rotated until a signal null or minimum is observed. While the receiver is held in this null position the dip angle of the null is read on the receiver inclinometer and recorded in degrees. A positive or negative sign is given each reading using the following convention.

Top of coil axis tilted to right of operator - sign positive

Top of coil axis tilted to left of operator - sign negative

At each station, the operator records dip angle of null in degrees, the grid line and station coordinates.

Presentation of Results:

The results of the survey are plotted on two plan maps, each at a scale of 1 inch equals 400 feet. Drawing No. 3 shows a plot of the recorded dip angle readings. These readings are profiled along each line using a vertical scale of 1 inch = 20 degrees. Drawing No. 4 shows a plot of the filtered dip angle readings. Negative values are indicated by the negative sign (-) only. Positive values are plotted and contoured.

The filtering technique was developed by D.C. Fraser and published in Geophysics, Vol. 34 No. 6 (December 1969) Pp. 958-967. The following functions are performed by the filtering procedure.

(1) The dip angle profiles are phase shifted by 90° (Anomalous profile cross-overs and inflections are now indicated by positive values).
(2) High frequency noise is attenuated.
(3) The D.C. component is removed (This component is caused in part by topography.).

Since the anomalous cross-overs and inflections of the profiled data are converted into positive values by the filtering, only these positive values are plotted and contoured. These positive contoured areas clearly define the conductive zones within the surveyed area.

Discussion of Results:

The relatively high frequency used for this survey (17.6 KHz), and the nature of the radiated signal produces a primary ground current distributed across large areas of the earth. The magnitude of this ground current is altered by changes in the conductivity of the earth, producing measurable changes in the vertical component of the electromagnetic field. The direction of the current flow, in line between the survey zone and the transmitter, appears to emphasize conductive zones oriented generally in line with this current flow.

The field results presented in profile form on Drawing No. 3 show a complex pattern. Interpretation of the results in this form would prove difficult. The filtered data presented in contour form on Drawing No. 4 provides a much clearer picture of the conductive zones.

As with all VLF - Electromagnetic surveys, a wild profusion of conductor patterns is evident. However, the conductive zones contained within the Induced Polarization responsive areas are significant. These VLF-EM results add definition to the broad ill defined Induced Polarization anomalies.

RECOMMENDATIONS AND CONCLUSIONS:

The results of the Induced Polarization survey have indicated three significant anomalies. Definite VLF - Electromagnetic conductors are associated with these anomalies.

The response indicated by the Induced Polarization results is sufficiently strong on the three anomalous areas to warrant investigation by drilling.

Respectfully submitted,

R.C. Heim, P.Eng.

J.T. Walker
Geophysicist

July 4, 1972

Statement of Qualifications

I, James T. Walker of the City of Vancouver, Province of British Columbia do certify that:

1. I have been an employee of Noranda Exploration Company, Limited since May 1958.

2. I have held the position of Geophysicist for Noranda Exploration Company, Limited, British Columbia since June 1965.

3. I am a member of the Canadian Institute of Mining and Metallurgy.

Dated at Vancouver
this 4th day of
July, 1972

James T. Walker

James T. Walker
Geophysicist
Noranda Exploration Company, Limited
(No Personal Liability)

TELL 1
TELL 2
TELL 3
TELL 4
MAYBE 1
MAYBE 2
MAYBE 3
MAYBE 4
MAYBE 5
MAYBE 6
MAYBE 7
MAYBE 8
JUNE 1 FRAC.
JUNE 2 FRAC.
MAYDAY 1
MAYDAY 2
MAYDAY 3
MAYDAY 4
MAYDAY 5
MAYDAY 6
MAYDAY 9
MAYDAY 10
MAYDAY 11
MAYDAY 14
MAYDAY 15
MAYDAY 24 FR.
MAYDAY 1A FRAC.
BRENDA 1
BRENDA 1A FRAC.
BRENDA 2
BRENDA 3
BRENDA 4
BRENDA 5
BRENDA 6
BRENDA 7
ANCHOR 1
ANCHOR 2
ANCHOR 1A
ANCHOR 2B
ANCHOR 3
ANCHOR 4
TED 1
TED 2
TED 3
TED 4
TED 5
TED 6
CLAIM BOUNDARY
Claim Line
B/L
TP
70 N
61 N B/L
56 N
48 N
39 N B/L
32 N
24 N
18 N
16 N
8 N
8 L 05
00 B/L
8 S
16 S
24 S
60 W
56 W
52 W
48 W
44 W
40 W
36 W
32 W
28 W
24 W
20 W
16 W
8 W
00
8 E
16 E
24 E
32 E
40 E
48 E
56 E
64 E
72 E
80 E
88 E

