COMINCO LTD.

EXPLORATION WESTERN DISTRICT

NTS: 82M/5W

# INDUCED POLARIZATION AND VLF SURVEY

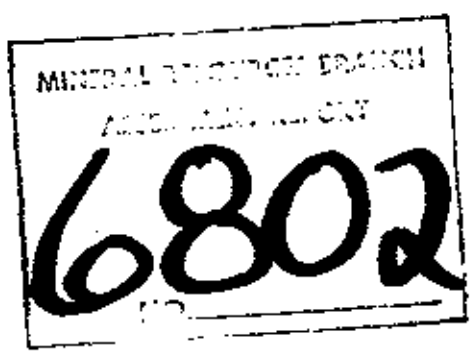
## BET CLAIMS

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

Latitude: 51°20'N: Longitude: 119°55'W

Work Performed: May 11 - May 18, 1978 inclusive

On Claims: BET 1 and BET 3




JULY 1978

A. R. SCOTT

TABLE OF CONTENTS



* * * * * * * * * * * *

ATTACHMENTS



* * * * * * * * * * * *

## INTRODUCTION AND SUMMARY

The BET claims are located some 85 km northeast of Kamloops B.C., as indicated on the accompanying location plan, plate 133-78-1. The lines surveyed are indicated on the accompanying claim map, plate 133-78-2.

During the period May 11 to May 18, 1978, a Cominco geophysical crew completed some 8.22 line kilometers of multi separation induced polarization survey, and some 8.9 line kilometers of VLF electromagnetics survey.

The purpose of the geophysical surveys was to define the extent and location of a known sulphide bearing horizon.

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

## LOCATION AND ACCESS

The BET claims straddle Birk Creek, a tributary of Barriere River. Geographic coordinates are approximately 51°20' North latitude by 119°55'West longitude.

Access to the property is by highway number 5 north from Kamloops to Barriere, thence eastward by secondary roads towards North Barriere Lake. The turnoff to Birk Creek and the BET claims is to the west, approximately 3 kilometers before reaching North Barriere Lake.

## GEOPHYSICAL SURVEYS

### VLF Survey

The VLF survey was 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.

anomaly which peaks at 38.5 mV/V at 450N.

Other less well defined VLF conductors were obtained on the survey, and dip angle crossovers that appear to correlate to IP anomalies are noted on the section. Due to the very steep topography of the survey area, it is sometimes necessary to visually shift the dip angle zero upwards, so as to determine the crossover point.

## Induced Polarization

The induced polarization (chargeability) and apparent resistivity data is presented in standard pseudo section format as plates 133-78-3 to 133-78-13 inclusive.

A broad zone of moderately high chargeability response trends across the survey area. The strongest response was obtained on line 7+00W north of station 600N. The n=1 peak value is 52 mV/V and is spacially associated with a VLF conductor.

The next strongest response is on line 3+00W where an n=1 peak value of 44 mV/V was obtained at 570N. It is associated with a "wide" VLF conductive zone.

Chargeability response in the vicinity of the strongest VLF conductor (line 0+00; station 540N) is relatively complex, but peaks at 38.5 mV/V at 450N.

## CONCLUSIONS

Portions of the BET claims were surveyed by multi-separation pole dipole time domain IP and VLF electromagnetics in May, 1978.

A broad zone of moderately anomalous chargeability response trends across the northern portion of the survey area, and indicates the approximate location of a sulphide bearing horizon.

The strongest geophysical response was obtained on lines 7+00W, 3+00W, and 0+00W, as discussed in the

previous section. Correlation of this data to geological information and geochemical data may indicate whether drill testing and/or trenching is warranted.

Respectfully submitted:

Alan R. Scott
Geophysicist

Endorsed for
Release by:

G. Harden
Manager, Exploration
Western District

ARS/deb
26 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 BET MINERAL CLAIMS

ON THE BET PROPERTY

LOCATED 85 KM NORTHEAST OF KAMLOOPS IN THE KAMLOOPS MINING DIVISION

OF THE PROVINCE OF BRITISH COLUMBIA MORE PARTICULARLY

N.T.S. 82M/5

## 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 BET MINERAL CLAIMS;

3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE 11th OF MAY AND THE 18th OF MAY FOR THE PURPOSE OF MINERAL EXPLORATION OF THE ABOVE NOTED CLAIMS.

Alan R. Scott
Geophysicist

APPENDIX II

BET CLAIMS

STATEMENT OF EXPENDITURES

(Linecutting, IP, and VLF-EM Survey)

SALARIES: (Work done May 11-18 inclusive)

| | | | | | |
|---|---|---|---|---|---|
| G.J. Niemeyer | 8 days | @ | $120.00/day = | $960.00 | |
| B. Lumm | 8 days | @ | $ 82.00/day = | $656.00 | |
| I. Cummings | 8 days | @ | $ 82.00/day = | $656.00 | |
| C. LaPrairie | 8 days | @ | $ 82.00/day = | $656.00 | |
| R. Grant | 8 days | @ | $ 82.00/day = | $656.00 | |
| J.M. Niemeyer | 3 days | @ | $ 82.00/day = | $246.00 | |
| | | | | | $ 3,830.00 |

MISCELLANEOUS:

Food, lodging, gas, consumables $ 750.08

OPERATING CHARGES (report, drafting, supervision)

8 days @ $175.00/day $ 1,400.00

GEOPHYSICAL EQUIPMENT AND TRUCK RENTAL:

8 days @ $282.00/day $ 2,256.00

LINE CUTTING:

9.9 line kms @ $270.00 per km $ 2,673.00

TOTAL: - $10,909.08

Alan R. Scott
Geophysicist

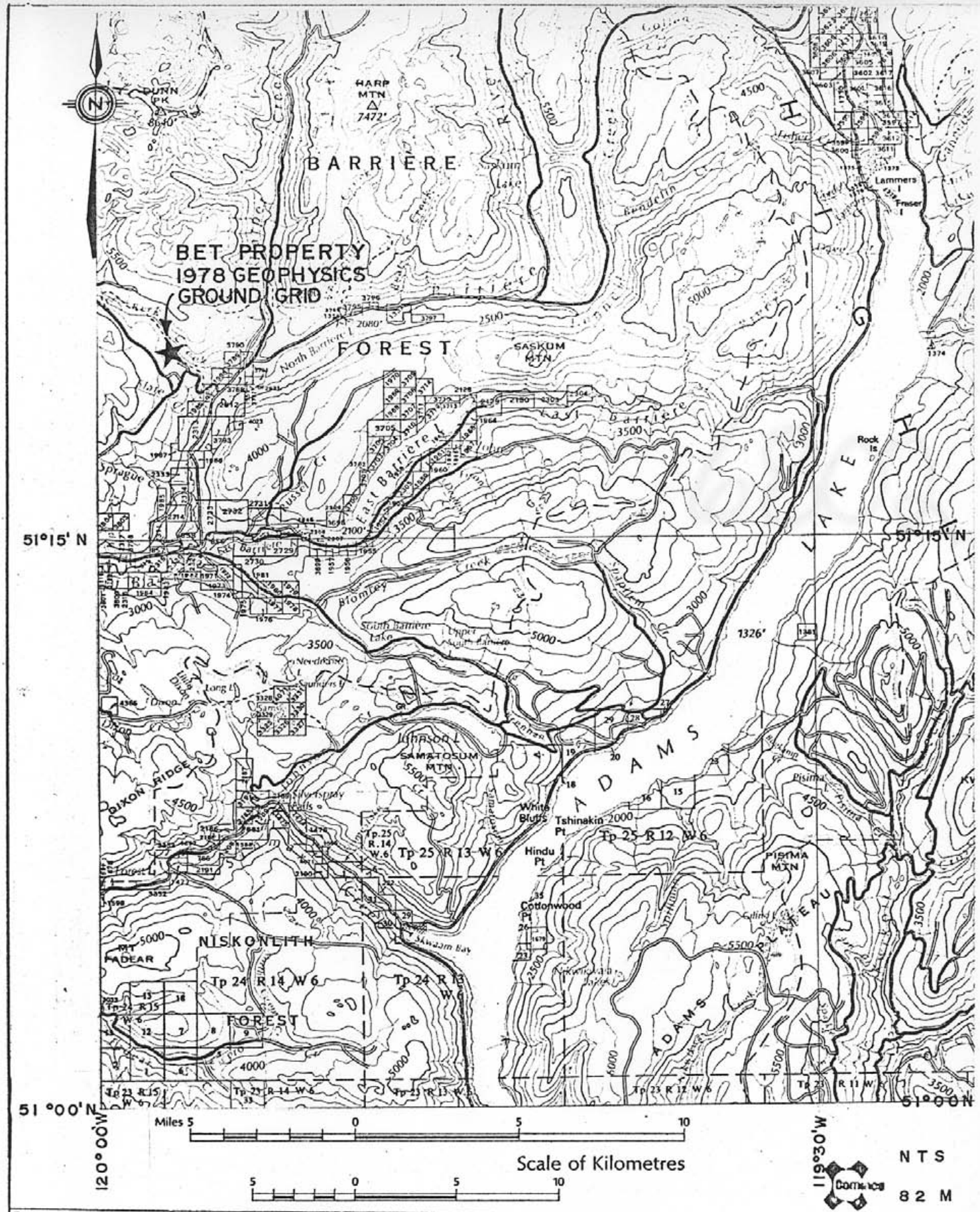
APPENDIX III

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

I, Alan R. 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 R. Scott
Geophysicist




| Drawn by: | | Traced by: | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# LOCATION MAP

