

COMINCO LTD.

EXPLORATION
N.T.S. 92I/11W

WESTERN DISTRICT

INDUCED POLARIZATION,

VLF-EM AND MAGNETICS GEOPHYSICAL SURVEYS

LOFAR CLAIMS

Ashcroft Area, B.C., Kamloops Mining Division

Latitude: 50°35'N; Longitude: 121°13'W

Work Performed: August 30-Sept. 6, 1978

On Claim : Lofar Mineral Claim
(18 units)

Part 3 of 3

MINERAL RECORDS BRANCH
ASSESSMENT REPORT
6918
NO. _____

October 1978

Alan Scott

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* * * * *

ATTACHMENTS

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3	Magnetic Field Data
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INTRODUCTION AND SUMMARY

The LOFAR mineral claim (18 units) is located some 17 kilometers south of Ashcroft, B.C., as indicated on the accompanying location plan, plate 144-78-1. The lines surveyed are indicated on the claim map, plate 144-78-2.

During the period August 30 to September 6, 1978, a Cominco geophysical crew completed some 5.9 line kilometers of multi separation IP survey, and some 6.5 line kilometers of VLF-EM and total field magnetics surveys, over portions of the LOFAR claims.

This report describes these geophysical surveys, presents the data collected, and discusses the results.

GEOPHYSICAL SURVEYS

Magnetics

A Scintrex MP-2 total field proton precession magnetometer was utilized for the magnetics survey of the LOFAR property. The instrument has a digital display that reads to the nearest gamma. The data was corrected for diurnal variation using the usual base station and sub base station looping method.

Readings were taken at 25 meter intervals on crosslines 200 meters apart. The data is plotted in contour plan form on accompanying plate 144-78-3.

VLF Electromagnetics

A VLF-EM survey was done concurrently with the IP survey. A Crone Radem VLF-EM receiver was utilized, with station NLK (Seattle, Washington at 18.6 KHz) serving as the primary VLF field. The dip angle of the resultant field and the horizontal component of the field strength were the parameters measured on the survey, and they are presented in profile form on the IP pseudo sections.

Readings were taken at 25 meter intervals. The dip angle is plotted so as to give a "right wave crossover" over a conductor.

Induced Polarization

G.J. Niemeyer, geophysical technician, was the party chief/receiver operator on the IP survey.

A Scintrex IPR-8 receiver in combination with a Huntex 7.5 KW motor generator/transmitter were deployed on the survey. The equipment measures the chargeability response in the time domain, employing a 2 second current on and 2 second current off alternating polarity square wave signal. The data plotted is the M_{232} value and the units are millivolts per volt. To convert to the more usual millisecond value (such as would be obtained with the IPR-7) the values should be multiplied by 0.7 for a "typical" decay curve. The reader is referred to the Scintrex manual for a more detailed discussion of this instrument.

The pole-dipole electrode array was used on the survey, with an "a" spacing of 50 meters and "n" separations of 1,2,3, and 4. Readings were taken at 50 meter intervals on crosslines 200 meters apart. The chargeability and apparent resistivity data is presented in standard pseudo section form on accompanying plates 144-78-4 to 144-78-10 inclusive.

DESCRIPTION OF RESULTS

Magnetics Survey

The total field magnetics data is presented in contour plan form on plate 144-78-3. 57,000 gammas should be added to the plotted values to obtain the measured total field.

A magnetic high was detected on the westernmost stations of line 4+00N. It peaks at 58718 gammas at station 475West. This mag high is coincident with a moderately anomalous chargeability high of 16.0 millivolts per volt.

A weaker magnetic high was detected on line 0+00 at 350E and line 2+00S at 500E. It peaks at 57720 gammas on line 0+00. IP coverage did not extend this far.

Magnetic response elsewhere on the grid is generally quite flat.

VLF Survey

The VLF field strength and dip angle data is plotted in profile form on the IP pseudo sections, plate 144-78-4 to 144-78-10. The dip angle data is plotted so as to give a "right wave" crossover over a conductor.

The objective of the VLF survey was that if a VLF conductor was detected coincidentally with an IP anomaly, it would assist in interpretation of that IP anomaly. VLF conductors not associated with an IP anomaly are not considered to be of direct interest.

The very strong VLF response on the eastern end of the lines, is due to the presence of powerline and telephone wires.

Induced Polarization Survey

The chargeability and apparent resistivity data is plotted in pseudo section format on plate 144-78-4 to 10.

The strongest IP response was obtained on line 10+00N, where an $n=4$ value of 18.4 millivolts per volt was read at station 400W. This moderately strong anomaly is centered at 300W for the $n=1$ values. A broad VLF field strength high is coincident with this IP high. A narrower VLF anomaly is coincident with a low resistivity zone at 150W.

This chargeability high was detected on the westernmost stations of all the survey lines. A VLF conductor, not coincident with the IP high, was detected on lines 8+00N, 6+00N, and 4+00N, immediately east of the IP high.

A second weaker zone of high chargeabilities was detected on the eastern side of the survey area. The strongest response was on line 4+00N where an $n=4$ value of 12.8 millivolts per volt was read at 250E. The anomaly is centered at 200E on the $n=1$ values, and lies immediately east of a VLF field strength high. This weak chargeability anomaly was also detected on line 8+00N at 200E, but is very poorly defined on the other survey lines.

CONCLUSIONS

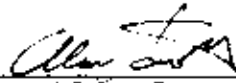
Parts of the LOFAR claims were surveyed by multi separation time domain IP, VLF electromagnetics, and total field magnetics in the late summer of 1978.

A zone of moderately high chargeability response was detected on the westernmost portion of the survey lines. The response was strongest on line 10+00N, where the anomaly is centered at 300W.

A second zone, of weakly anomalous chargeability response, was detected on the east portion of lines 4+00N and 8+00S. It is best defined on line 4+00N where it is centered at 200E.

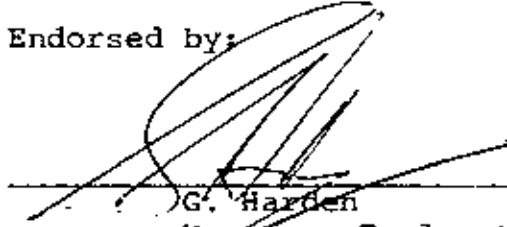
Correlation of this geophysical data to geology and geochemistry should be done to determine if further work is warranted.

