

COMINCO LTD.

EXPLORATION
N.T.S. 82M/13 E

WESTERN DISTRICT

INDUCED POLARIZATION, VLF, AND MAGNETICS SURVEY

CK CLAIMS

Raft River Area, B.C., Kamloops Mining Division

Latitude: 51°55'N; Longitude 119°35'W

Work Performed: May 19-28, June 6, 1978

On Claims: CK 1-9 inclusive, CK 11,
13 and 83

MINERAL RESOURCES BRANCH ASSESSMENT REPORT 6756 NO. _____
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JUNE 1978

A. R. SCOTT

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ATTACHMENTS

Plate 132-78-1	General Location Map
132-78-2	CK Claim Map
132-78-3	Magnetic data values and contour plan
132-78-4 to 13	Induced Polarization and Apparent Resistivity Pseudo Sections, VLF Profiles where obtained.
Appendix I	Statement
Appendix II	Cost Statement
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INTRODUCTION AND SUMMARY

The CK claims are located some 150 kilometers north of Kamloops, B.C., 8 kilometers south east of Wells Grey Park, as indicated on the accompanying location plan 132-78-1. The lines surveyed are indicated on accompanying claim map 132-78-2.

During the period May 19 to May 28, 1978, a Cominco geophysical crew completed some 8 line kilometers of multi separation induced polarization survey and some 9 line kilometers of total field magnetics survey. On June 6 some 2.5 line kilometers of VLF EM survey was done.

The purpose of the survey was to try to define a geophysical target that could represent the source for mineralized boulders in the survey area.

This report describes these geophysical surveys and discusses the results obtained.

LOCATION AND ACCESS

The CK claims lie at approximate geographic coordinates of 51°55'N latitude by 119°35'W longitude, and are in the Kamloops Mining Division.

Access is by highway No. 5 some two and a half miles north of Clearwater then by logging road along the west side of the Raft River to McClosky Creek.

GEOPHYSICAL SURVEYS

Magnetics Survey

The magnetic survey was done by Boris Lumm, geophysicist in training. A Scintrex MP-2 total field proton precession magnetometer was utilized. The instrument has a scale sensitivity of 1 gamma. The data was corrected for diurnal variation using the standard base and sub base station looping method.

Readings were normally taken at 25 meter intervals on cross lines 100 meters apart. The data is presented in contour plan form as accompanying plate 132-78-3.

VLF Survey

The VLF survey was also conducted by Boris Lumm, geophysicist in training. A Crone Radem VLF-EM receiver was utilized on the survey, 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 on lines 1, 2, 5, and 6 North. The dip angle data is plotted so as to give a "left 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 Hunttec 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" separation of 1, 2, 3, and 4. Readings were taken at 50 meter intervals on crosslines 100 meters apart.

The chargeability and apparent resistivity data is presented in standard pseudo section form on accompanying plates 132-78-4 to 132-78-13 inclusive.

DESCRIPTION OF RESULTS

Magnetics Survey

The total field magnetic data is presented in contour plan form on accompanying plate 132-78-3.

A magnetic high trends north north west across the survey area from 375E on line 0+00 to line 5+00N on the baseline, approximately as outlined by the 58600 gamma contour. This magnetic high is spacially coincident with high chargeability values, suggesting the IP anomaly is in part due to magnetite and/or pyrrhotite.

A subparallel and weaker magnetic high, extends from line 4+00N; station 2+50E to line 8+00N; station 2+00E and is also spacially coincident with high chargeability values. It is defined by the greater than 58500 gamma contour.

The strongest magnetic high detected on the survey is on line 4+00N at station 7+00E. This anomaly is part of a larger zone of high magnetic field strength (as outlined by the 500 gamma contour), that extends from 7+50E on line 1+00N to station 5+50E on line 6+00N. This magnetic high is spacially coincident with moderately high chargeability response.

VLF Survey

VLF coverage was obtained over the main IP anomaly on lines 1, 2, 5, and 6 North. The field strength and dip angle data is plotted on the pseudo sections for those lines.

Due to the steep hillside slope on which the survey was run, zero crossovers of tilt angle were not obtained. However by "eyeballing" the zero upwards and referring to field strengths, VLF conductors can be interpreted at: -

Line 1+00N: station 3+50E

Line 2+00N; station 2+50 to 3+00E

These VLF conductors are coincident with high chargeability and low apparent resistivity.

Less well defined VLF conductors were also detected on line 5+00N at 3+00E and from the baseline to 0+50W.

Induced Polarization Survey

The induced polarization (chargeability) and apparent resistivity data is presented in standard pseudo section format as plates 132-78-4 to 132-78-13 inclusive.

A strongly anomalous zone of high chargeability was detected to the west of the creek, and extends from line 1S to 8N. The anomaly is open to the north west. North of line 3N, the anomaly appears to form two separate zones (this is also indicated by the magnetics, with the western zone having the higher magnetic values).

Chargeability response is strongest on line 2N at 2+75E, with an n=1 value of 60 millivolts/volt. The VLF survey indicates a wide conductor between stations 2+50 to 3+00E, coincident with the chargeability high. The associated magnetic high is relatively weak on this line.

The next strongest response is on line 1N at 3+75E, with an n=1 value of 53 mv/v. The VLF survey indicates a conductor at 3+50E, and the magnetics survey shows a magnetic high from 3+25E to 4+00E.

These anomalies lie just upslope from mineralized boulders.

A moderate amplitude chargeability zone lies to the east of the creek. This zone is open to the east and to the south, and is spacially coincident with a magnetic high.

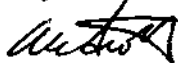
CONCLUSIONS

Portions of the CK claims were surveyed by multi separation pole dipole time domain IP, total field magnetics, and VLF electromagnetics in the Spring of 1978.

A strongly anomalous chargeability zone was detected west of the stream. The anomaly is spacially coincident with high magnetic field values, and on lines 1N and 2N with VLF conductors. As this anomaly is just upslope from mineralized boulders, it should be considered a good drill target.

A zone of moderately anomalous chargeability response was detected to the east of the stream. It is also, at least in part, spatially coincident with high magnetic field values. No VLF data was obtained over this anomaly. It should also be considered a valid, but lower priority, drill target.