## KAMLOOPS M.D., B.C.

Scale: 1: 250,000 | Date: JUNE 1978 | Plate 133-78-1

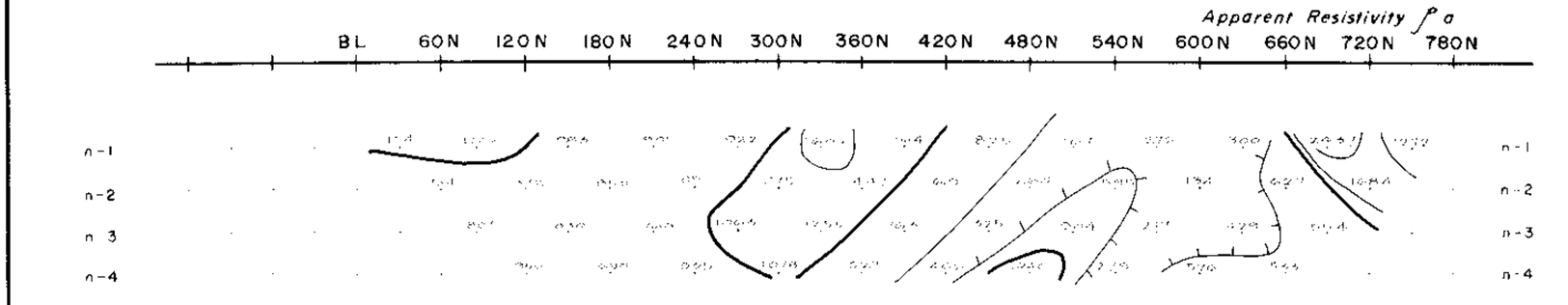
N.T.S. 82 N 5

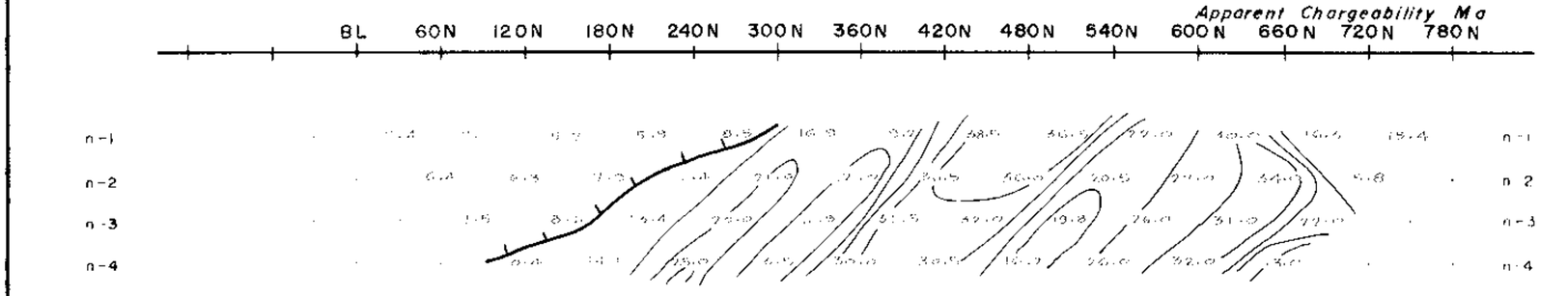
DWG. NO. 133-78-3

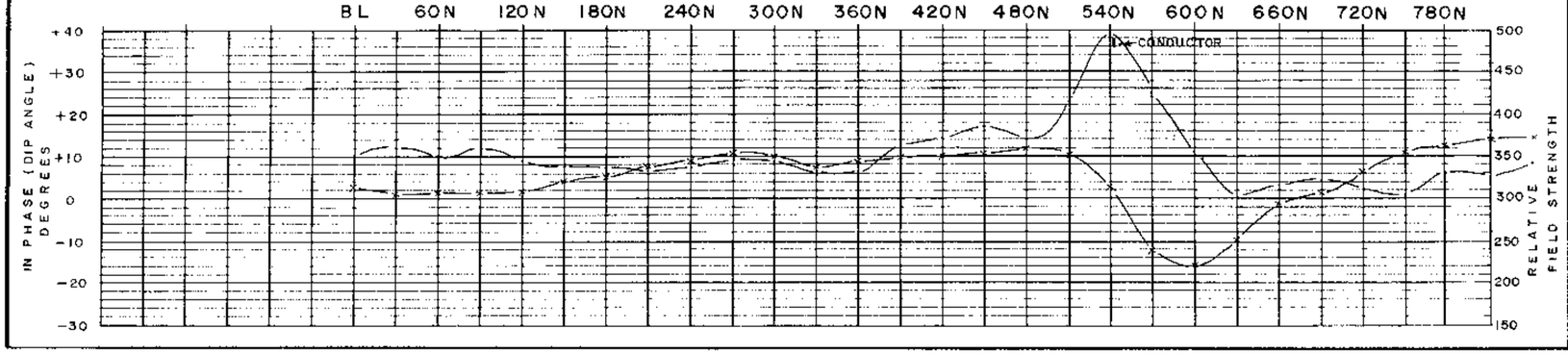
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

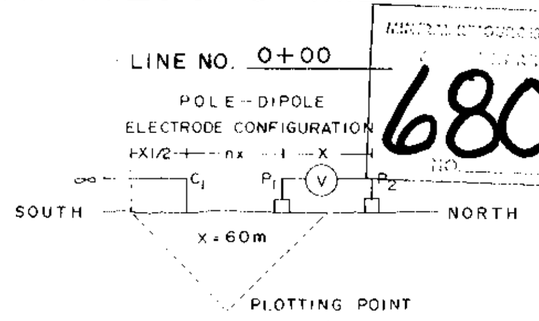



LINE NO. 0+00

POLE-DIPOLE ELECTRODE CONFIGURATION




CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

MINING RECORDER'S CERTIFICATE
6802

DATE SURVEYED MAY 12, 17, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρa

APP CHARG. — 5.0 MV/v

APPROVED

x—— x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

DATE

·—— · FIELD STRENGTH

TRANSMITTER — HUNTEC 7.5 m

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 0+00

N.T.S. 82 N 5 DWG. NO. 133-78-4

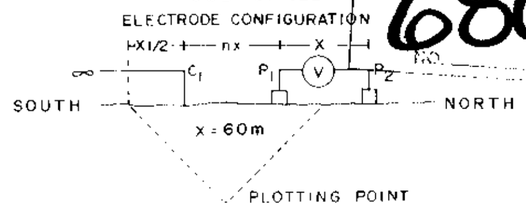
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