Respectfully submitted by:



Alan Scott
Geophysicist

Endorsed by:



G. Harden
Manager, Exploration
Western District

ARS/deb
12 October 1978
Distribution:

Mining Recorder (2)
Western District (1)
Geophysics (1)

APPENDIX I

IN THE MATTER OF THE B.C. MINERAL ACT
AND IN THE MATTER OF A GEOPHYSICAL PROGRAMME
CARRIED OUT ON PORTIONS OF THE LOFAR MINERAL CLAIMS
ON THE LOFAR PROPERTY
LOCATED 17 KM SOUTH OF ASHCROFT IN THE KAMLOOPS MINING DIVISION
OF THE PROVINCE OF BRITISH COLUMBIA MORE PARTICULARLY
N.T.S. 92I/11W

S T A T E M E N T

I, ALAN SCOTT, OF THE CITY OF VANCOUVER IN THE PROVINCE
OF BRITISH COLUMBIA, MAKE OATH AND SAY: -

1. THAT I AM EMPLOYED AS A GEOPHYSICIST BY COMINCO LTD.
AND, AS SUCH, HAVE A PERSONAL KNOWLEDGE OF THE FACTS
TO WHICH I HEREINAFTER DEPOSE;
2. THAT ANNEXED HERETO AND MARKED AS "APPENDIX II" TO
THIS STATEMENT IS A TRUE COPY OF EXPENDITURES INCURRED
ON GEOPHYSICAL SURVEY AND LINECUTTING ON THE LOFAR
MINERAL CLAIMS;
3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE
30TH OF AUGUST AND THE 6TH OF SEPTEMBER 1978 FOR THE
PURPOSE OF MINERAL EXPLORATION OF THE ABOVE NOTED
CLAIMS.



Alan Scott
Geophysicist

ARS/deb
10 October 1978

APPENDIX II

LOFAR CLAIM (18 units)

STATEMENT OF EXPENDITURES

(Induced Polarization, VLF-EM, and Magnetics Surveys)

SALARIES

G.J. Niemeyer	Aug. 30 - Sept. 6		
	8 days @ \$120	= \$ 960	
T. Maurer	Aug. 30 - Sept. 6		
	8 days @ \$ 82	= \$ 656	
J.M. Niemeyer	Aug. 30 - Sept. 4		
	6 days @ \$ 82	= \$ 492	
P. Harden	Aug. 30 - Sept. 2		
	4 days @ \$ 82	= \$ 328	
K. Weaver	Aug. 30 - Sept. 5		
	7 days @ \$ 82	= \$ 574	
			<hr/>
			\$ 3,010.00

MISCELLANEOUS

Food, lodging, gas, consumables \$ 1,053.22

OPERATING CHARGES

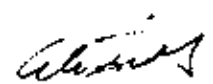
(Towards report, drafting, supervision)
6 survey days @ \$175 \$ 1,050.00

EQUIPMENT RENTALS AND CHARGES

6 survey days @ \$282/day	\$ 1,692	
2 days truck rental only @ \$30/day	\$ 60	
		<hr/>
		\$ 1,752.00

TOTAL:.....\$ 6,865.33

ARS/deb
10 October 1978




APPENDIX III

C E R T I F I C A T I O N

I, Alan Scott, of 4013 West 14th Avenue, in the city of Vancouver, in the Province of British Columbia, do hereby certify that: -

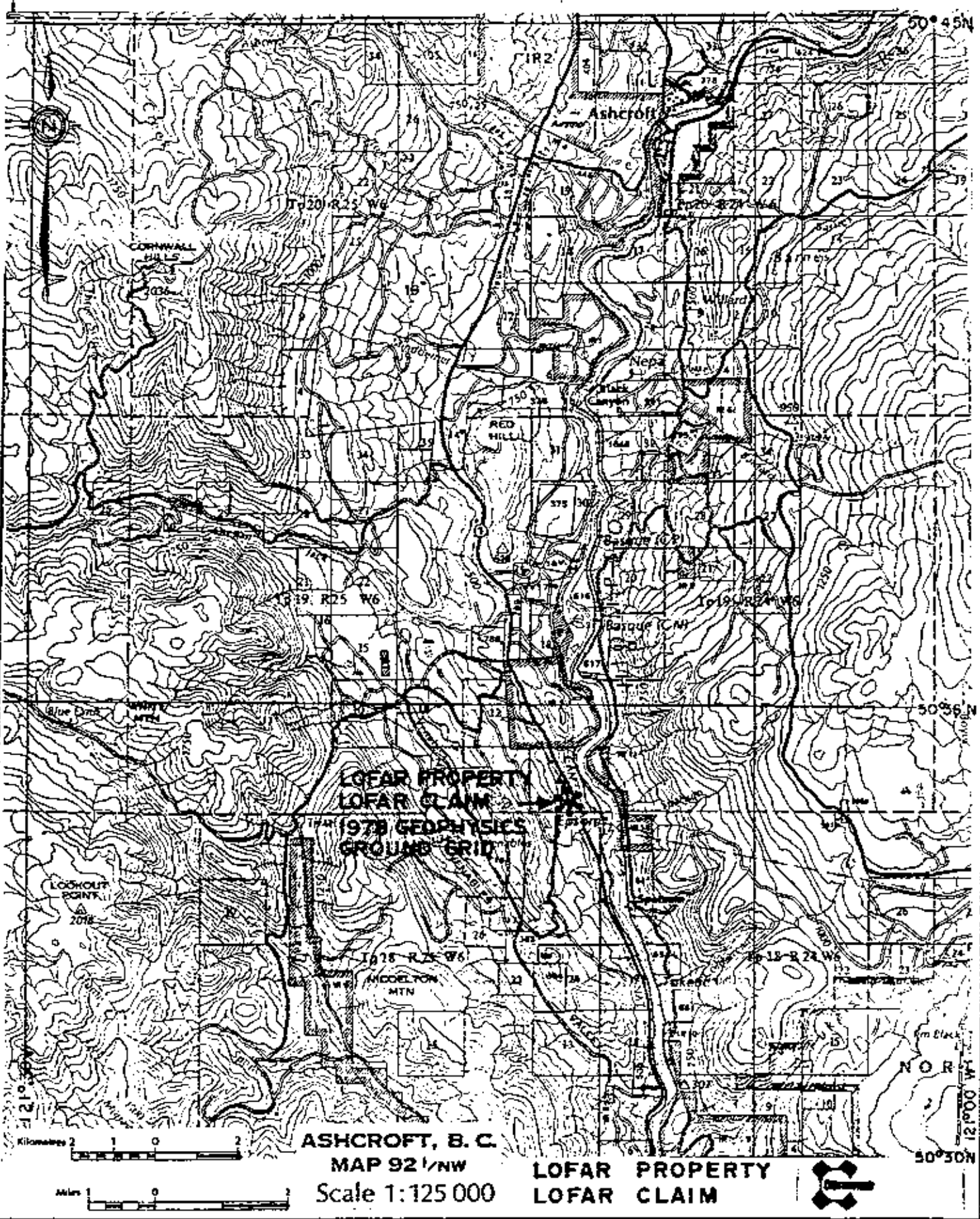
1. I graduated from the University of British Columbia in 1970 with a B.Sc. in Geophysics.
2. I am a member of the Association of Professional Engineers of the Province of Saskatchewan, the Society of Exploration Geophysicists of America, and the British Columbia Geophysical Society.
3. I have been practising my profession for the past eight years.