Respectfully submitted by:



Alan R. Scott
Geophysicist

Endorsed for
Release by:



G. Harden
Manager, Exploration
Western District

ARS/deb

20 June 1978

Distribution:

Mining Recorder (2) ✓

Western District (1)

Geophysics File (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 CK MINERAL CLAIMS
ON THE CK PROPERTY
LOCATED 150 KM NORTH OF KAMLOOPS IN THE KAMLOOPS MINING DIVISION
OF THE PROVINCE OF BRITISH COLUMBIA MORE PARTICULARLY
N.T.S. 82M/13

S T A T E M E N T

I, ALAN R. 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 ON
THE CK MINERAL CLAIMS;
3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE 19th OF
MAY AND THE 28th OF MAY, AND ON THE 6th OF JUNE, 1978, FOR
THE PURPOSE OF MINERAL EXPLORATION OF THE ABOVE NOTED CLAIMS.



Alan R. Scott,
Geophysicist

APPENDIX II

CK CLAIMS

STATEMENT OF EXPENDITURES

(Line Cutting, IP and Ground Magnetic Survey)

SALARIES: (Work done May 19-28 inclusive)

G.J. Niemeyer	10 days @ \$120.00/day	\$ 1,200.00	
B. Lumm	10 days @ \$ 82.00/day	\$ 820.00	
I. Cummings	10 days @ \$ 82.00/day	\$ 820.00	
C. LaPrairie	10 days @ \$ 82.00/day	\$ 820.00	
J. Reader	10 days @ \$ 82.00/day	\$ 820.00	
R. Grant	10 days @ \$ 82.00/day	\$ 820.00	
			\$ 5,300.00

MISCELLANEOUS:

Food, lodging, gas, consumables \$ 1,973.48

OPERATING CHARGES: (IP and Mag Survey)

10 days @ \$175.00/day \$ 1,750.00

GEOPHYSICAL EQUIPMENT & TRUCK RENTAL:

10 days @ \$292.00/day \$ 2,920.00

VLF SURVEY (Work done June 6)


2.5 line kilometers @ \$120.00/km \$ 300.00

LINE CUTTING:

10.6 line kilometers at \$173.77/km \$ 1,842.00

TOTAL : - \$ 14,084.48

5

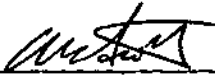

Alan R. Scott,
Geophysicist

APPENDIX III

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

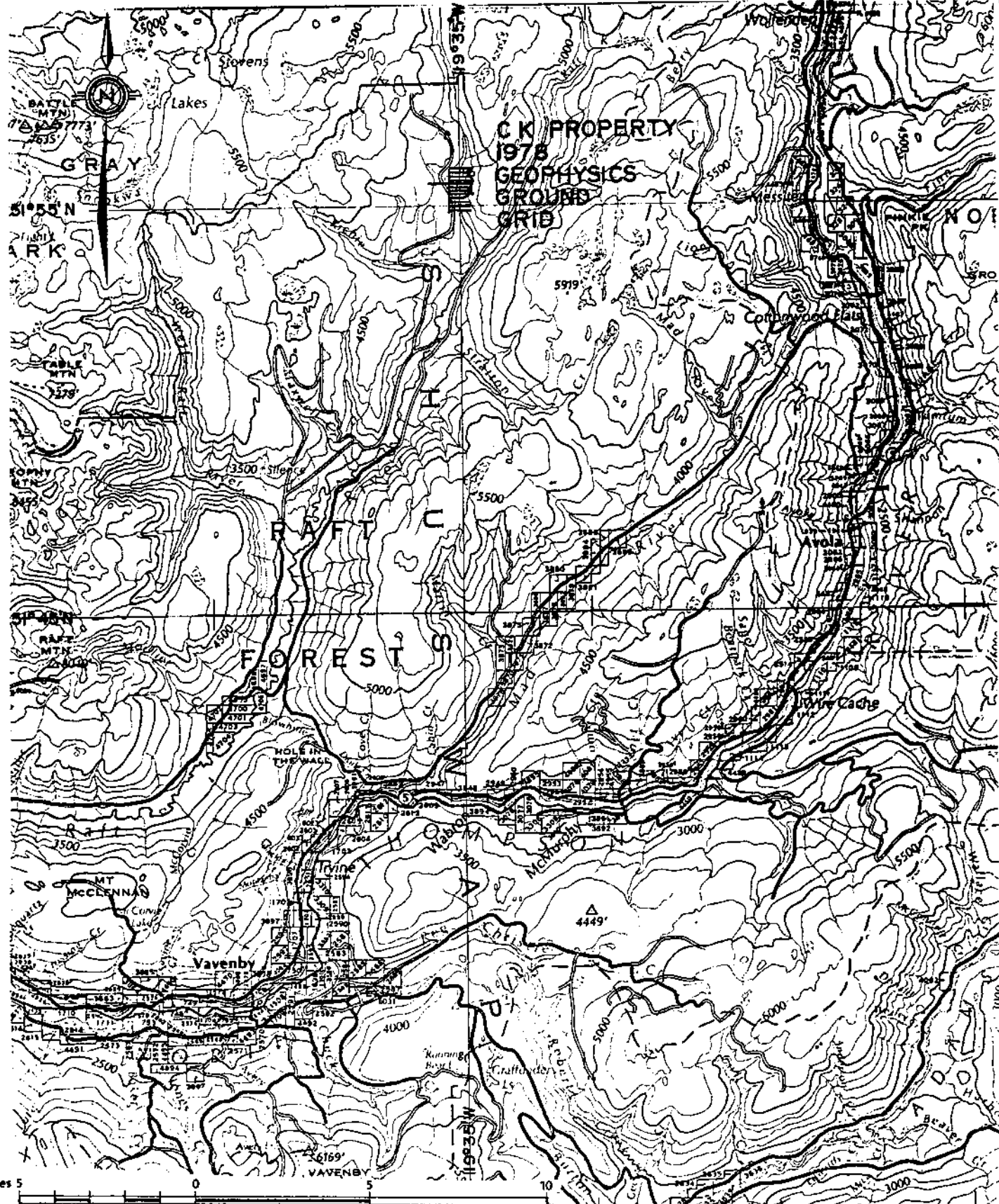
I, Alan Scott, of 4013 W. 14th Avenue, in the city of Vancouver, in the Province of British Columbia, do hereby certify that: -