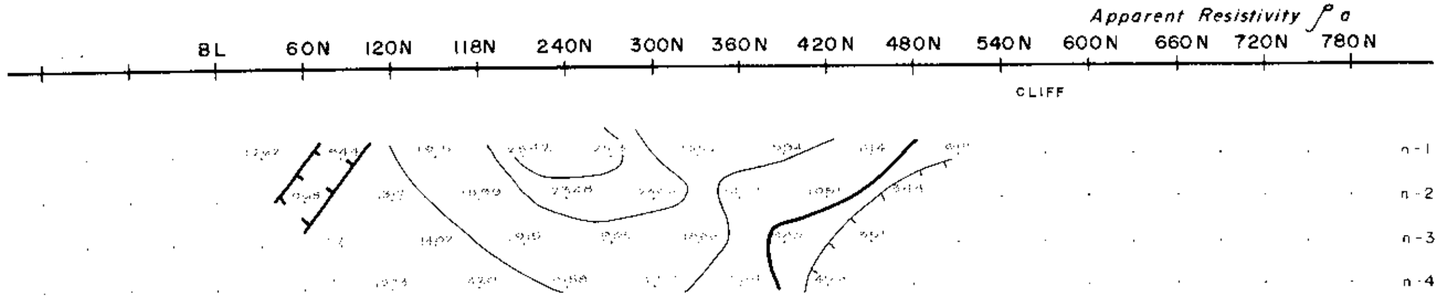
LINE NO. 1+00W

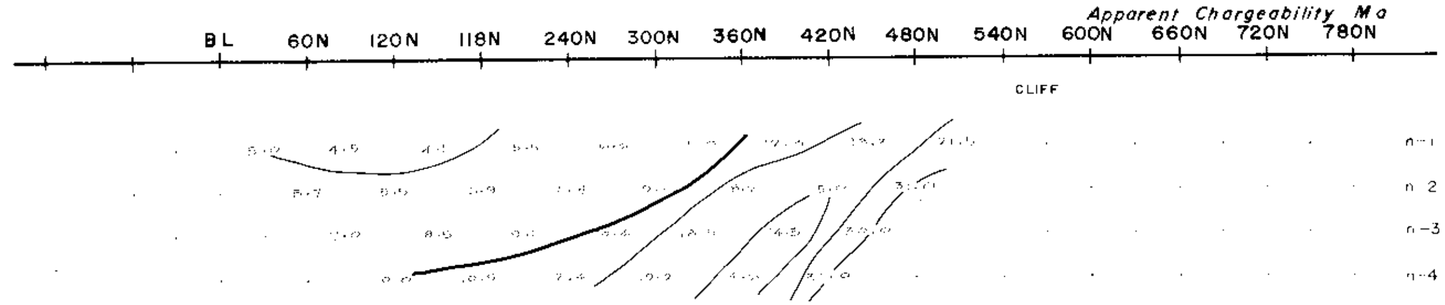
POLE-DIPOLE
ELECTRODE CONFIGURATION

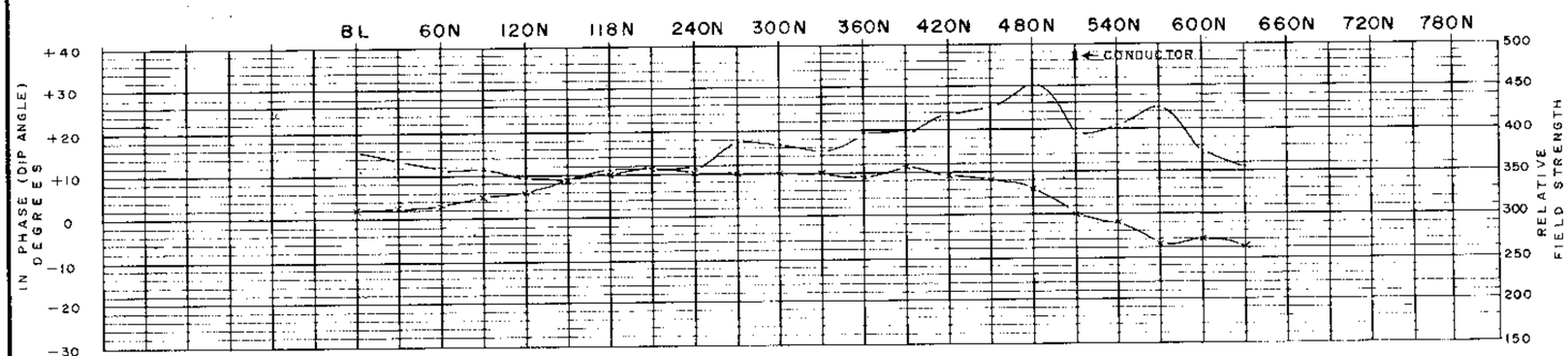



PLOTTING POINT
n = 1, 2, 3, 4, 5 8 6

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE




DATE SURVEYED MAY 12, 16, 1978

CONTOUR INTERVALS:

APP. RES. - 500 ρa
APP CHARG. - 5.0 MV/v

x——x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

·——· FIELD STRENGTH

APPROVED

DATE

TRANSMITTER - HUNTEC 7.5 m

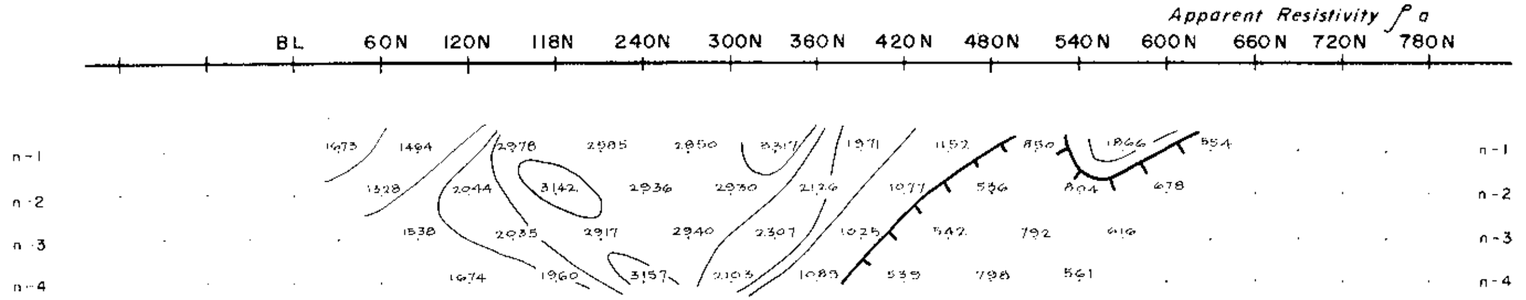
RECEIVER — IPR 8

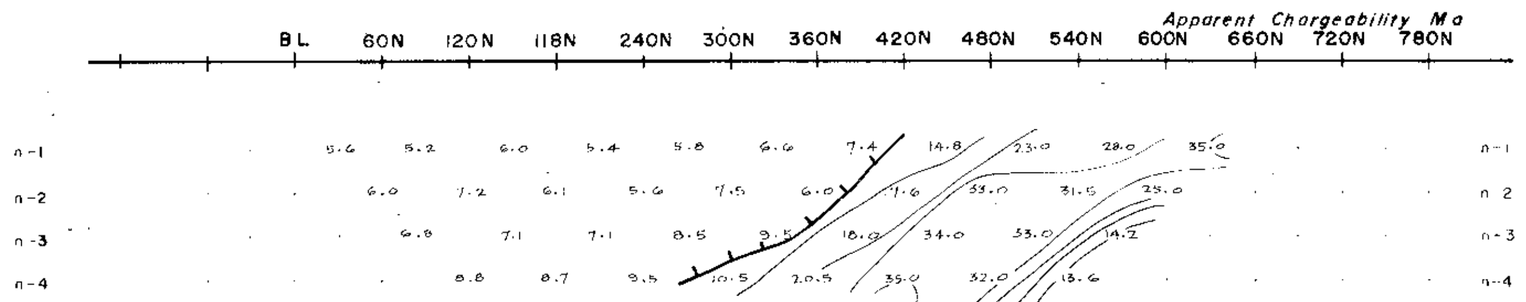
VLF INSTRUMENT - CRONE RADEM
FROM NLK STATION, SEATTLE WASH., USA

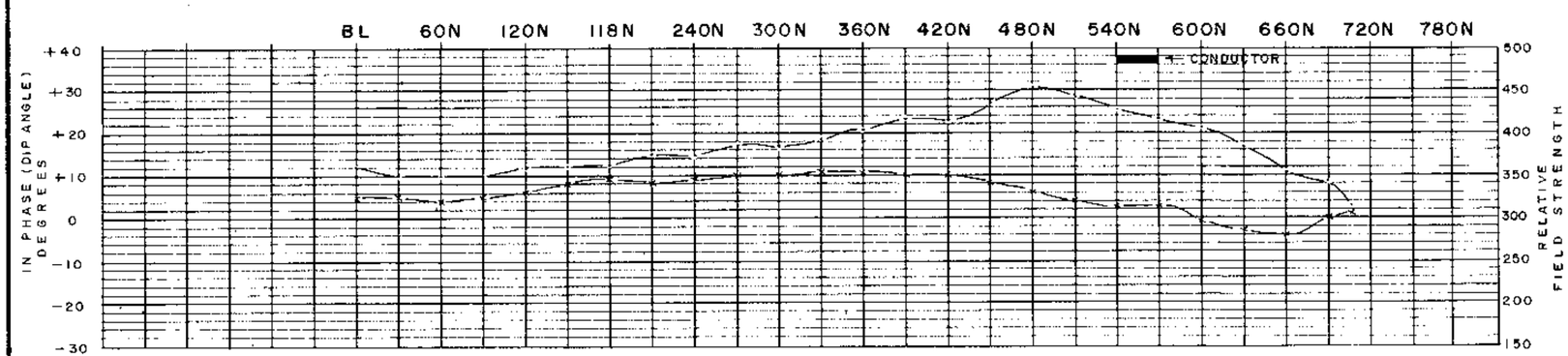
INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

LINE 1+00W




N.T.S. 82 N 5 DWG. NO. 133-78-5

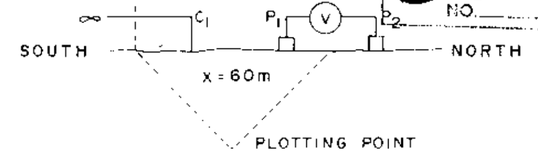
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

LINE NO. 2+00W

POLE-DIPOLE ELECTRODE CONFIGURATION




CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

MINING RIGHT
6802
NO.

