COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

NTS: 92 I/10

GEOPHYSICAL REPORT

ON

INDUCED POLARIZATION AND MAGNETICS SURVEYS

R O P E R L A K E P R O P E R T Y

Greenstone Mountain Area; Kamloops Mining Division, B.C.

LATITUDE: 50°35'N;

LONGITUDE: 120°39'W

Work Performed: August 8-16, 1980

On claims: Happy Days 1,2,3,7,9,10,12,15,17;
Amron 1,2; GG 1, GIL 2

27 NOVEMBER 1980

ALAN R. SCOTT

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COMINCO LTD.

EXPLORATION
NTS: 92 I/10

WESTERN DISTRICT
27 November 1980

GEOPHYSICAL REPORT

ON

INDUCED POLARIZATION AND MAGNETICS SURVEYS

ROPER LAKE PROPERTY

INTRODUCTION

During the period August 8-16, 1980, a Cominco geophysical crew completed some 20 line kilometers of multiseparation induced polarization survey and 50 line kilometres of total field magnetics survey over portions of the Roper Lake property.

The property is located 35 kilometers west south west of Kamloops, B.C., and is accessible via the Mile High Lodge road, which heads west from the Logan Lake Highway 10 kms north of Logan Lake. The general location of the property is indicated on plate 1, and the location of the survey grid in relation to the claims is shown on plate 2.

This report describes the procedures used on the geophysical surveys, presents the data, and discusses the survey results.

GEOPHYSICAL SURVEYS

Induced Polarization

A Huntec 7.5 kw IP motor generator transmitter in combination with two Scintrex IPR-8 receivers were used on the Roper Lake survey. Readings were taken in the time domain using a 2 second current on/2 second current off alternating square wave signal. The chargeability (IP) values plotted are those for the M_{232} window of from 650 - 1170 milliseconds following cessation of the current pulse. The units of measurement are expressed in millivolts/volt.

A pole dipole electrode array was used on the survey with an "a" spacing of 100 meters and "n" separations of 1,2,3 and 4. The current electrode was kept to the south of the potential dipole on all survey lines.

The apparent resistivity values are in units of ohm meters and were calculated from the relation:

$$\text{resistivity} = (V/I) \cdot K$$

where V is the voltage drop across the measuring dipole during the current on period (I) and K is a constant dependent on the "a" spacing and "n" separation.

Magnetics

A Scintrex MP-2 total field proton precession magnetometer was used for the magnetics survey. Corrections for diurnal drift were made by reference of a Scintrex MBS-2 base station magnetometer.

DISCUSSION OF RESULTS

The chargeability (IP) and apparent resistivity survey results are presented in pseudosection format on plates 4 to 10 inclusive. This is a schematic form of data presentation and no specific target depth or geometry is implied by it. The near separation (n=1) chargeability values are also presented in contour plan form on plate 11. The total field magnetometer survey values are plotted in contour plan form on plate 3.

The chargeability results have been categorized on the sections as follows:

▬▬▬▬▬▬	strong IP high (>40 mv/v at near separation)
▬▬▬▬▬▬	moderate IP high(25-40 mv/v at near separation)
//////////	weak IP high (10-25 mv/v at near separation)
— — —	IP high at further separations (>10 mv/v)

On the n=1 contour plan, anomalous areas of greater than 10 mv/v are indicated by light stippling and those of greater than 25 mv/v by heavy stippling. Four areas of high IP response are noted on the contour plan.

Magnetic field highs, defined as greater than 58,000 gammas, are indicated by the stippling pattern on the magnetic field contour plan (plate 11).

IP anomaly I consists of a large area of greater than 10 mv/v north of the baseline on lines 24W to 32W. A core area of strong IP response is centered at 1,250N on line 29W (53 mv/v at n=1). Anomaly I is coincident with generally high magnetic field values (greater than 58,000 gammas).

Anomaly II, as outlined by the greater than 10 mv/v contour, is located some 1,500 to 3,000 meters north of the baseline on lines 0 to 6E. A narrow strong response zone lies along the southern flank of anomaly II (peak value of 46 mv/v plots at 1,750N on line 0). Anomaly II is in an area of generally low magnetic field strength.