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
20 June 1978



Miles 5



Scale of Kilometres



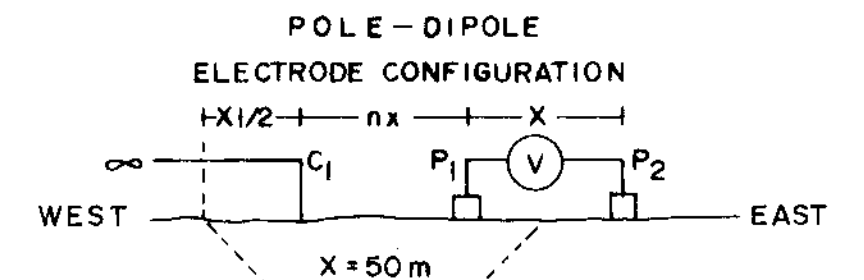
N.T.S.
82 M

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

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

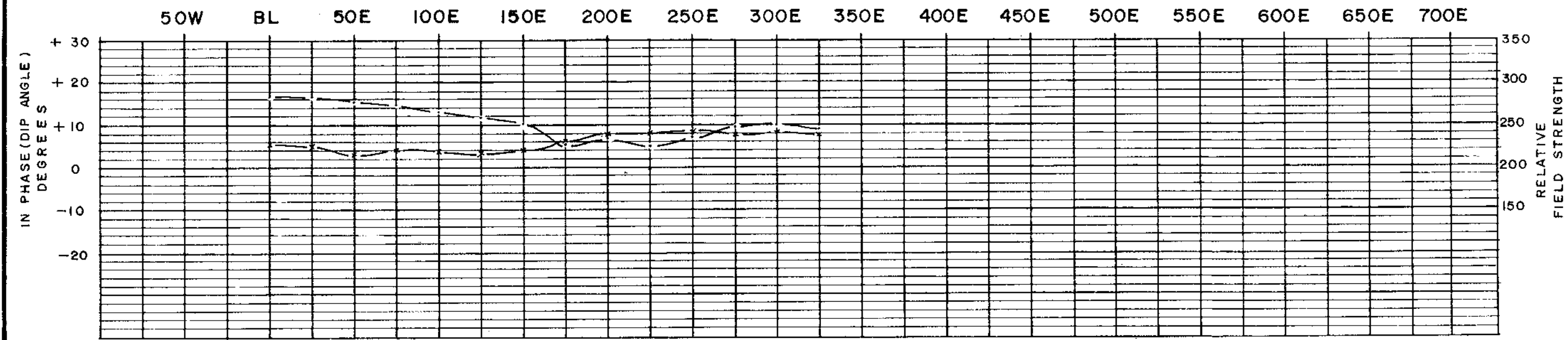
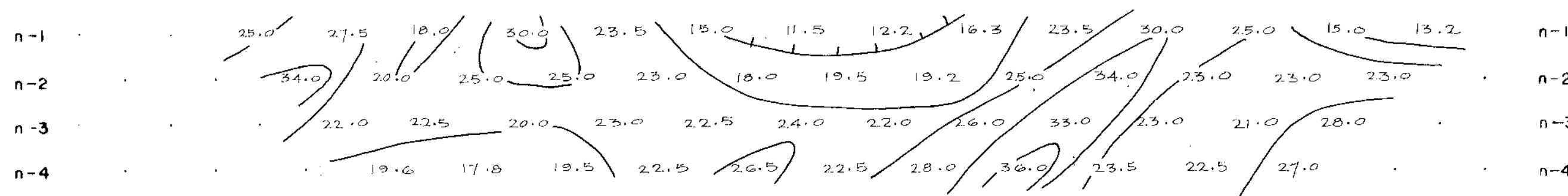
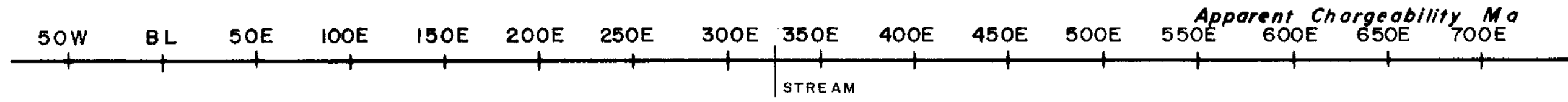
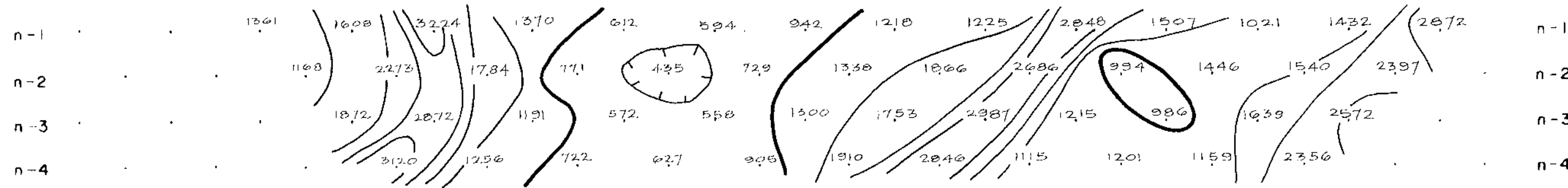
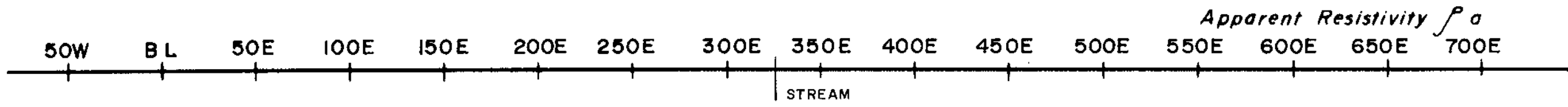
COMINCO LTD. C.K. PROPERTY KAMLOOPS M.D. B.C.

LINE NO. 6+00 N



PLOTTING POINT
n = 1, 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE



SCALE 1:

DATE SURVEYED MAY 25, JUNE 6, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρ_a
APP. CHARG. — 5.0 M_v/V

APPROVED CS

—•—•— IN PHASE (DIP ANGLE) LEFT
WAVE CROSSOVER
x—x—x FIELD STRENGTH

DATE

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

6756
NO.

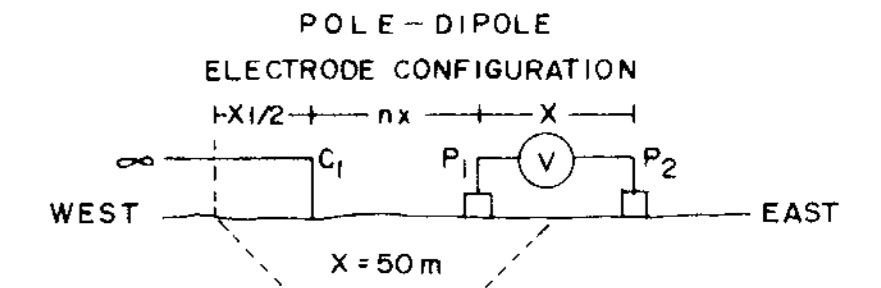
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RECEIVER — IPR 8
VLF INSTRUMENT — CRONE RADEM
FROM NLK STATION, SEATTLE WASH., USA

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

LINE 6+00N

COMINCO LTD. C.K. PROPERTY KAMLOOPS M.D.B.C.