Alan Scott
Geophysicist

ARS/deb

10 October 1978



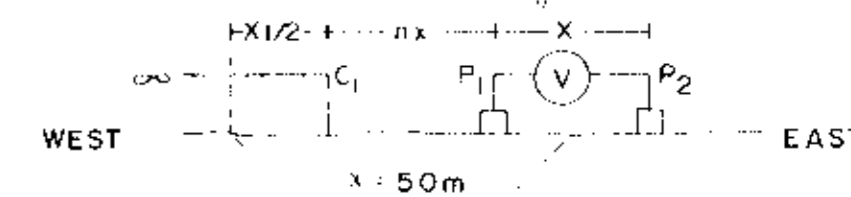
Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

LOCATION MAP
KAMLOOPS M.D., B.C.

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

LINE NO. 2+005

POLE-DIPOLE
ELECTRODE CONFIGURATION



PLOTTING POINT
n = 1, 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

DATE SURVEYED SEPTEMBER 3, 1978

CONTOUR INTERVALS:

APP. RES. LOGARITHMIC Ω m

APP. CHARG. 1.0 Mv/V

— IN PHASE (DIP ANGLE) RIGHT

— WAVE CROSSOVER

x — X FIELD STRENGTH

TRANSMITTER — HUNTEC 7.5 Km

RECEIVER — IPR 8

V.I.F. INSTRUMENT — CRONE RADEM

FROM NLK STATION, SEATTLE WASH USA

APPROVED

Part 3 of 3

DATE MINERAL RECORDS PROGRAM

ASSIGN TO PROPERTY

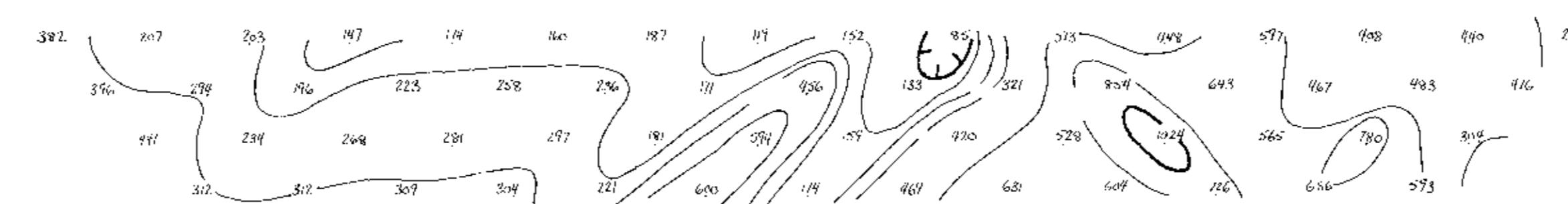
6918

NO.

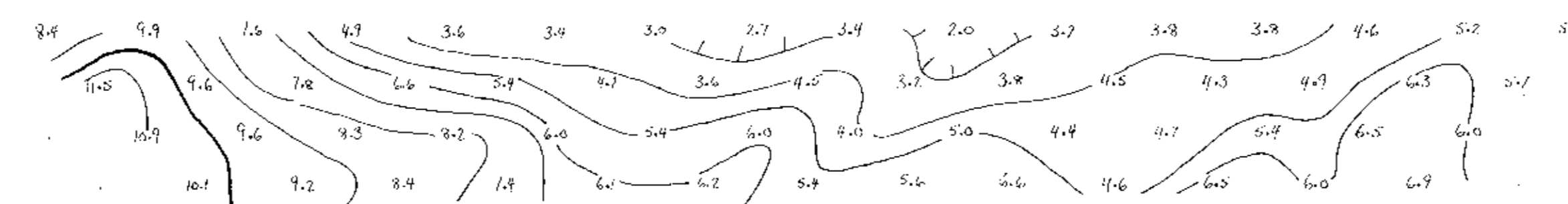
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SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

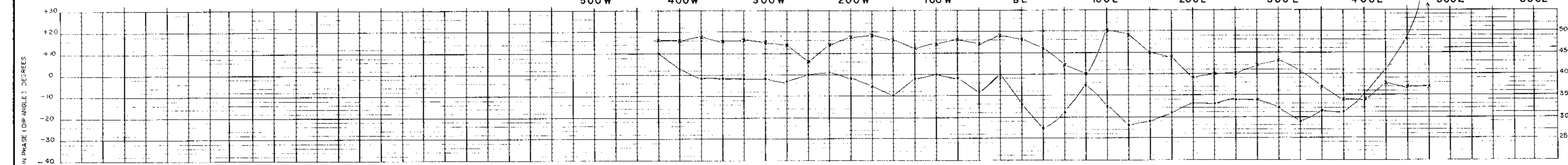
500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



LINE 2+005

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

LINE NO. 100 BL.