Anomaly III is a weak IP high on line 0 from about 900 to 1,300N. The peak value of 15.9 mv/v plots at 1,050N. Anomaly III is in an area of generally low magnetic field strength.

Anomaly IV is located just north of the baseline on lines 3E and 6E. The peak value of 12.3 mv/v plots at 350N and the anomaly is open towards Cornwall Lake to the north as well as to the east. Anomaly IV is in an area of generally low magnetic field strength.

CONCLUSIONS

Portions of the Roper Lake property were surveyed with time domain IP and total field magnetics in the summer of 1980.

Four areas of high IP response were detected on that survey and are labelled I, II, III, and IV on accompanying plate 11. Areas of greater than 10 mv/v IP response (n=1) are categorized as weakly high, of greater than 25 mv/v as moderately high, and of greater than 40 mv/v as strongly high.

Anomalous area I is the only one of these anomalies coincident with generally high magnetic field values, suggesting at least a partially common source such as magnetite of pyrrhotite for that anomaly.

Anomalies I and II are both large in aerial extent and contain core areas of strong IP response. Both of the anomalies are open to the east and west.

Anomalies III and IV are relatively small in area and do not contain strong response cores. Anomaly III is open to the west and anomaly IV is open to the north and east.

Correlation of these geophysical results to geology and geochemistry information is neccesary before any decision on further work to test for the source of these anomalous responses can be made.

Respectfully submitted:

Alan R. Scott
Geophysicist

Endorsed for
Release by:

G. Harden, Manager
Western District

ARS/skg
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 HAPPY DAYS GROUP OF MINERAL CLAIMS

ON THE ROPER LAKE PROPERTY

LOCATED 35 KM WSW OF KAMLOOPS IN THE KAMLOOPS MINING DIVISION

OF THE PROVINCE OF BRITISH COLUMBIA, MORE PARTICULARLY

N.T.S.: 92I/10E

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 the annexed hereto and marked as "Appendix II" to this statement is a true copy of expenditures incurred on geophysical survey on the Happy Days mineral claims;

3. THAT the said expenditures were incurred for the purpose of mineral exploration of the above noted claims between the 8th day and the 16th day of August, 1980.

Signed: Alan Scott
Alan R. Scott,

27 November 1980

APPENDIX II

HAPPY DAYS CLAIMS

ROPER LAKE PROPERTY

STATEMENT OF EXPENDITURES

(Induced polarization, magnetometer surveys, linecutting)

1. SALARIES

S. Holland, geophysicist in training,	Aug. 8-16	9 days @ 105 =	$	945
D. Milne, geophysical technician,	Aug. 8-16	9 days @ 105 =		945
Y. Fortin, IP crewman,	Aug. 8-16	9 days @ 83 =		747
E. Bernshaw, IP crewman,	Aug. 8-16	9 days @ 83 =		747
D. Campbell, IP crewman,	Aug. 8-16	9 days @ 83 =		747
J. Allen, IP crewman,	Aug. 8-16	9 days @ 83 =		747
			$	4878