LINE NO. 5+00 N



PLOTTING POINT
n = 1, 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

SCALE 1:

DATE SURVEYED MAY 24, 28, JUNE 6, 1978

CONTOUR INTERVALS:

APPROVED *AS*

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APP. CHARG. — 5.0 Mv/V

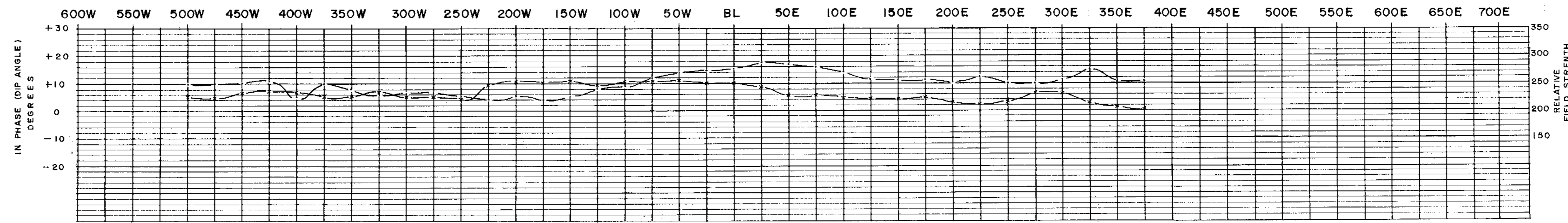
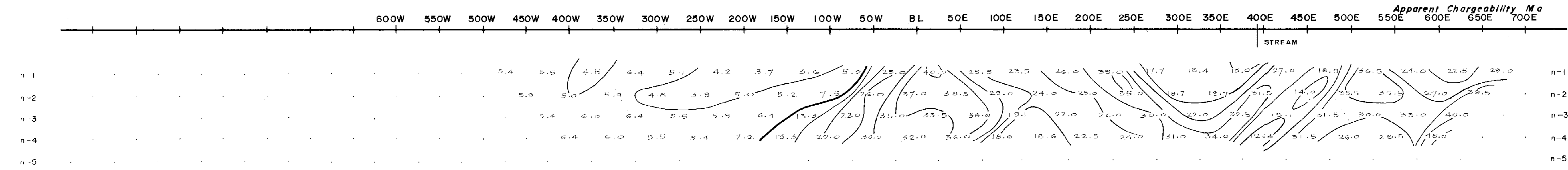
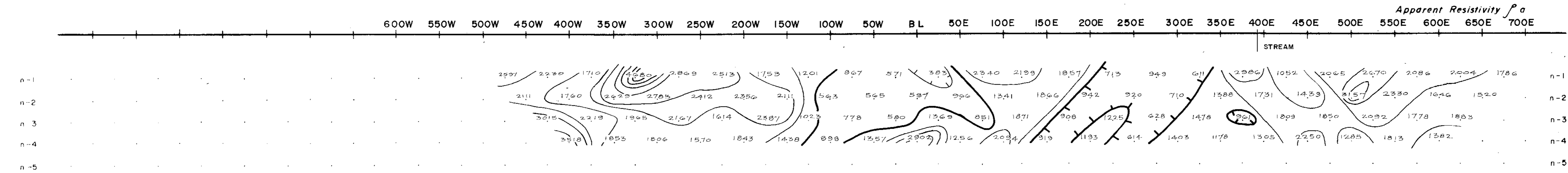
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— WAVE CROSSOVER
x — FIELD STRENGTH

DATE

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

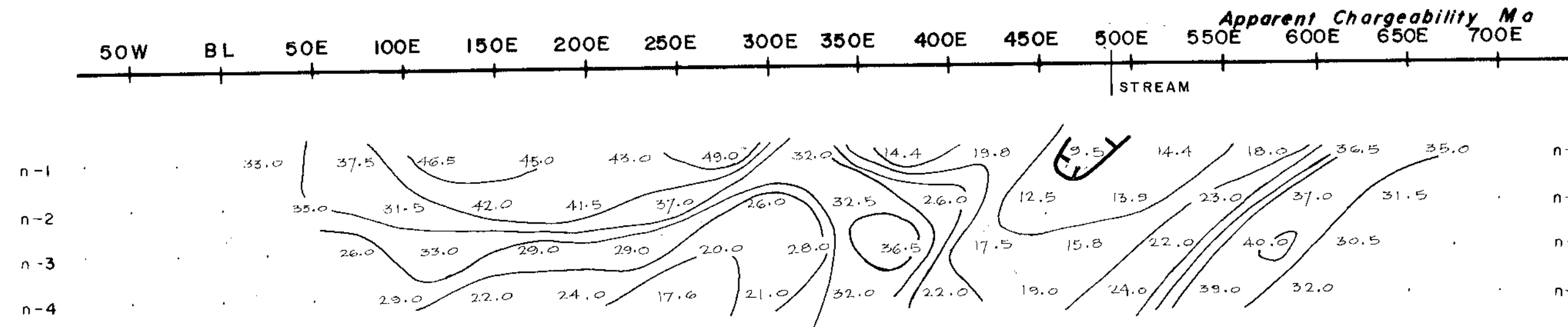
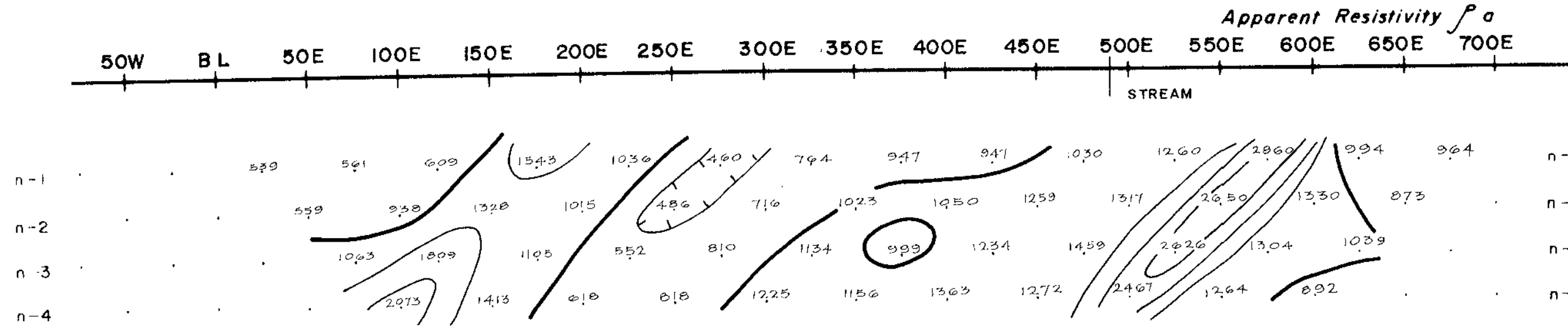
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NO.