WEST EAST
50m

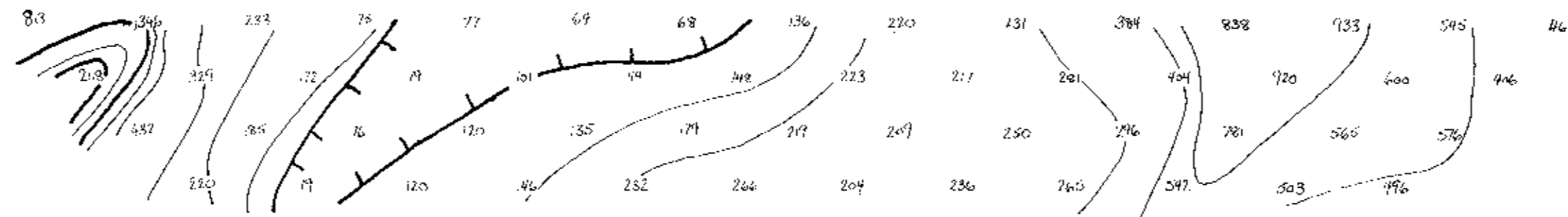
DATE SURVEYED: SEPTEMBER 3, 1978

NET AREA INTERVAL: 100m
APP. RES. LOGARITHMIC Ωm
APP. CHARGE 1.0 MVZV
IN PHASE (DIP ANGLE) RIGHT
WAVE CROSSOVER
X FIELD STRENGTH
TRANSMITTER HUNTEC 7.5 Km
RECEIVER IPRB
VLF INSTRUMENT-GRONE RADEM
FROM NLK STATION, SEATTLE WASH. USA

APPROVED
MINERAL RESOURCES BRANCH
ASSESSMENT DIVISION
6918
NO.

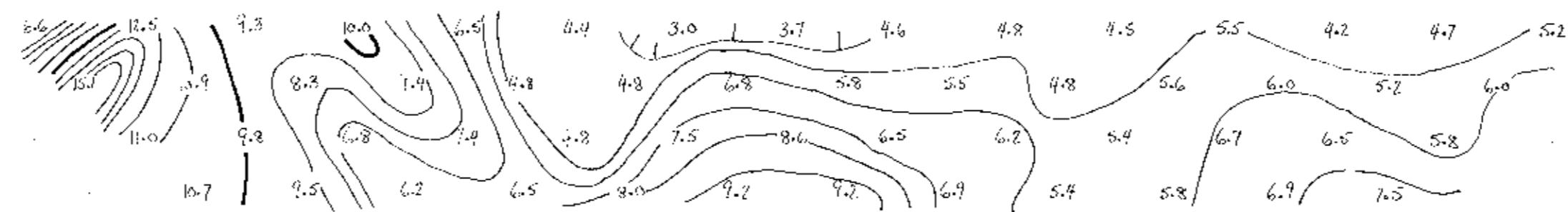
INDUCED POLARIZATION AND RESISTIVITY SURVEY
SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E

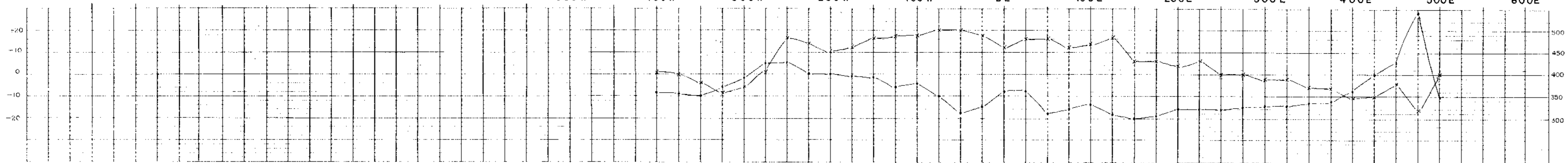


Apparent Chargeability M_a
500E 600E

500W 400W 300W 200W 100W BL 100E 200E 300E 400E



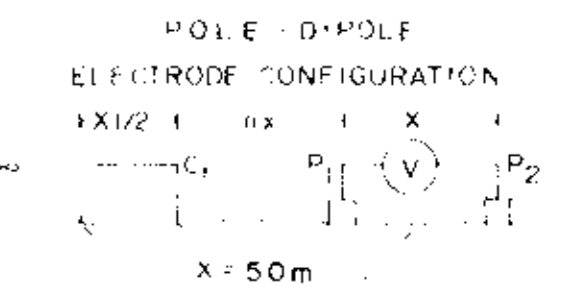
500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



LINE 00BL

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

LINE NO. 2+00N



PLOTTING POINT
REF. 2, 3, 4

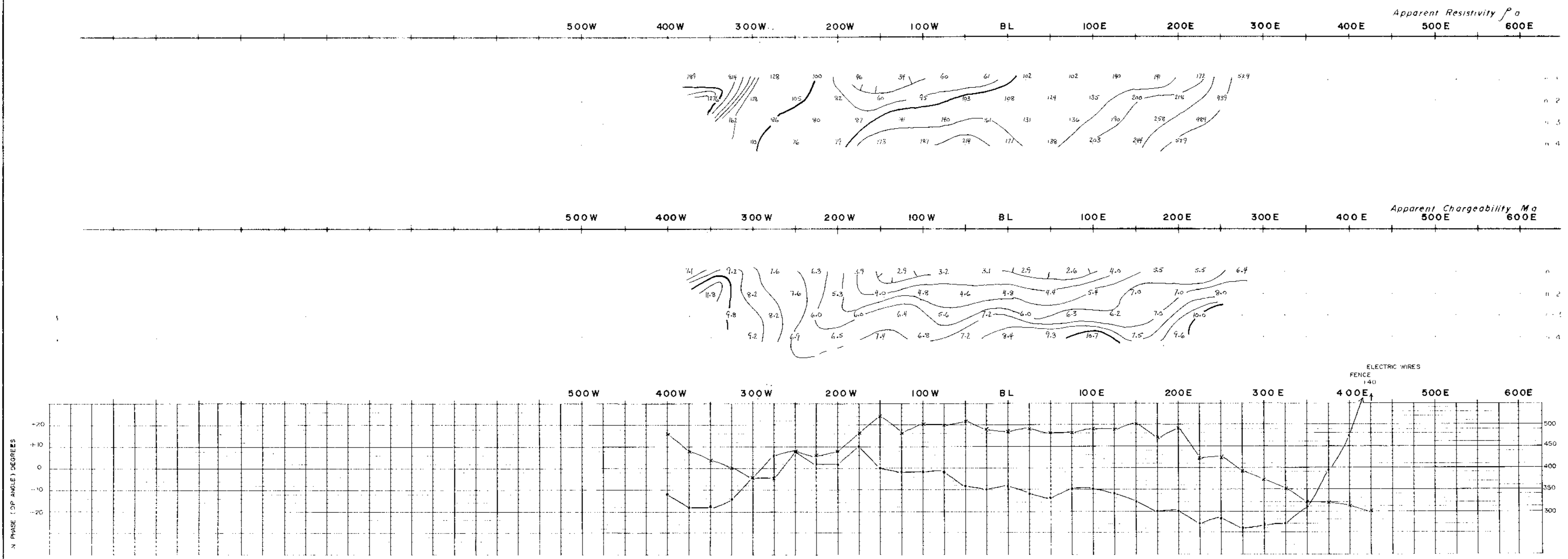
CURRENT ELECTRODE WEST POTENTIAL DIPOLE

DATE SURVEYED SEPTEMBER 2, 1978

CONTOUR INTERVALS:
 APP. RES. LOGARITHMIC Ωm
 APP. CHARG. 1.0 Mv/V
 IN PHASE (DIP ANGLE) RIGHT
 WAVE CROSSOVER
 x FIELD STRENGTH
 TRANSMITTER HUNTEC 7.5 Km
 RECEIVER IPR 8
 VLF INSTRUMENT-CRONE RADEM
 FROM NLK STATION, SEATTLE WASH. U.S.A.