LINE 2+00W

DATE SURVEYED MAY 13, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρa

APP CHARG. — 5.0 MV/v

x—x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

•—• FIELD STRENGTH

APPROVED

DATE

TRANSMITTER — HUNTEC 7.5 m

RECEIVER — IPR 8

VLF INSTRUMENT — CRONE RADEM

FROM NKL STATION, SEATTLE WASH, USA

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

N.T.S. 82 N 5

DWG. NO. 133-78-6

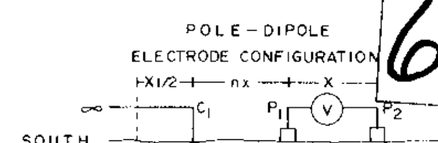
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

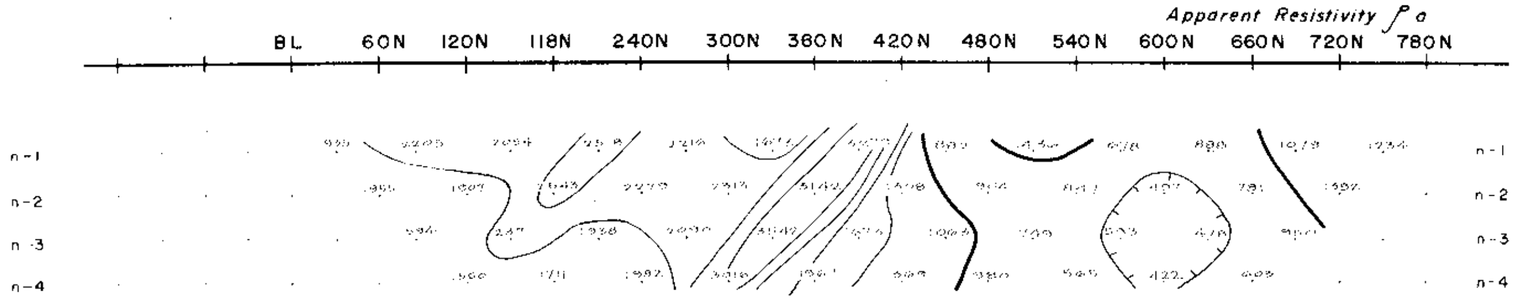
LINE NO. 3+00W

POLE-DIPOLE ELECTRODE CONFIGURATION

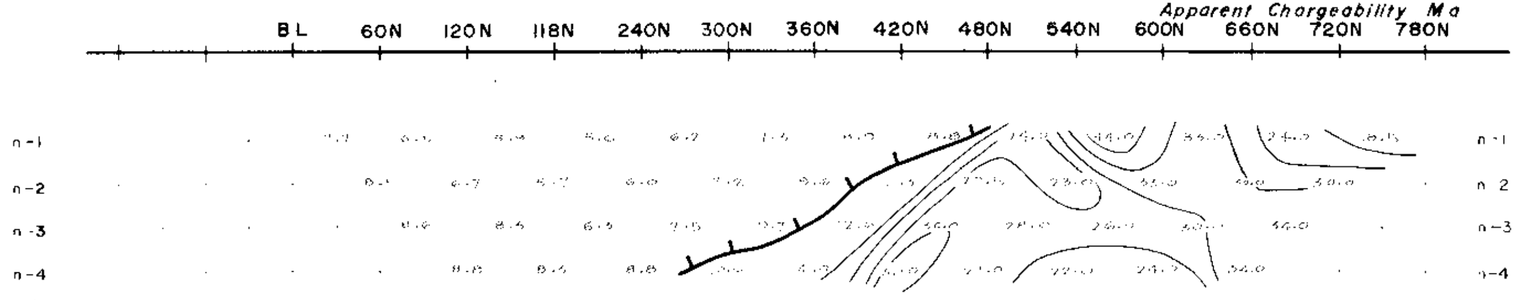


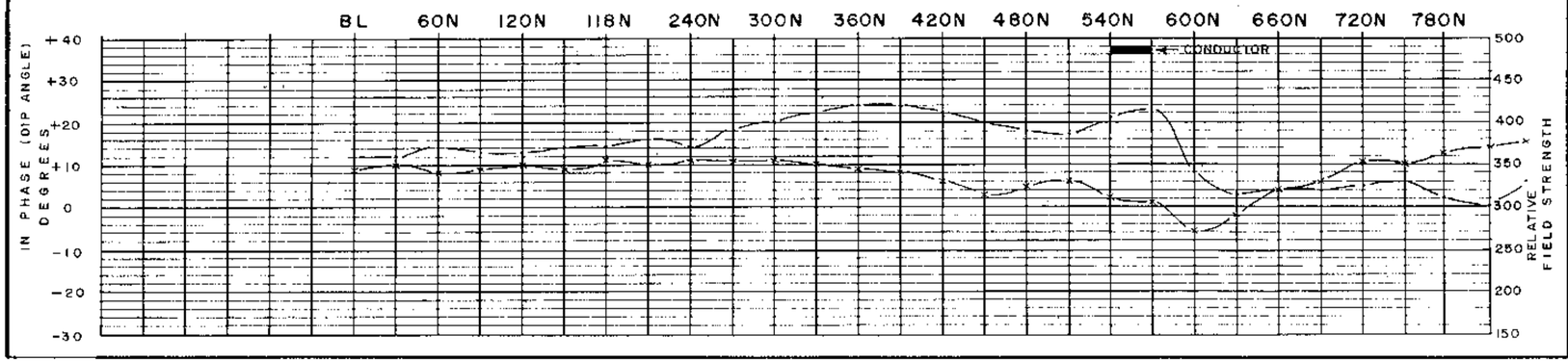

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

Apparent Resistivity ρa




Apparent Chargeability Ma




DATE SURVEYED MAY 13, 16, 1978

CONTOUR INTERVALS:

APP. RES. - 500 ρa

APP CHARG. - 5.0 MV/v

x—x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

•—• FIELD STRENGTH

APPROVED

DATE

TRANSMITTER - HUNTEC 7.5 m

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 3+00W

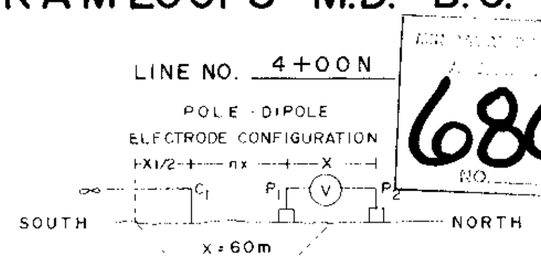
N.T.S. 82 N 5 DWG. NO. 133-78-7

# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

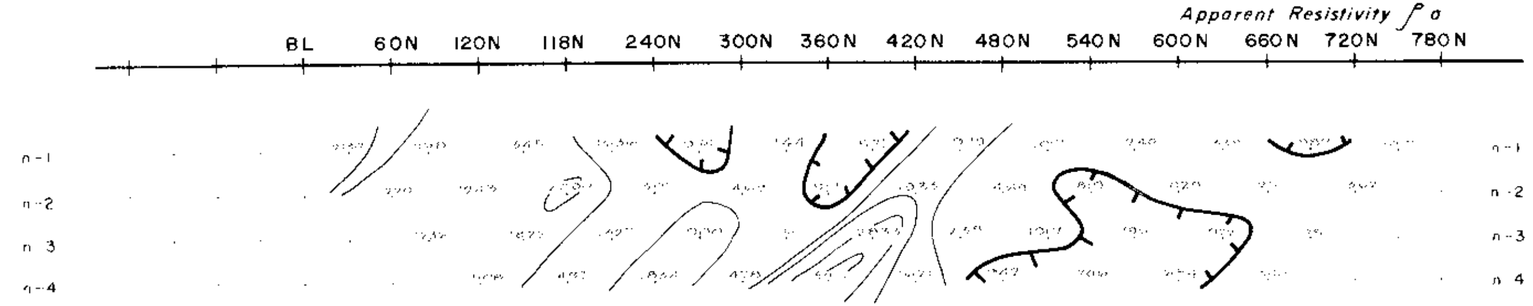
LINE NO. 4+00N

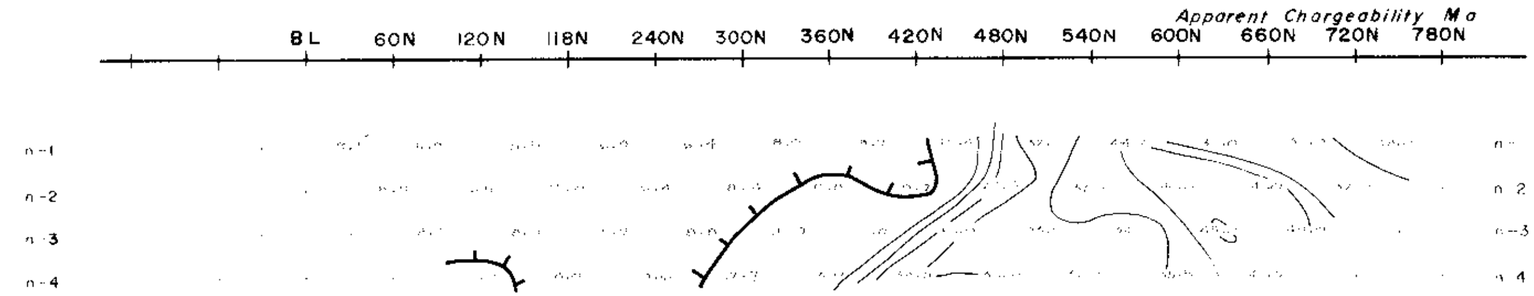


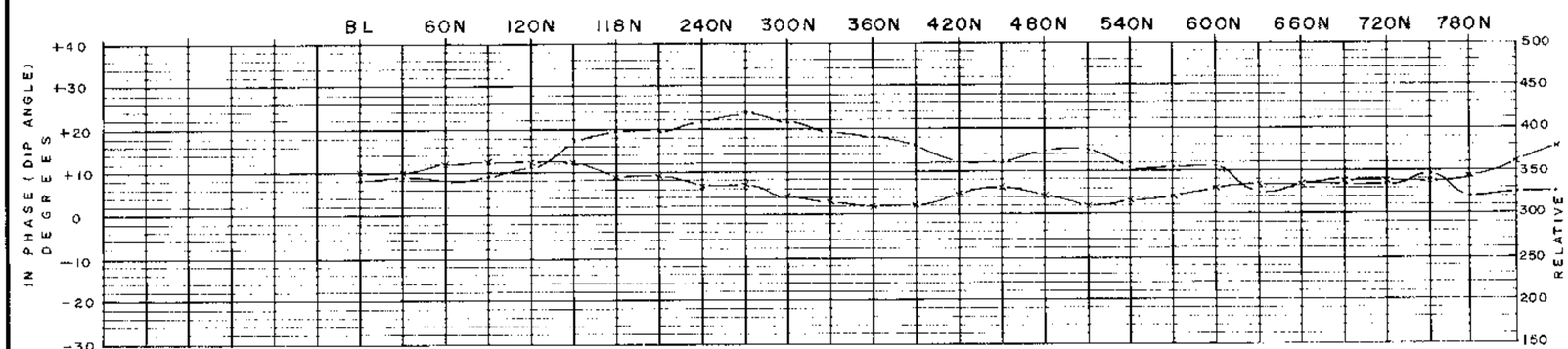

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

6802
NO.

LINE 4+00N




DATE SURVEYED MAY 15, 1978

CONTOUR INTERVALS:

APP. RES. - 500 ρa

APP CHARG. - 5.0 MV/v

APPROVED

x——x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

DATE

·——· FIELD STRENGTH

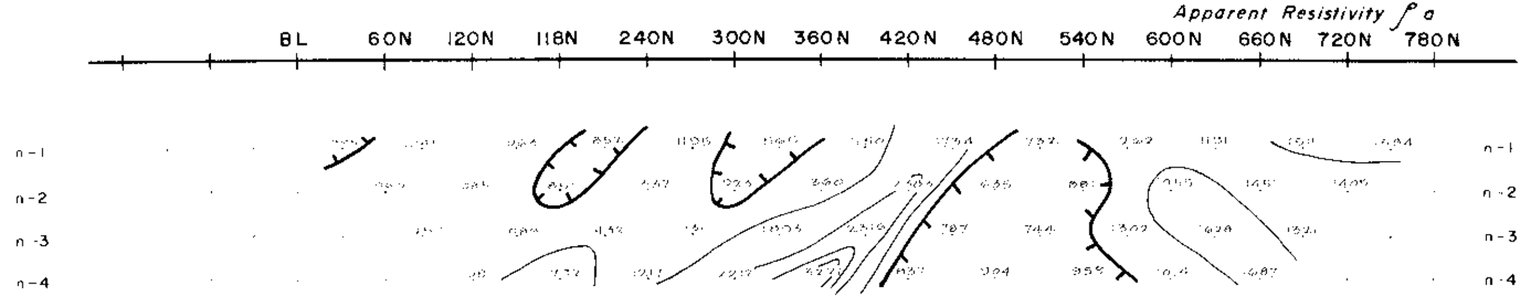
TRANSMITTER - HUNTEC 7.5 m

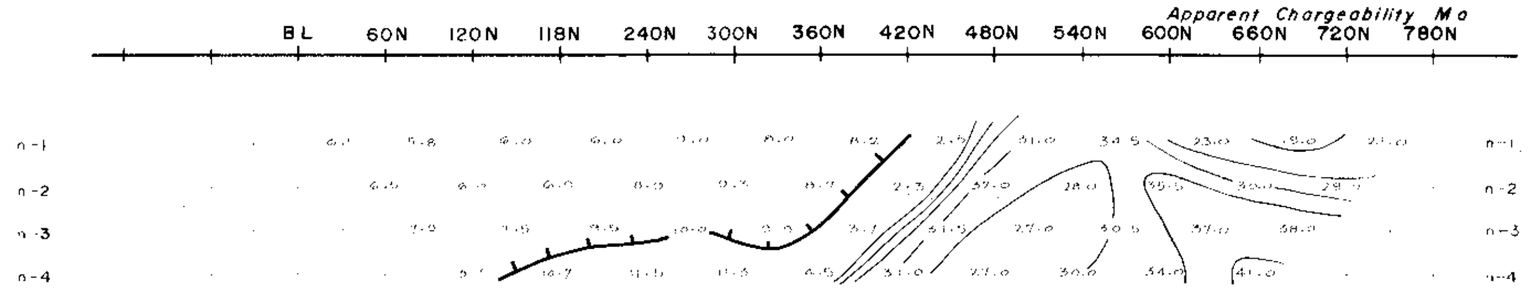
RECEIVER — IPR 8

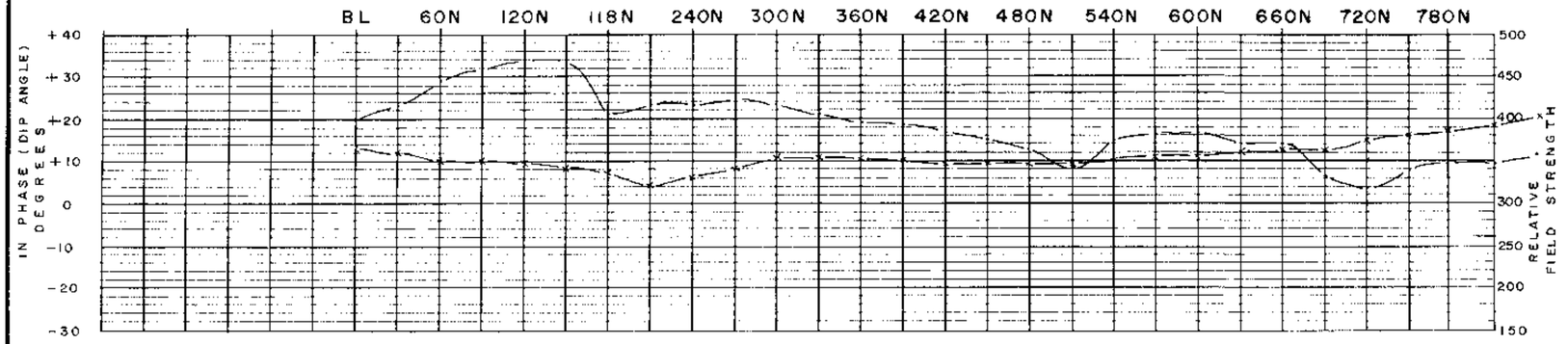
VLF INSTRUMENT — CRONE RADEM
FROM NLK STATION, SEATTLE WASH, USA

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION




N.T.S. 82 N 5

DWG. NO. 133-78-8

# COMINCO LTD.

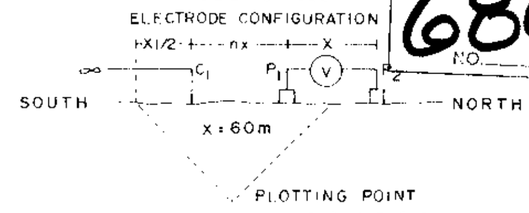
# BET PROPERTY

# KAMLOOPS M.D. B.C.

LINE NO. 5+00W

NO. 6802

POLE - DIPOLE
ELECTRODE CONFIGURATION




CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

DATE SURVEYED MAY 15, 16, 1978

CONTOUR INTERVALS :