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



LINE 5+00 N

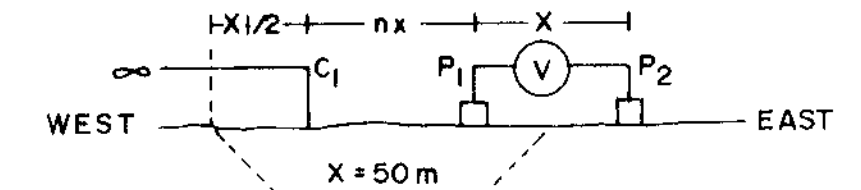
COMINCO LTD. C.K. PROPERTY KAMLOOPS M.D. B.C.



	50W	BL	50E	100E	150E	200E	250E	300E	350E	400E	450E	500E	550E	600E	650E	700E
n-1																
n-2																
n-3																
n-4																

LINE NO. 3+00N

POLE-DIPOLE
ELECTRODE CONFIGURATION



PLOTTING POINT
n=1, 2, 3, 4

CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

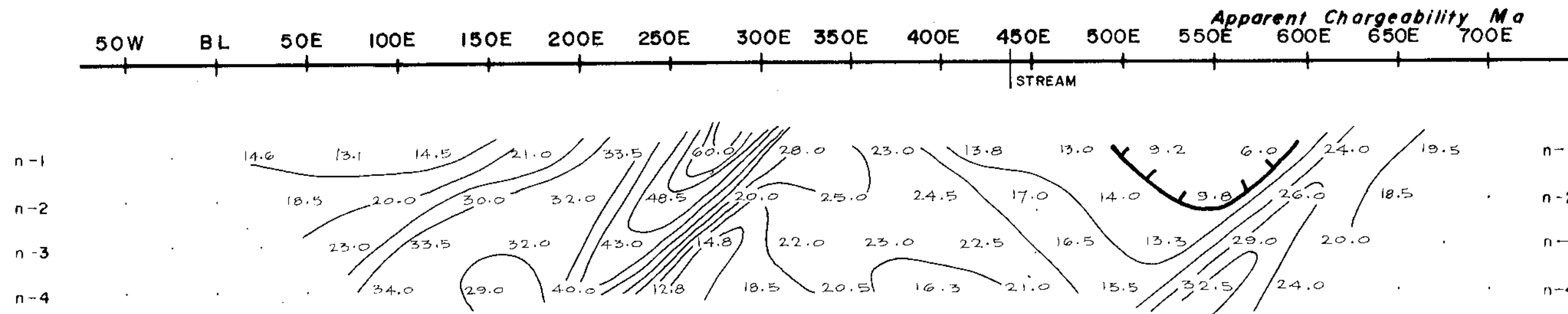
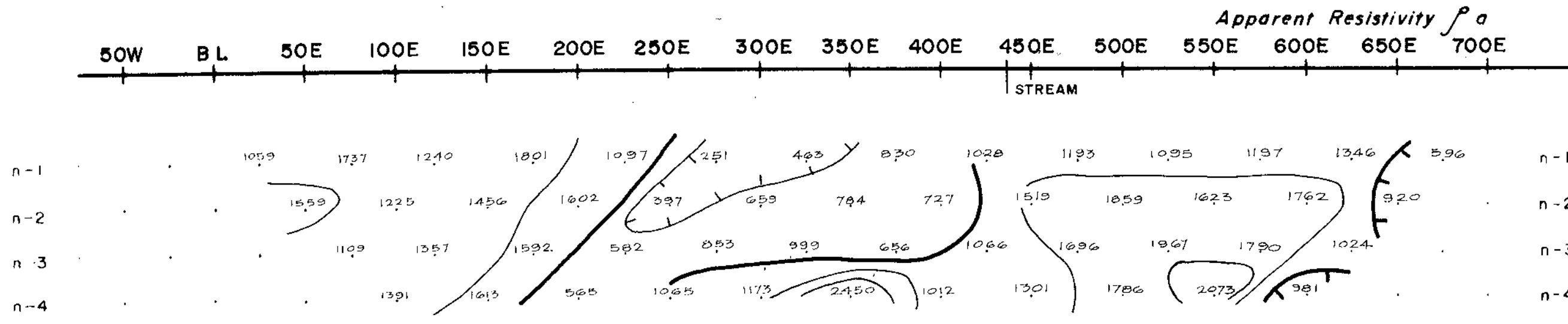
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 DATE SURVEYED MAY 23, 1978
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 APP. CHARG. — 5.0 Mv/V
 APPROVED RA

DATE _____
 MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
6756
 NO.