APPROVED: *[Signature]*
 DATE: *[Blank]*
 MINERAL RECORDS DIVISION
 ASSESSMENT REPORT
6918
 NO. *[Blank]*

INDUCED POLARIZATION AND RESISTIVITY SURVEY
SURVEYED BY COMINCO LTD. EXPLORATION DIVISION



LINE 2+00N

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

LINE NO. 4400N

POLE TO POLE

ELECTRODE SPACING

1X1/2

WEST EAST
x 50m

POINT NO. 1

CURRENT ELECTRODE WEST

DATE: SEPTEMBER 2, 1978

CONTOUR INTERVAL

APP. RES. LOGARITHMIC $\log m$

APP. CHRG. 1.0 MV/V

IN PHASE (DIP ANGLE) RIGHT

WAVE CROSSOVER

x x FIELD STRENGTH

TRANSMITTER - HUNTEC 7.5 Km

RECEIVER - IPR8

VLF INSTRUMENT - CRONE PATRIM

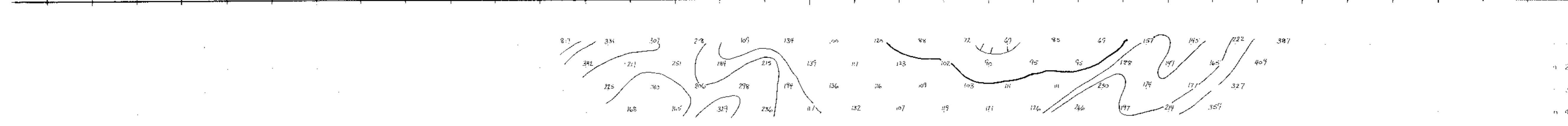
FROM NLK STATION, SEATTLE WASH. USA

INDUCED POLARIZATION AND RESISTIVITY SURVEY

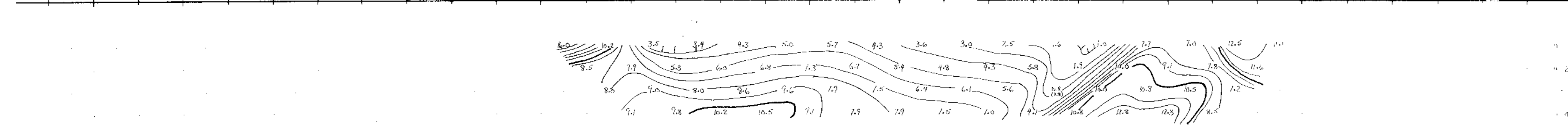
SURVEYED BY COMINCO LTD. EXPLORATION DIVISION

Part 3 of 3
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6918

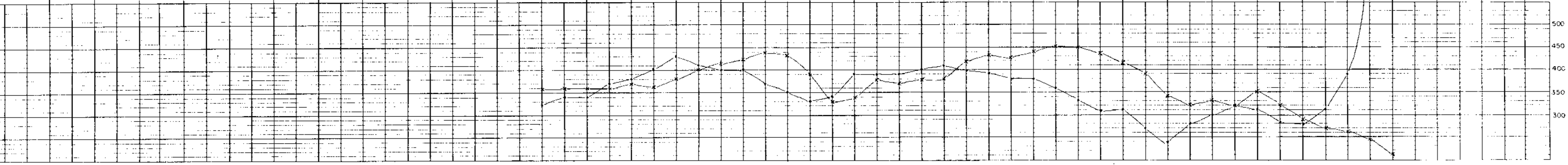
500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



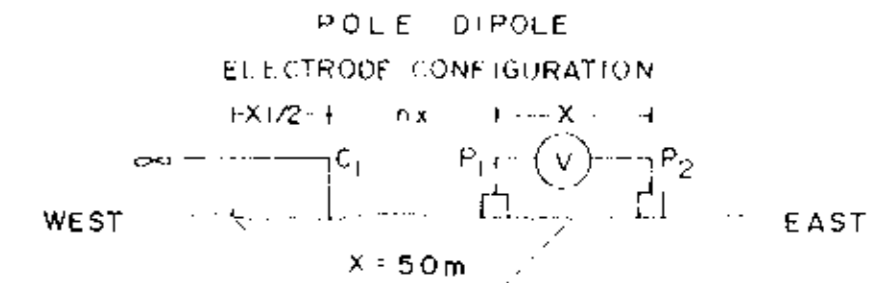
IN PHASE (DIP ANGLE) DEGREES

RELATIVE FIELD STRENGTH

LINE 4400N

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

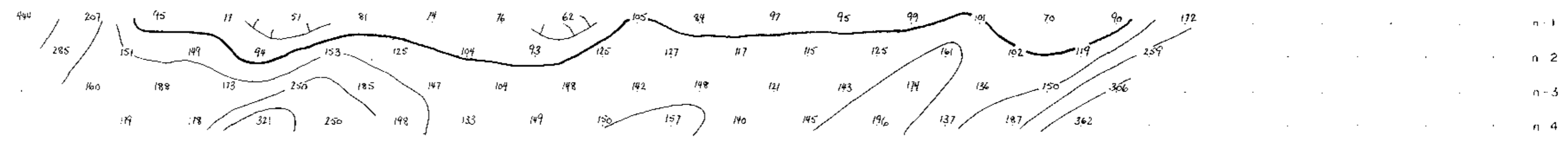
LINE NO. 6+00N



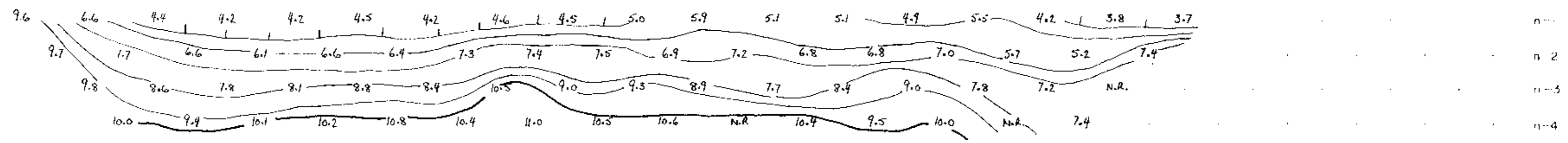
PLOTTING POINT
n = 1, 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