APP. RES. - 500 ρa
APP CHARG. - 5.0 MV/v

APPROVED

x——x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

•——• FIELD STRENGTH

DATE

TRANSMITTER - HUNTEC 7.5 m

RECEIVER — IPR 8

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

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

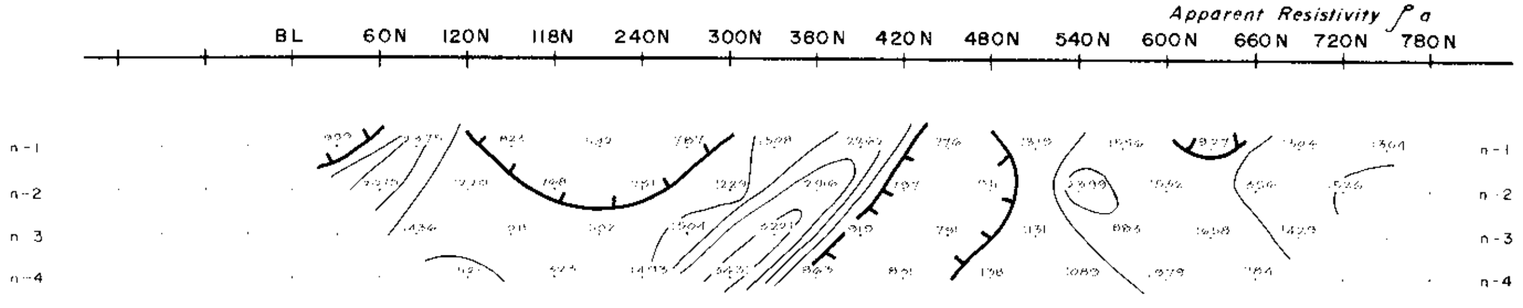
LINE 5+00W

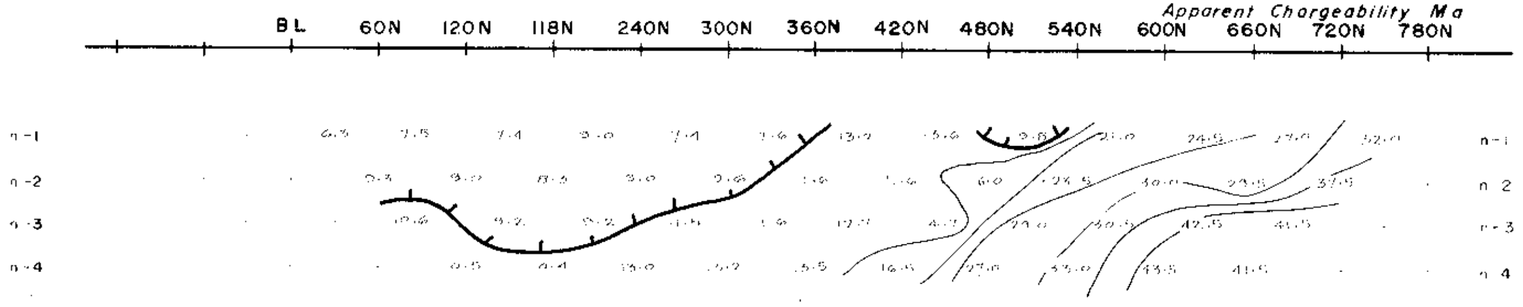
N.T.S. 82 N 5 DWG. NO. 133-78-9

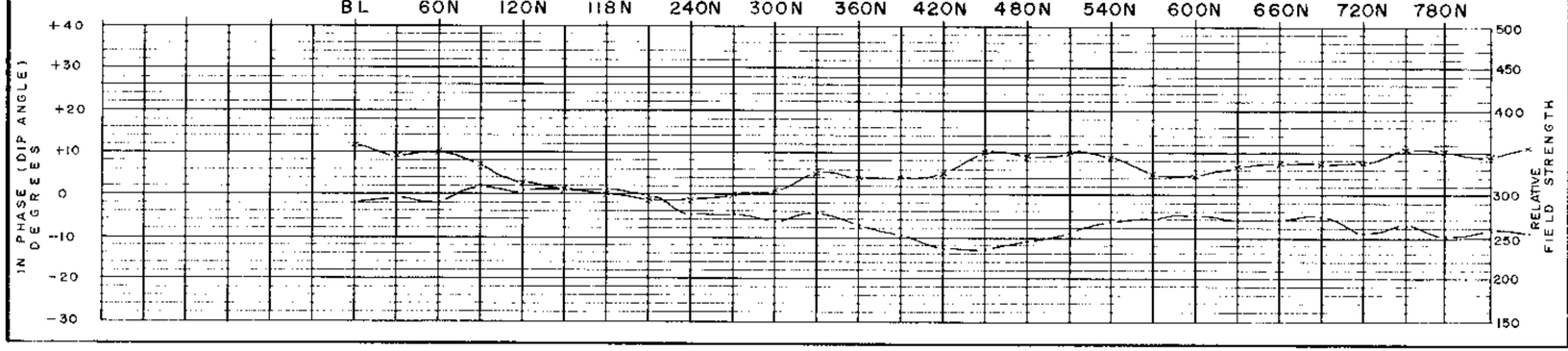
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

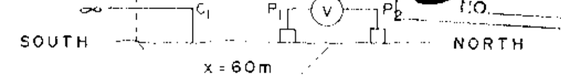



LINE NO. 6+00W

POLE - DIPOLE
ELECTRODE CONFIGURATION




PLOTTING POINT
n = 1, 2, 3, 4, 5 & 6

CURRENT ELECTRODE SOUTH OF POTENTIAL D-POLE

DATE SURVEYED MAY 16, 17, 1978

CONTOUR INTERVALS:
APP. RES. — 500 ρa
APP CHARG. — 5.0 MV/v

APPROVED

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

DATE

TRANSMITTER — HUNTEC 7.5 m
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+00W

N.T.S. 82 N 5

DWG. NO. 133-78-10

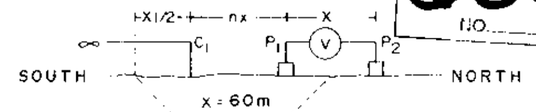
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

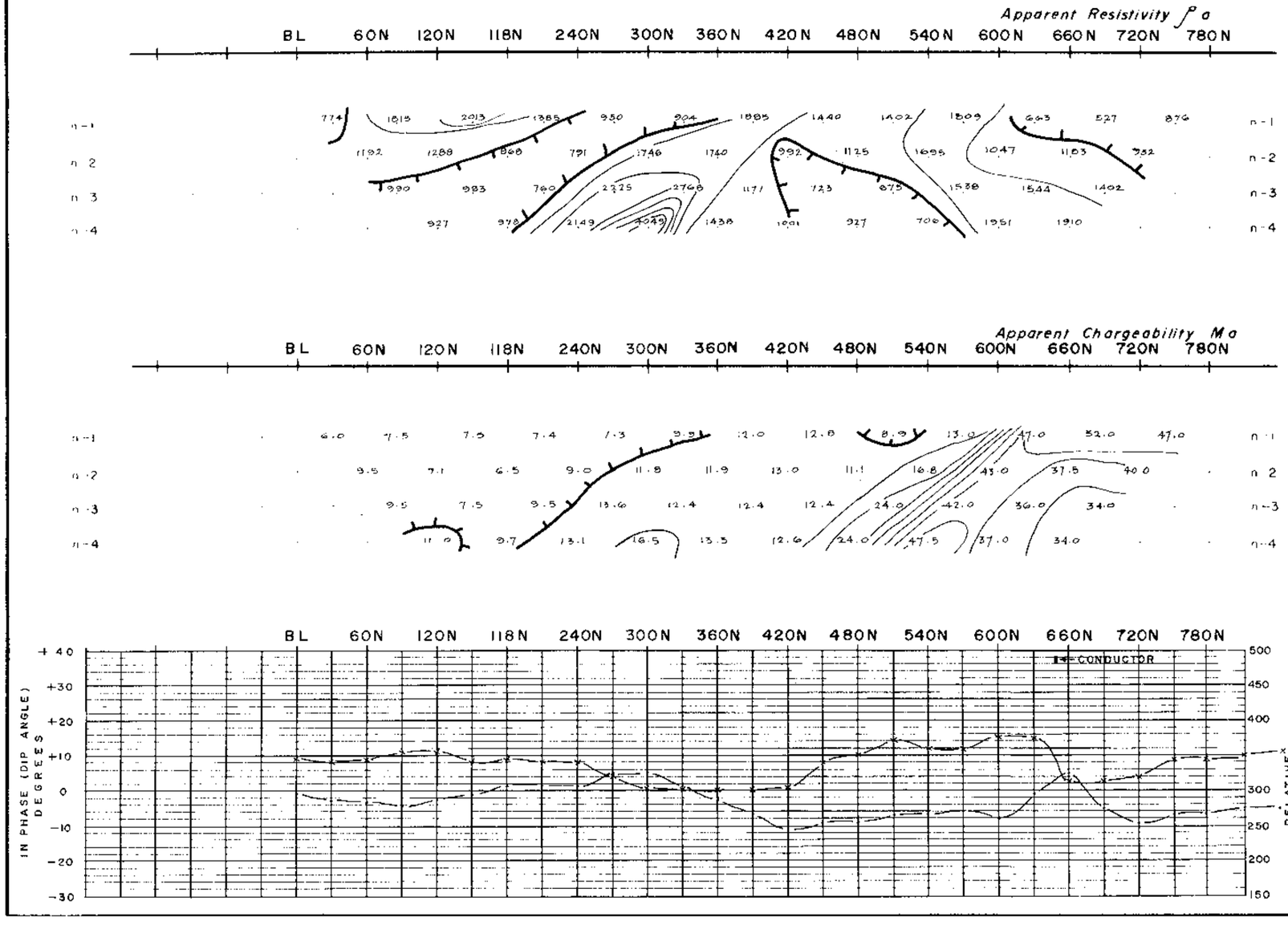
LINE NO. 7+00W

POLE - DIPOLE
ELECTRODE CONFIGURATION




PLOTTING POINT
n = 1, 2, 3, 4, 5 & 6

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE




LINE 7+00W

DATE SURVEYED MAY 16, 17, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρa
APP. CHARG. — 5.0 MV/v
x—x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER
•—• FIELD STRENGTH

APPROVED CH

DATE

TRANSMITTER — HUNTEC 7.5 m

RECEIVER — IPR 8

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

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

N.T.S. 82 N 5 DWG. NO. 133-78-11

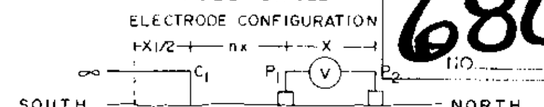
# COMINCO LTD.