To accompany Geophysical Report by R.C. Heim P.Eng and J.T. Walker Geophysicist on the Brenda 1-7, Mayday 1-6, 9-11, 14 & 15, Ted 1-6, Maybe 1-8, Tell 1-4, Anchor 1A, 2B, 3 & 4, Mineral Claims and Mayday 1A Frac. Brenda 1A Frac., June 1 Frac & 2 Frac., Mayday 24 Frac., Fractional Mineral Claims.

Cariboo Mining Division Dated July 4, 1972

J. T. Walker.

3746 M-2

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3746 MAP #2

REVISED	ENSBROOK
	I. P. SURVEY % F.E. CONTOUR MAP X = 400', N=1, FREQ. 03 & 10 Hz. Dipole - Dipole Array
	PROJECT:
PROJ. Nº 42	SURVEYED BY: Fraser - Eaton DATE: MAY, 1972
N.T.S. 93 B/8 E	DRAWN BY: D.R. Eaton SCALE: 1" = 400'
DWG. Nº 1	NORANDA EXPLORATION CO. LTD.
	OFFICE: VANCOUVER

To accompany Geophysical Report by R.C. Heim P.Eng and J.T. Walker Geophysical on the Brenda 1-7, Mayday 1-6, 9-11, 14 & 15, Ted 1-6, Maybe 1-8, Tell 1-4, Anchor 1A, 2B, 3 & 4, Mineral Claims and Mayday 1A Frac., Brenda 1A Frac., June 1 Frac. & 2 Frac., Mayday 24 Frac., Fractional Mineral Claims.

Cariboo Mineral Division — Dated July 4, 1972

J. J. Walker

REVISED

ENSBROOK

I.P. SURVEY

RESISTIVITY CONTOUR MAP

X=400, N=1, $\rho a/2\pi$ IN OHM FT.

Dipole-Dipole Array

PROJECT:

PROJ. No 42

SURVEYED BY: Fraser, Eaton DATE: May, 1972

N.T.S. 93 B/8 E

DRAWN BY: D. Eaton SCALE: 1" = 400'

DWG. No 2

NORANDA EXPLORATION CO. LTD.