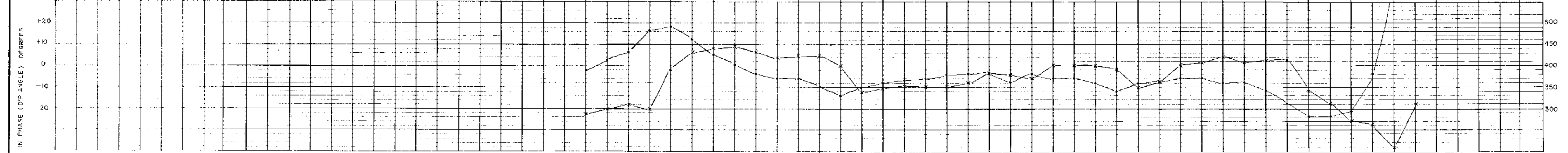
500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



DATE SURVEYED AUGUST 31, 1978

CONTOUR INTERVALS:
 APP. RES. LOGARITHMIC JL/m
 APP. CHARG. - 1.0 Mv/V
 — IN PHASE (DIP ANGLE) RIGHT
 — WAVE CROSSOVER
 x — FIELD STRENGTH

TRANSMITTER - HUNTEC 7.5 Km
 RECEIVER - IPR8
 VLF INSTRUMENT - CRONE RADEM
 FROM NLK STATION, SEATTLE WASH. USA

APPROVED *AA*
 DATE
 NO. **6918**

INDUCED POLARIZATION AND RESISTIVITY SURVEY
SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

LINE 6+00N

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

LINE NO. 8+00N

POLE-DIPOLE

ELECTRODE CONFIGURATION

EX1/2-1 EX2/2-4

WEST EAST

x = 50m

PLOTTING POINT

REF. 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

DATE SURVEYED SEPTEMBER 1, 1978

APPROVED *[Signature]*

Part 3 of 3

DATE

6918

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

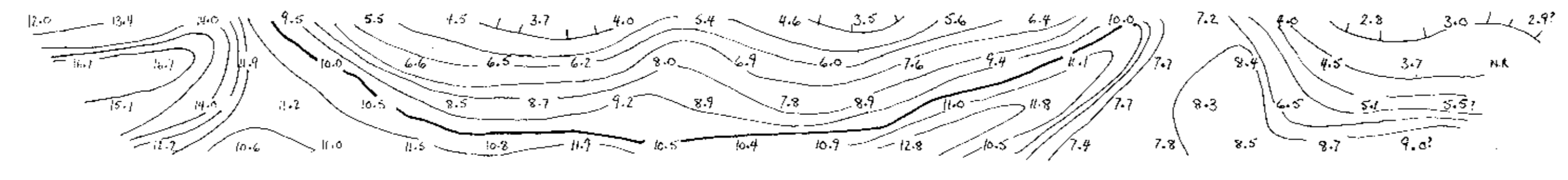
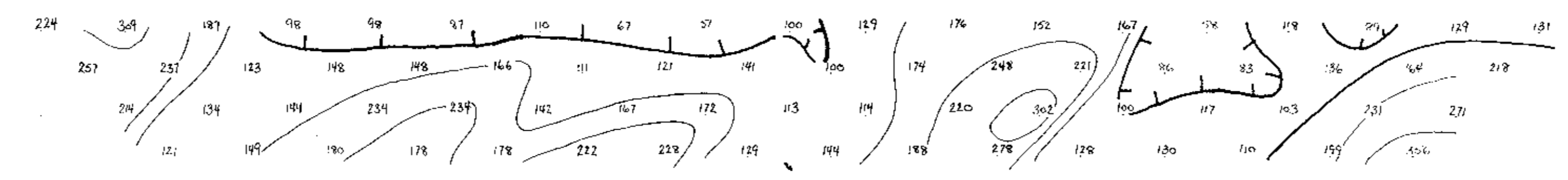
Apparent Resistivity ρ_a

Apparent Chargeability M_a

500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E

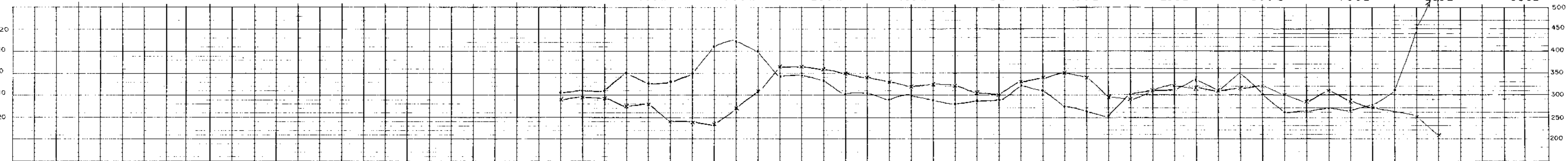
500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E

500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



IN PHASE (DP ANGLE) DEGREES

RELATIVE FIELD STRENGTH

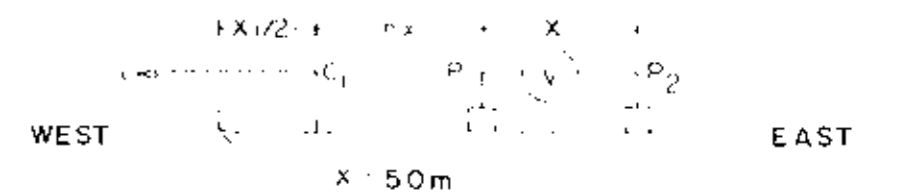


LINE 8+00N

COMINCO LTD. LOFAR PROPERTY LOFAR CLAIM KAMLOOPS M.D., B.C.