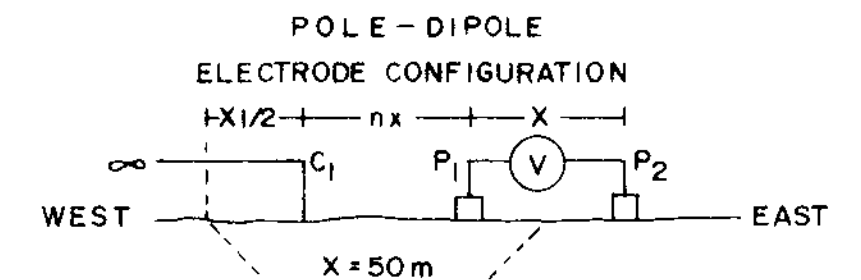
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 RECEIVER — IPR 8
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 SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

LINE 3+00N

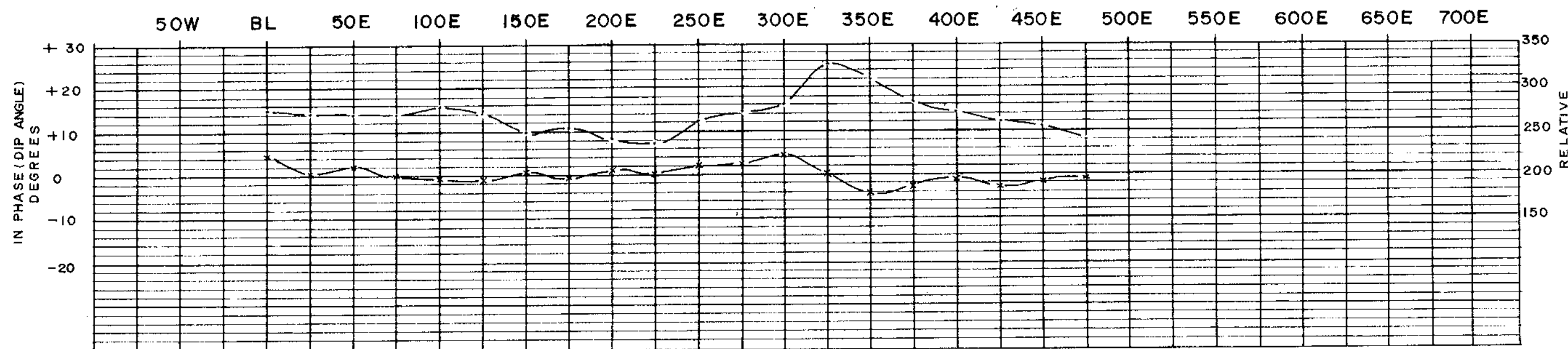
COMINCO LTD.
C.K. PROPERTY
KAMLOOPS M.D. B.C.



LINE NO. 2+00 N



PLOTTING POINT
n = 1, 2, 3, 4
CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE



SCALE 1:

DATE SURVEYED MAY 23, JUNE 6, 1978

CONTOUR INTERVALS:

APPROVED AA

APP. RES. — 500 ρ_a

APP. CHARG. — 5.0 Mv/V

— IN PHASE (DIP ANGLE) LEFT

- - - WAVE CROSSOVER

x — x FIELD STRENGTH

DATE MINERAL RESOURCES BRANCH

ASSESSMENT REPORT

6756
NO.

TRANSMITTER — HUNTEC 7.5 KW

RECEIVER — IPR 8

VLF INSTRUMENT — CRONE RADEM

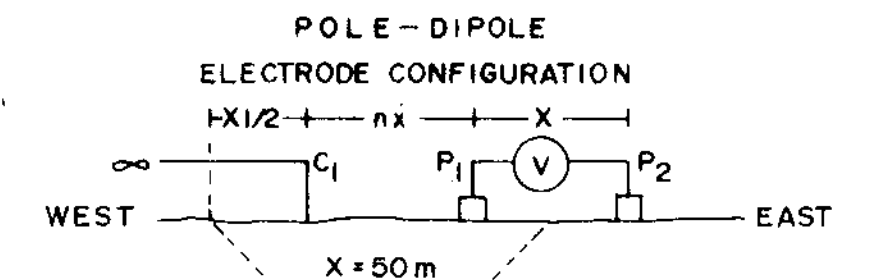
FROM NLK STATION, SEATTLE WASH, USA

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

LINE 2+00 N

COMINCO LTD.
C.K. PROPERTY
KAMLOOPS M.D. B.C.