# BET PROPERTY

# KAMLOOPS M.D. B.C.

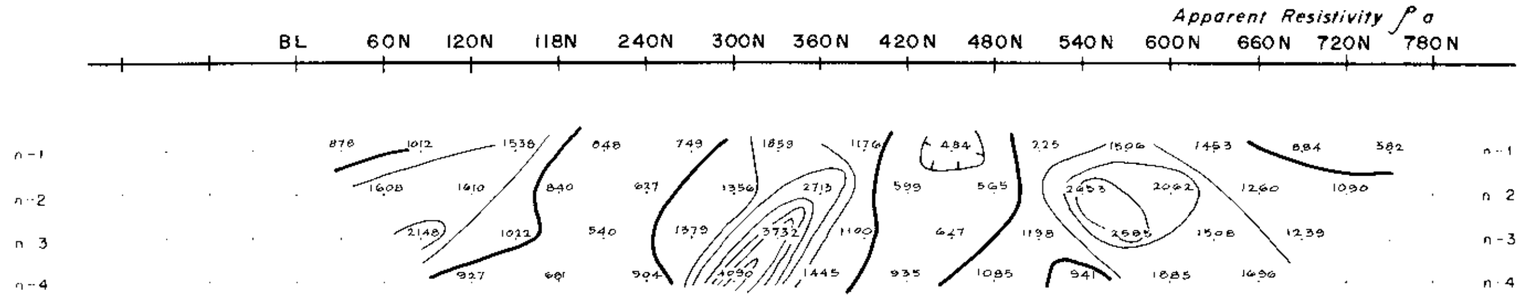
LINE NO. 8+00 W

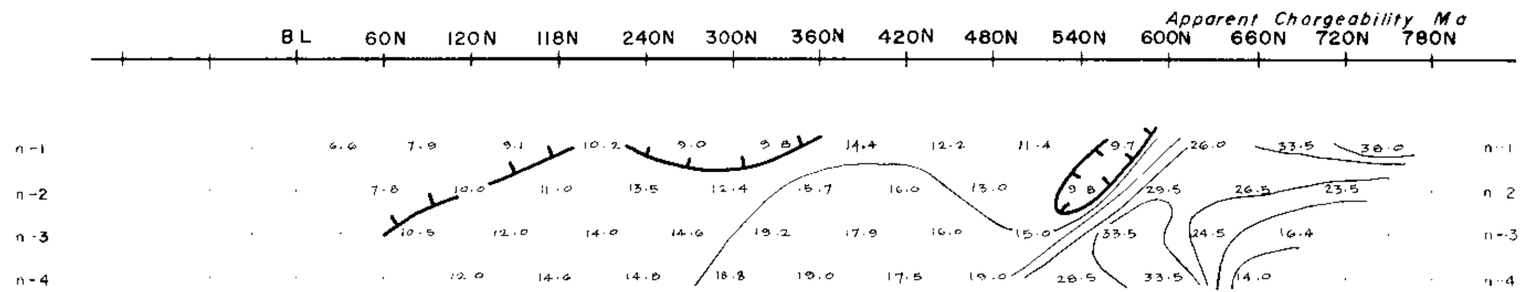
POLE-DIPOLE
ELECTRODE CONFIGURATION

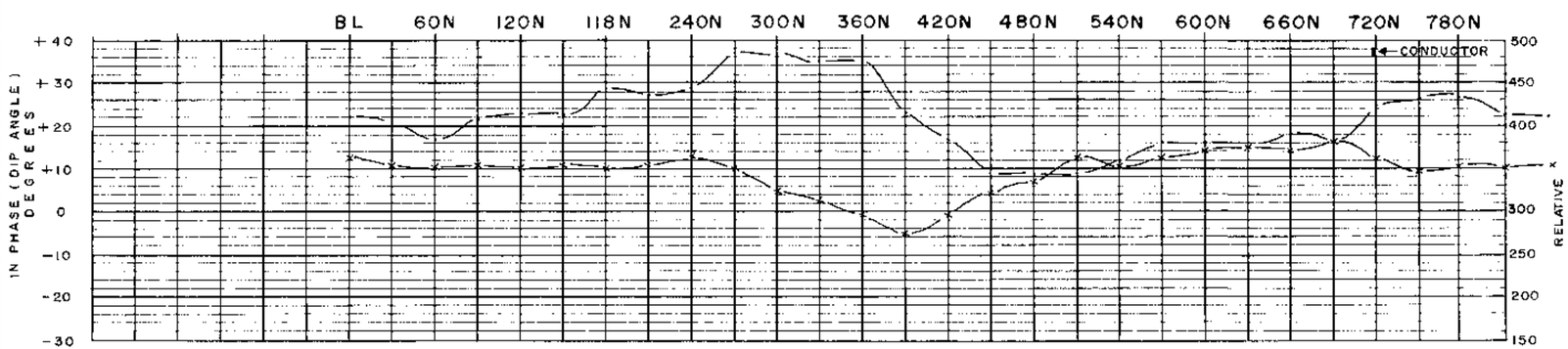



PLOTTING POINT
n = 1, 2, 3, 4, 5 & 6

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE




DATE SURVEYED MAY 17, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρa
APP CHARG. — 5.0 MV/v