LINE NO. 10±00N

POLE TO POLE
ELECTRODE CONFIGURATION



PLOTTING POINT
REF. 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

DATE SURVEYED: SEPTEMBER 1, 1978

CONTOUR INTERVALS:

APP. RES. LOGARITHMIC $\Omega \cdot m$

APP. CHARG. 1.0 MV/V

— IN PHASE (DIP ANGLE) RIGHT

— WAVE CROSSOVER

x-x FIELD STRENGTH

TRANSMITTER - HUNTEC 7.5 Km

RECEIVER - IPR 8

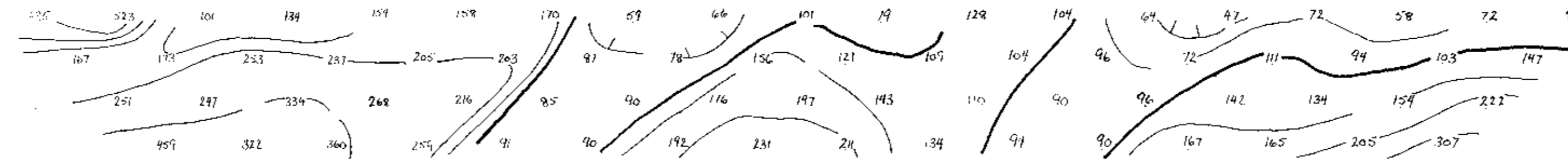
VLF INSTRUMENT - CRONE RADEM
FROM NLK STATION, SEATTLE WASH.

INDUCED POLARIZATION AND RESISTIVITY SURVEY

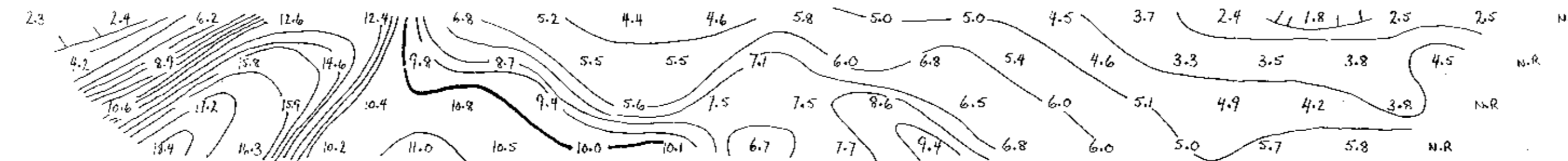
SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

APPROVED: *[Signature]*
DATE: *[Date]*
MINERAL RECORD NO. 1000
APPROVED BY: *[Signature]*
NO. **6918**

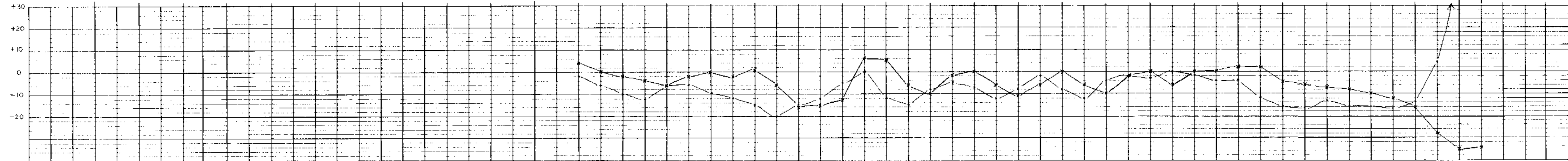
500W 400W 300W 200W 100W BL 100E 200E 300E 400E
Apparent Resistivity ρ_a
500E 600E



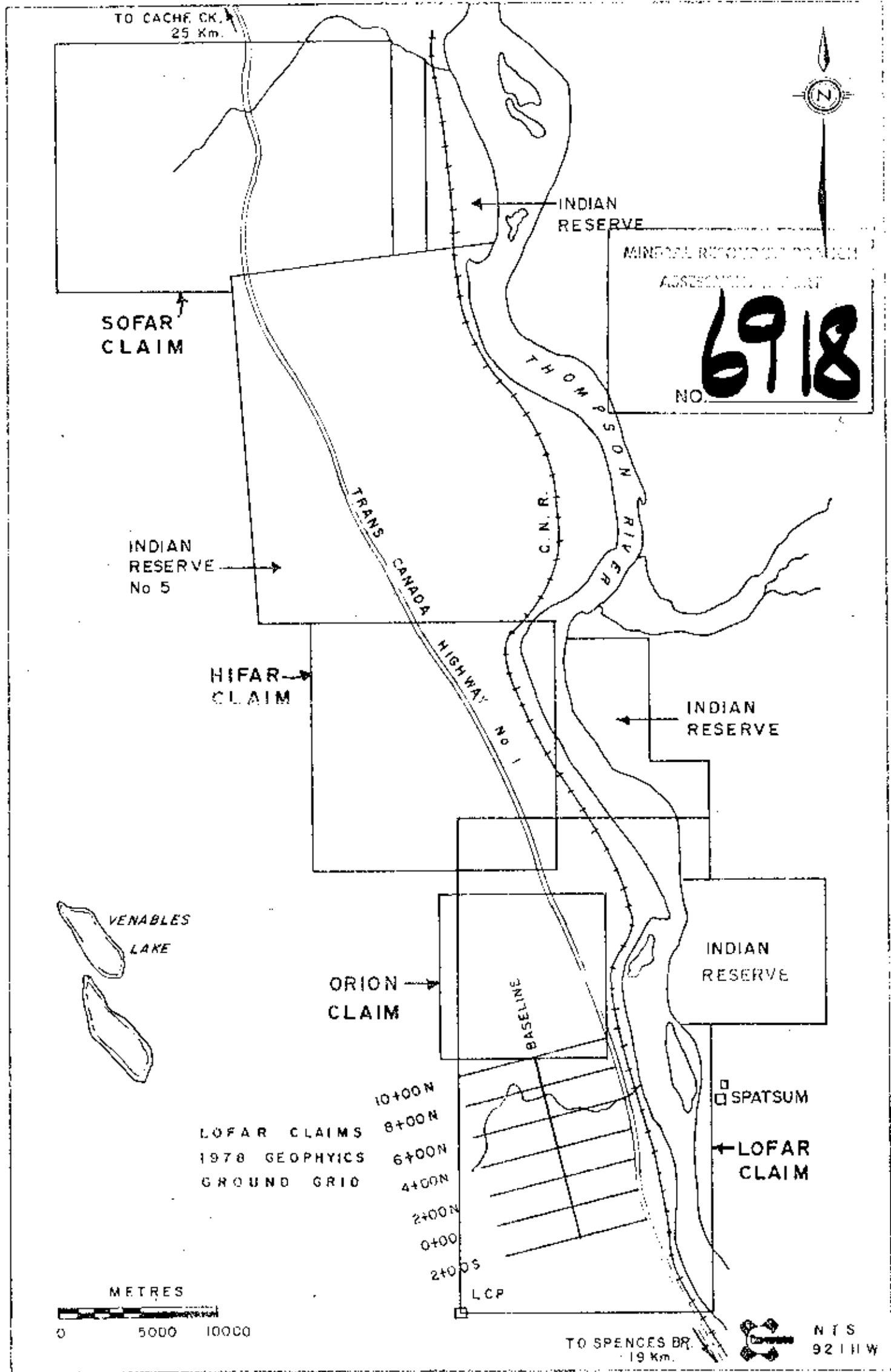
500W 400W 300W 200W 100W BL 100E 200E 300E 400E
Apparent Chargeability M_a
500E 600E