LINE NO. 1+00 N



PLOTTING POINT
 n = 1, 2, 3, 4, 5
 CURRENT ELECTRODE WEST OF POTENTIAL DIPOLE

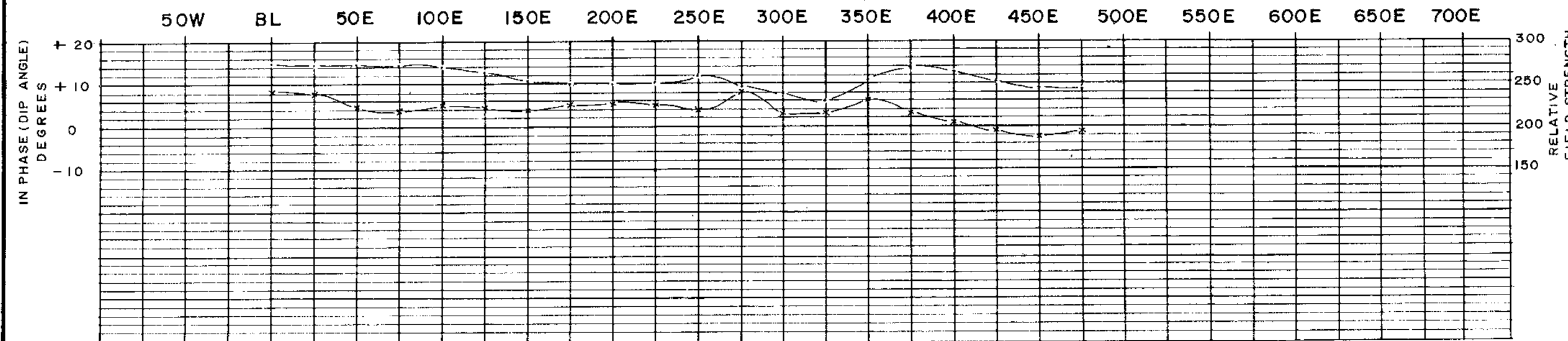
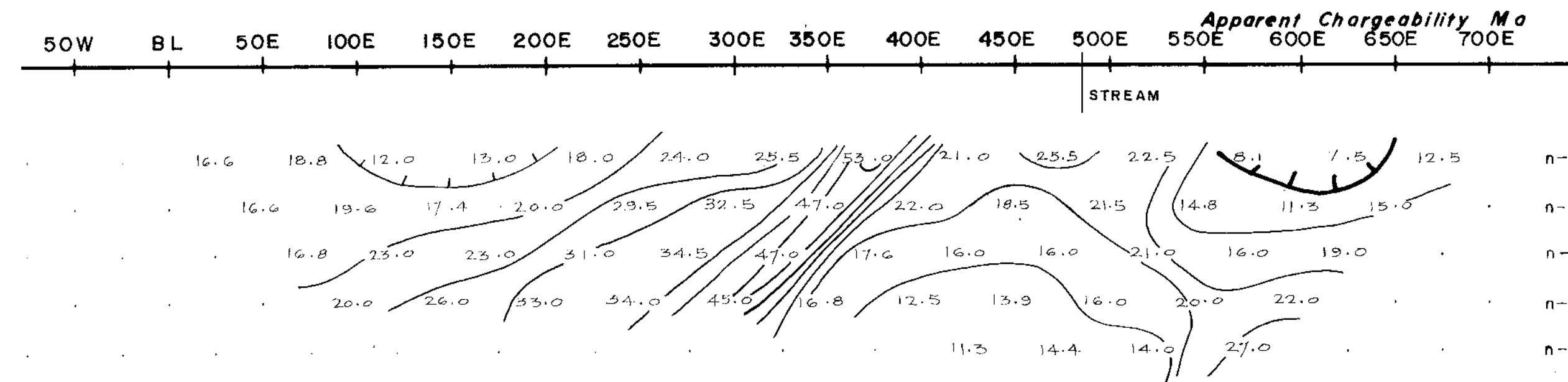
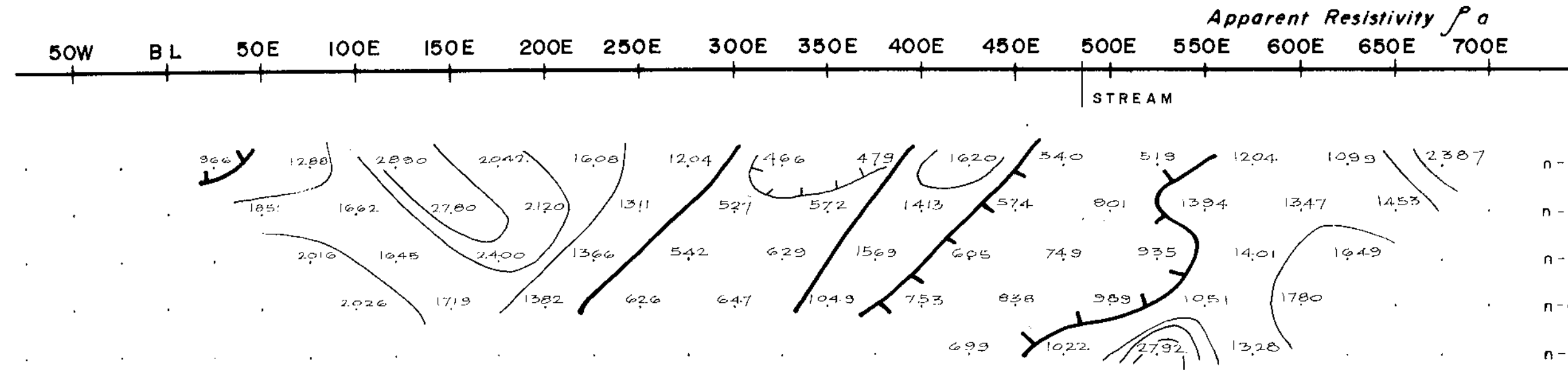
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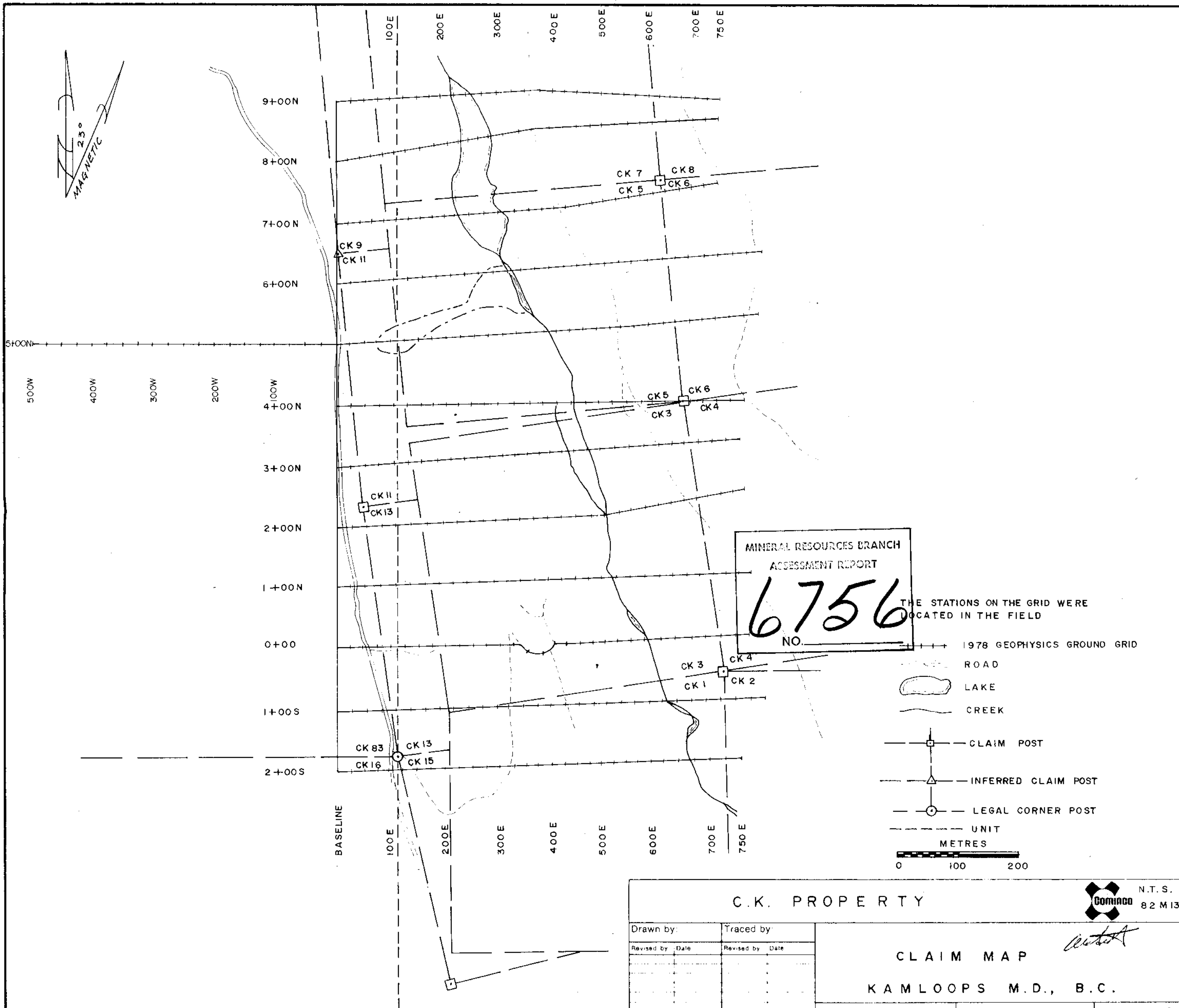
DATE MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6756
 NO.