OFFICE: VANCOUVER

Department of Mines and Petroleum Resources ASSESSMENT REPORT

NO. 3146 MAP #3

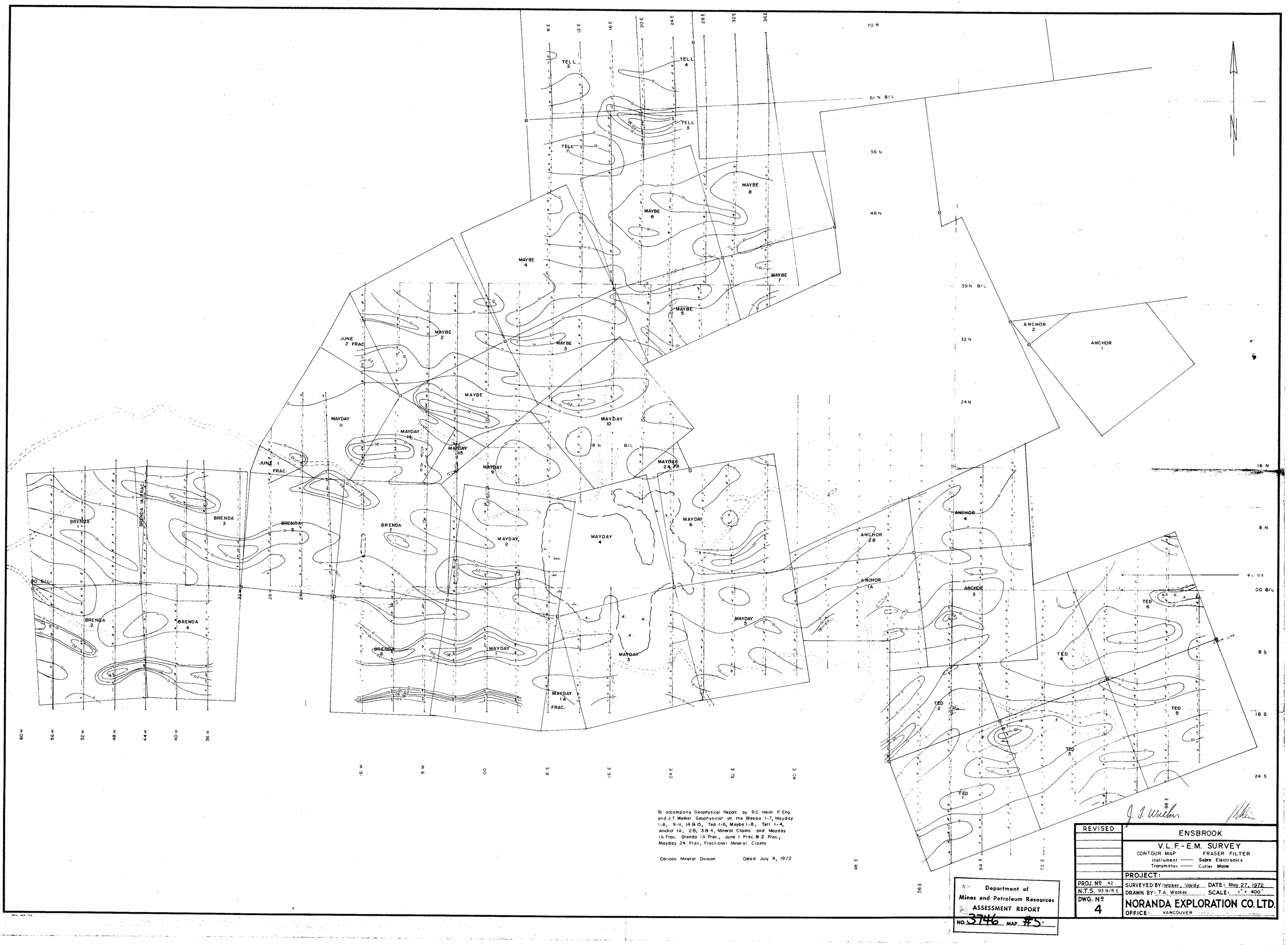
To accompany Geophysical Report by R.C. Heim P. Eng. and J. T Walker Geophysicist on the Brenda 1-7, Mayday 1-6, 9-11, 14 & 15, Ted 1-6, Maybe 1-8, Tell 1-4, Anchor 1A, 2B, 3 & 4, Mineral Claims and Mayday 1A Frac., Brenda 1A Frac., June 1 Frac., & 2 Frac., Mayday 24 Frac., Fractional Mineral Claims.

Cariboo Mining Division Dated July 4, 1972

J. J. Walker

REVISED	ENSBROOK
	VLF-EM SURVEY
	PROFILES OF NULL ANGLE IN DEGREES
	INSTRUMENT — SABRE ELECTRONICS
	TRANSMITTER — CUTLER MAINE
	PROJECT:
PROJ. Nº 42	SURVEYED BY: DATE:
N.T.S. 93 B/8 E	DRAWN BY: T.A. WALKER SCALE: 1" = 400'
DWG. Nº 3	NORANDA EXPLORATION CO. LTD.
	OFFICE: VANCOUVER

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3746 MAP #4



To accompany Geophysical Report by R.C. Herm P. Eng. and J.T. Walker Geophysicist on the Brenda 1-7, Mayday 1-6, 9-11, 14 & 15, Ted 1-6, Maybe 1-8, Tell 1-4, Anchor 1A, 2B, 3 & 4, Mineral Claims and Mayday 1A Frac. Brenda 1A Frac., June 1 Frac. & 2 Frac., Mayday 24 Frac, Fractional Mineral Claims

Cariboo Mineral Division — Dated July 4, 1972

J. T. Walker

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3746 MAP #5

REVISED	ENSBROOK
	V.L.F.-E.M. SURVEY
	CONTOUR MAP — FRASER FILTER
	Instrument — Sabre Electronics
	Transmitter — Cutler Maine
	PROJECT:
PROJ. Nº 42	SURVEYED BY: Walker, Vardy — DATE: May 27, 1972
N.T.S. 93 B/8 E	DRAWN BY: T.A. Walker — SCALE: 1" = 400'
DWG. Nº 4	NORANDA EXPLORATION CO. LTD.
	OFFICE: VANCOUVER