500W 400W 300W 200W 100W BL 100E 200E 300E 400E 500E 600E



LINE 10±00N

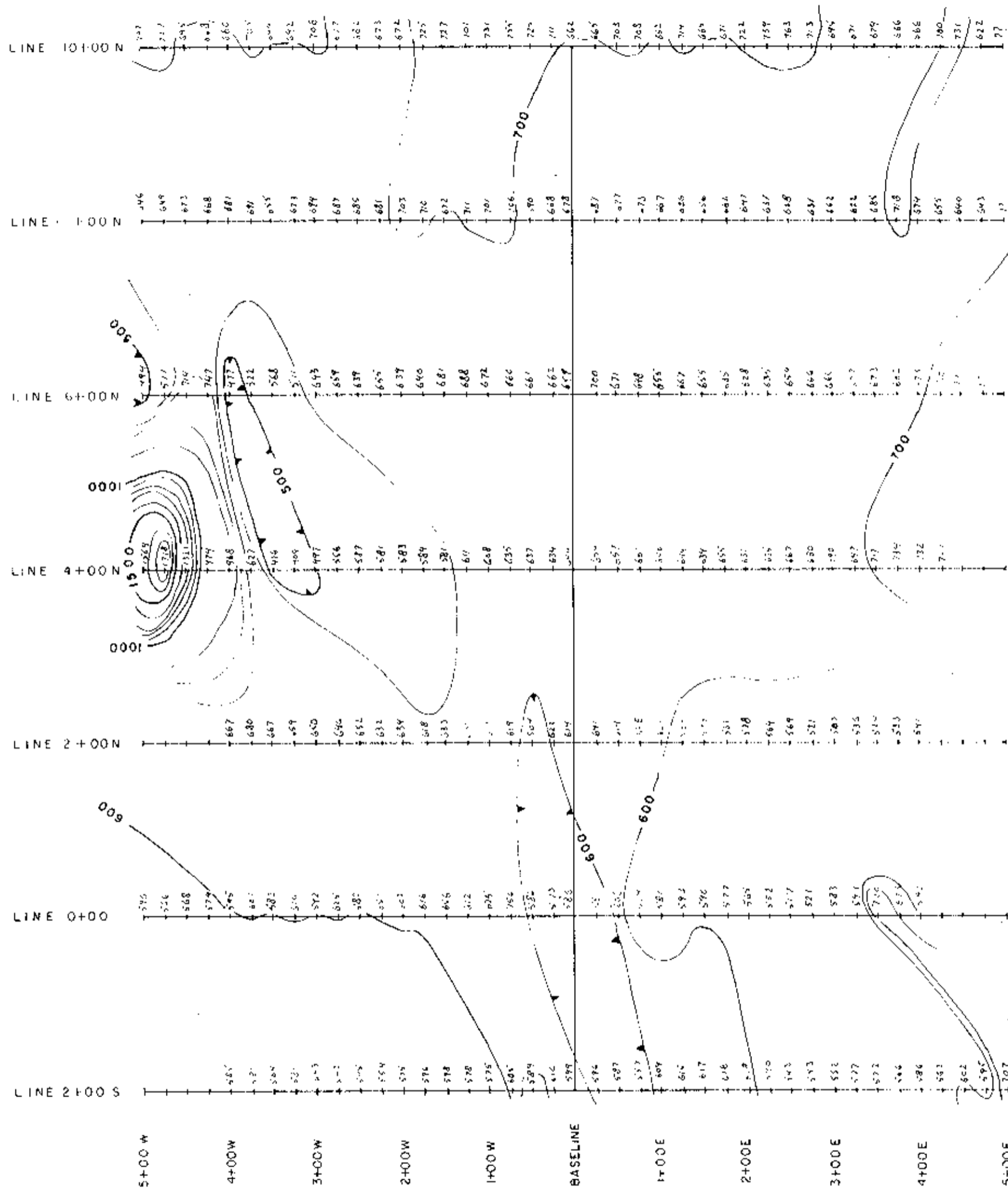
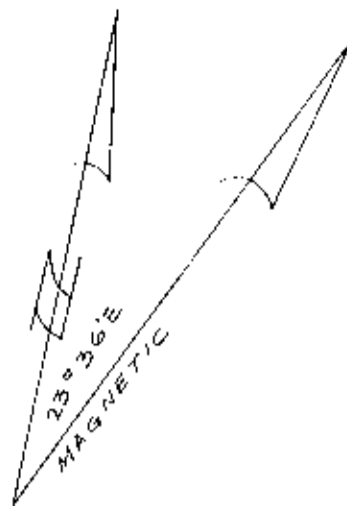


Drawn by	Traced by
Checked by	Reviewed by
Date	Date

LOFAR PROPERTY
CLAIM MAP
KAMLOOPS M.D., B.C.

Adrian

NTS 9211W



1978 GEOPHYSICS GROUND GRID

INSTRUMENT : SCINTREX MP II PROTON
PRECISION MAGNETOMETER

BASE 57,000 GAMMAS

CONTOUR INTERVAL 100 GAMMAS

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

NO. **6918**

LOFAR PROPERTY, LOFAR CLAIMS

Drawn by	Traced by
Revised by - Date	Revised by - Date

MAGNETOMER SURVEY

KAMLOOPS M.D., B.C.

Scale: 1 : 5000

Date: SEPT. 1978

Page: 44 78-3



K.T.S.
92111W