CONTOUR INTERVALS :
 APP. RES. - 500 ρ_a
 APP. CHARG. - 5.0 Mv/V
 — IN PHASE (DIP ANGLE) LEFT
 — WAVE CROSSOVER
 x — FIELD STRENGTH
 TRANSMITTER - HUNTEC 7.5 kw
 RECEIVER - IPR 8
 VLF INSTRUMENT - CRONE RADEM
 FROM NLK STATION, SEATTLE WASH. USA

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



LINE 1+00 N



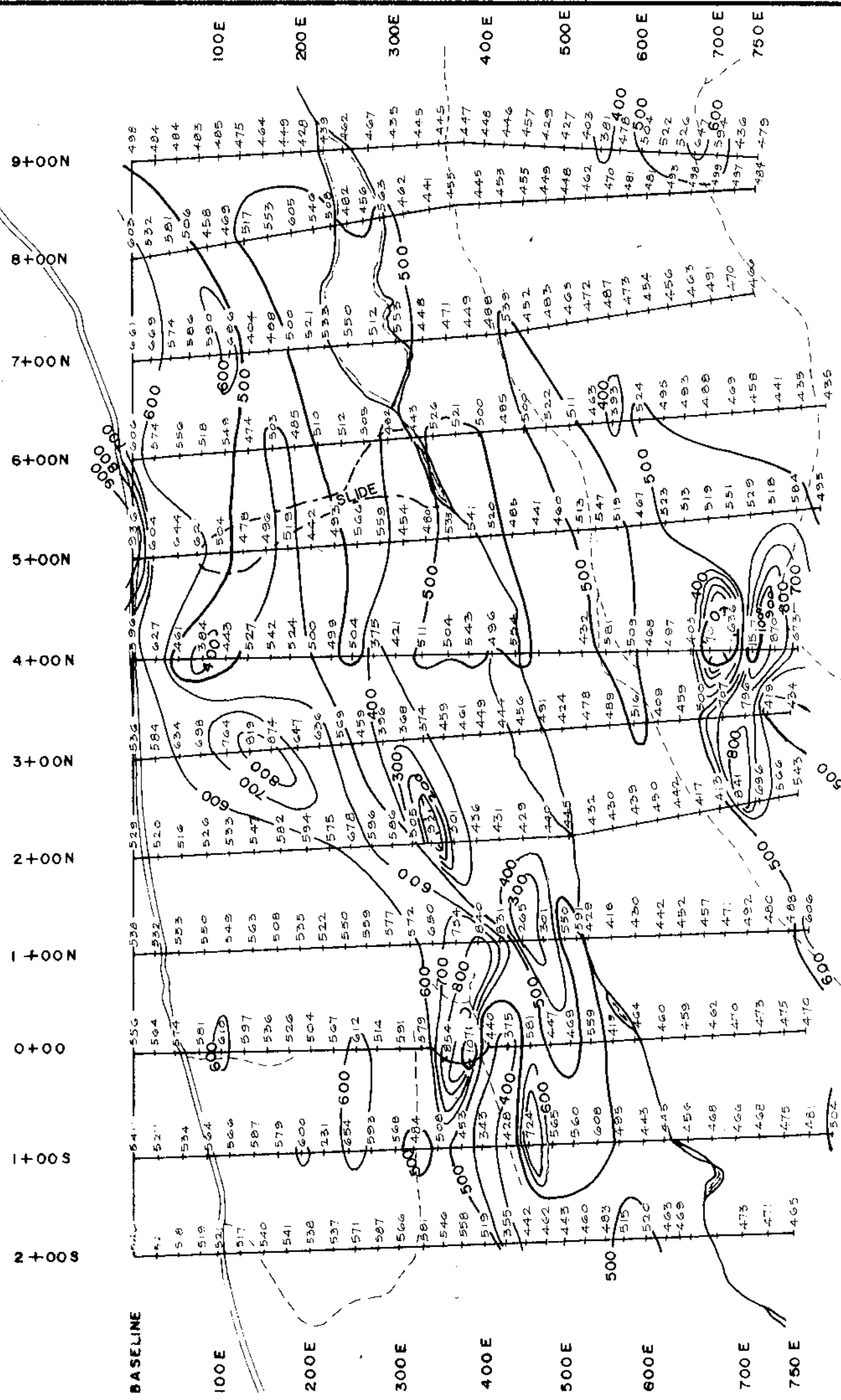
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6756
NO.

THE STATIONS ON THE GRID WERE LOCATED IN THE FIELD

- 1978 GEOPHYSICS GROUND GRID
- ROAD
- LAKE
- CREEK
- CLAIM POST
- INFERRED CLAIM POST
- LEGAL CORNER POST
- UNIT METRES

C.K. PROPERTY		N.T.S. 82 M 13	
Drawn by:	Traced by:		
Revised by: Date	Revised by: Date		
CLAIM MAP		KAMLOOPS M.D., B.C.	
Scale: 1:5000	Date: JUNE 1978	Plate: 132-78-22	

MAGNETIC
23°



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6756
NO.

- 1978 GEOPHYSICS GROUND GRID
- ROAD
- LAKE
- CREEK

INSTRUMENT SCINTREX MP II PROTON
PRECESSION MAGNETOMETER
MODEL NO. 767010
SERIAL NO. 703281
BASE 58000 GAMMAS
CONTOUR INTERVAL 100 GAMMAS



THE STATIONS ON THE GRID WERE LOCATED IN THE FIELD.

C.K. PROPERTY

N.T.S.
82 M 13

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

MAGNETOMETER SURVEY
KAMLOOPS M.D., B.C.

Scale: 1 : 5000 Date: JUNE 1978 Plate: 132-78-3