x—x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

•—• FIELD STRENGTH

APPROVED

DATE

TRANSMITTER — HUNTEC 7.5 m

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 8+00 W

N.T.S. 82 N 5 DWG. NO. 133-78-12

# COMINCO LTD.

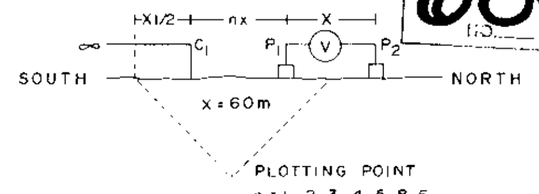
# BET PROPERTY

# KAMLOOPS M.D. B.C.

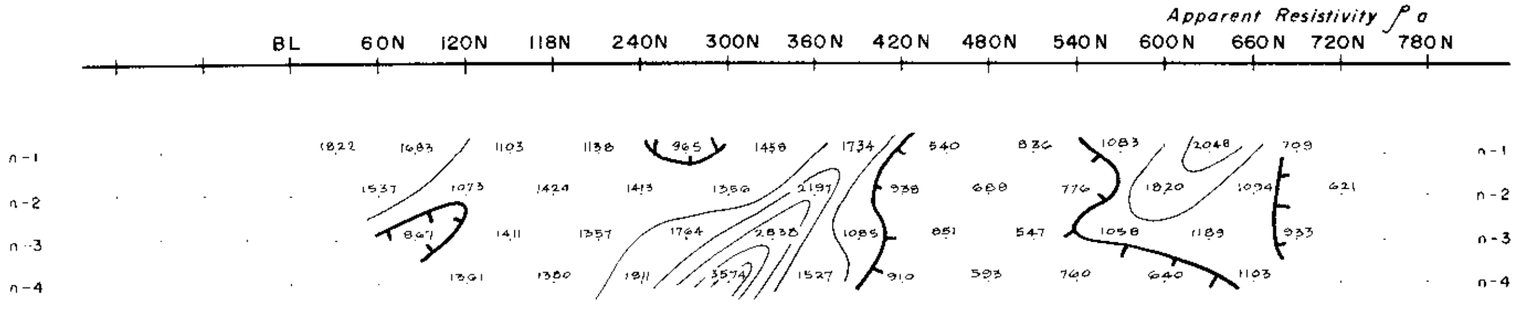


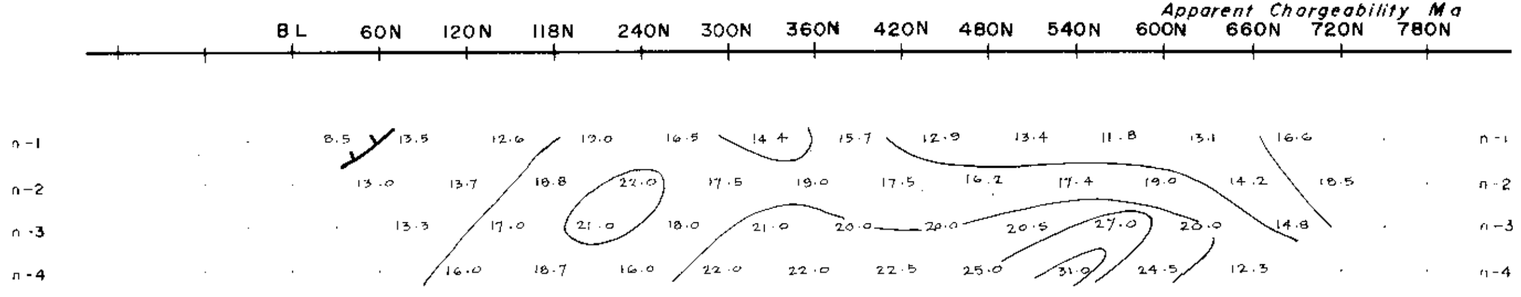
LINE NO. 9+00W

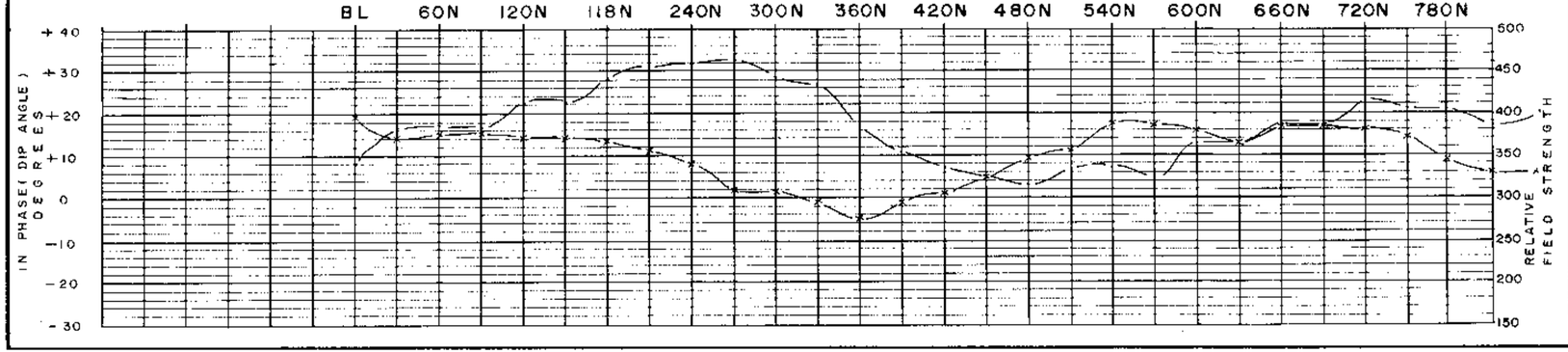
POLE-DIPOLE ELECTRODE CONFIGURATION




CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE




DATE SURVEYED MAY 17, 18, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρa
APP CHARG. — 5.0 MV/v

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

APPROVED

DATE

TRANSMITTER — HUNTEC 7.5 m

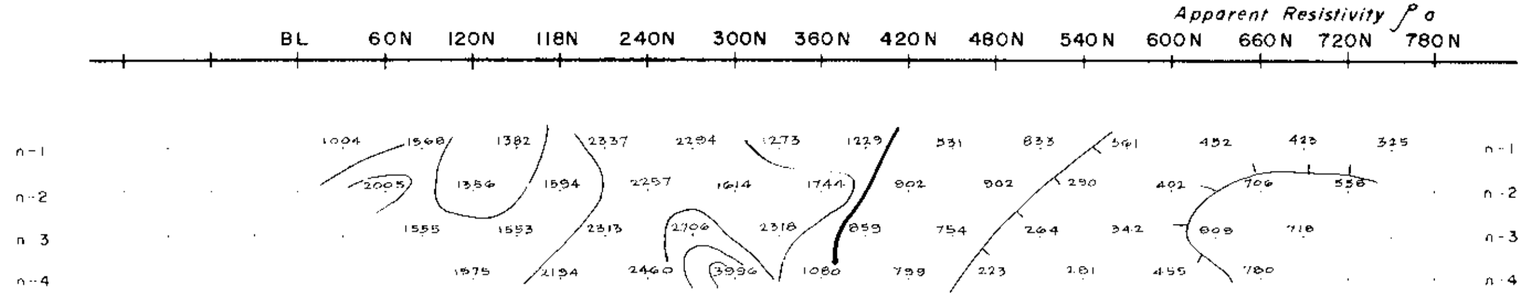
RECEIVER — IPR 8

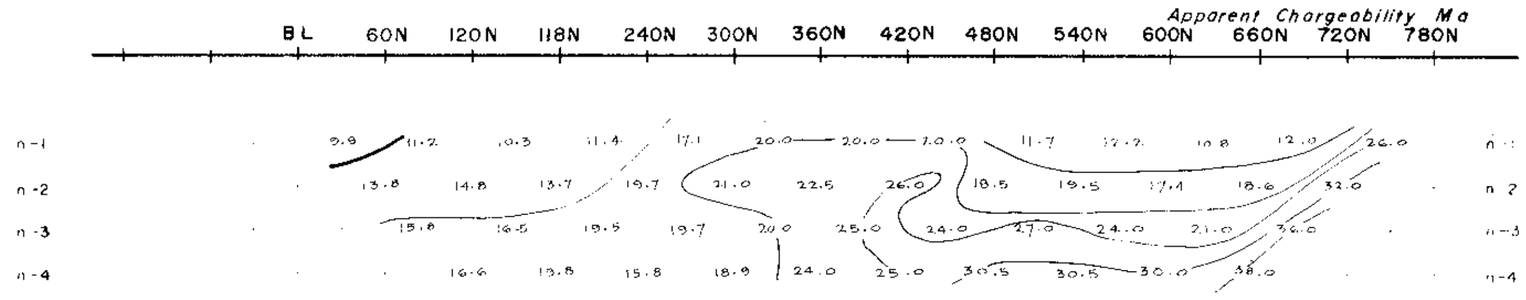
VLF INSTRUMENT — CRONE RADEM
FROM NLK STATION, SEATTLE WASH., USA

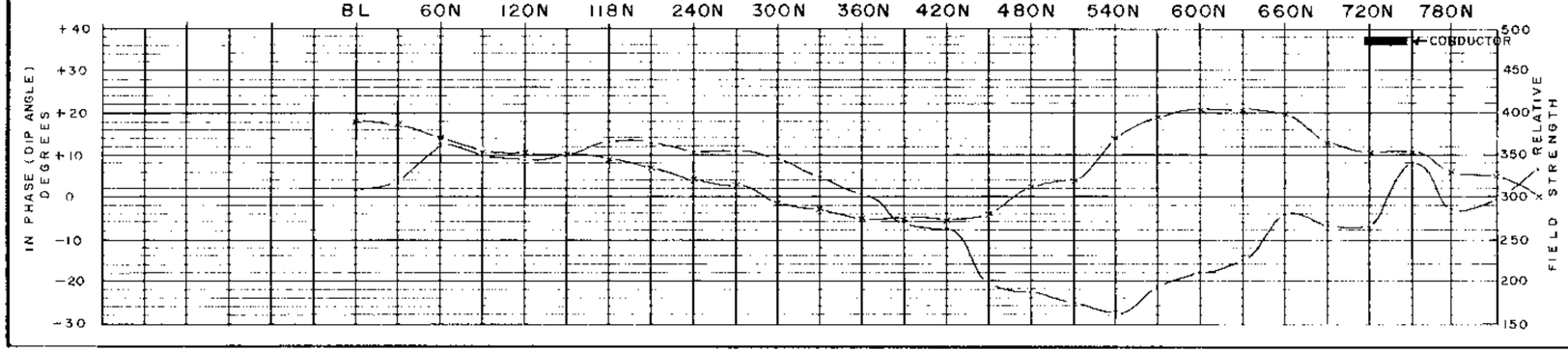
INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

LINE 9+00W




N.T.S. 82 N 5

DWG. NO. 133-78-13

# COMINCO LTD.

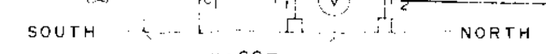
# BET PROPERTY

# KAMLOOPS M.D. B.C.

LINE NO. 10+00W

POLE-DIPOLE

ELECTRODE CONFIGURATION




PLOTTING POINT

n = 1, 2, 3, 4, 5 & 6

CURRENT ELECTRODE SOUTH OF POTENT.A. D-POLE

ASSESSMENT REPORT

6802

LINE 10+00W

DATE SURVEYED MAY 16, 18, 1978

CONTOUR INTERVALS:

APP. RES. — 500 ρa

APP CHARG. — 5.0 MV/v

x——x IN PHASE (DIP ANGLE) RIGHT WAVE CROSSOVER

·——· FIELD STRENGTH

APPROVED

DATE

TRANSMITTER — HUNTEC 7.5 m

RECEIVER — IPR 8

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

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

840 N

750 N

600 N

450 N

300 N

150 N

BASELINE

230° MAGNETIC

LEGAL CORNER POST
BET 3, BET 4

BET 4
2 UNITS

BIRK CREEK

711N

627N

TRENCH

OLD FARM

GRAVEL PIT

TO NORTH BARRIERE LAKE

LINE 10+00W

LINE 9+00W

LINE 8+00W

LINE 7+00W

LINE 6+00W

LINE 5+00W

LINE 4+00W

LINE 3+00W

LINE 2+00W

LINE 1+00W

LINE 0+00

BET 3
4 UNITS

BET 1
15 UNITS

1978 GEOPHYSICS GROUND GRID

HIGHWAY, ROAD

CREEK

UNIT BOUNDARY

LEGAL CLAIM POST

METRES
0 100 200

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6802

# BET PROPERTY

NTS 82M5

Cominco

| Drawn by: | | Traced by: | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |

## CLAIM MAP

KAMLOOPS M.D., B.C.

Scale: 1:5000 | Date: JUNE 1978 | Plate: 133-78-2

210-0670