2. EQUIPMENT RENTALS

7.5 kw IP survey system, magnetometers, truck $ 2893

3. CHARGES PER SURVEY DAY

8 days geophysical survey @ 175 $ 1400

4. MISCELLANEOUS CHARGES

food, gas, lodging, consumables $ 1785

5. LINECUTTING

60.625 kms @ 317/km $19218

TOTAL EXPENDITURES: $30174

APPENDIX III

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

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

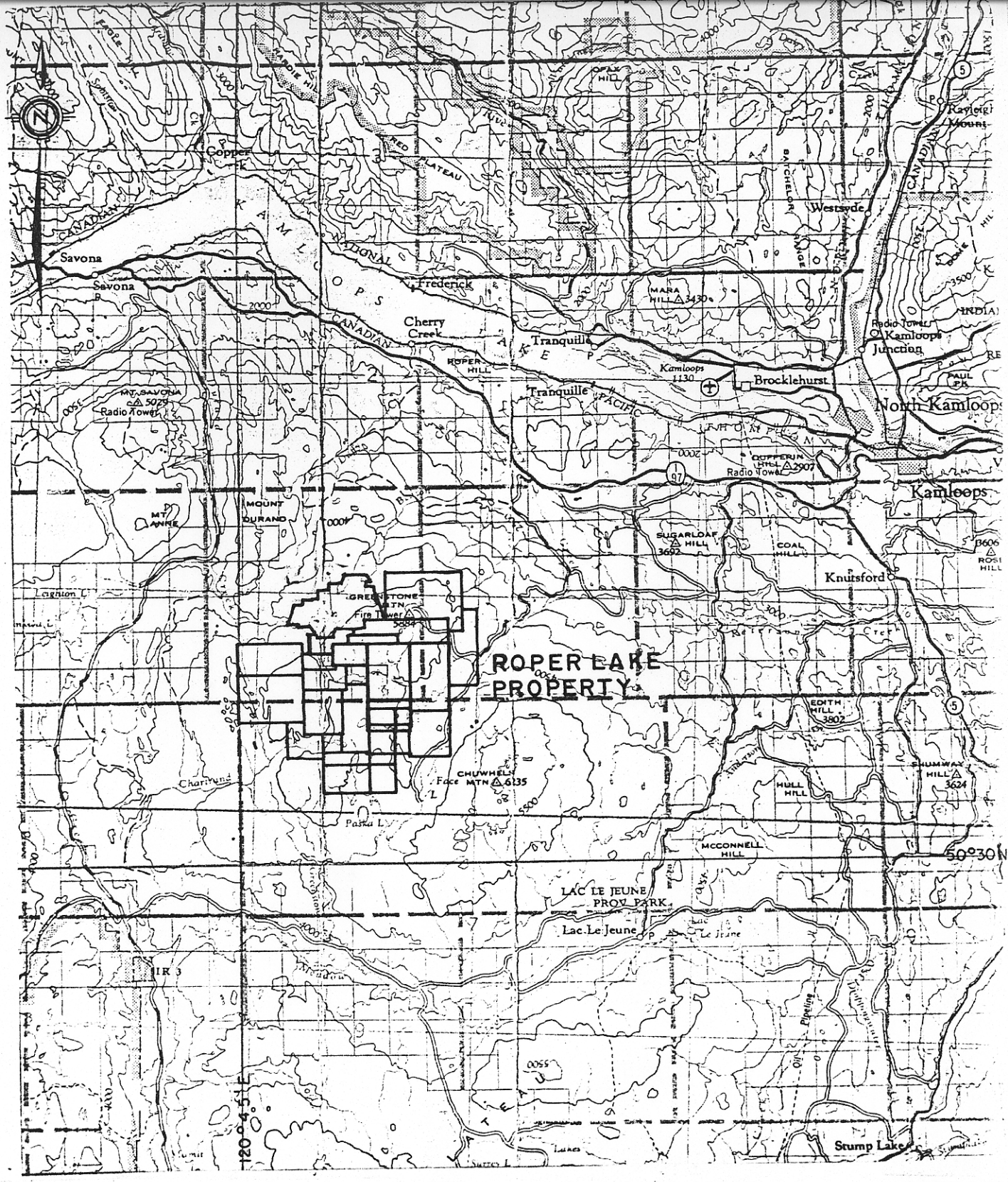
1. THAT I graduated from the University of British Columbia in 1970 with a B.Sc. in Geophysics;

2. THAT 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. THAT I have been practising my profession for the past ten years.

Signed: _____
Alan R. Scott, Geophysicist

27 November 1980



ROPER LAKE PROPERTY

Drawn by	Traced by	
Revised by Date	Revised by Date	

LOCATION MAP

KAMLOOPS M.D., B.C.

Scale 1:250,000	Date DEC 1978	Plate 184-80-1

GIL
GIL 2
HAPPY DAYS #11
HAPPY DAYS #12
HAPPY DAYS #6
HAPPY DAYS #14 FRAC.
HAPPY DAYS #9
RECORD #2100
(I.P.) RAG 72
RAG 40 (I.P.) (I.P.) RAG 39
RAG 97 (I.P.) RAG 89
RAG 100
RAG 101 FRACTION
HAPPY DAYS #5
G.G.1
DOMINIC LAKE
DOMINIC SOUTH EAST
CHERISE
HAPPY DAYS #9
RECORD #2194
HAPPY DAYS
HAPPY DAYS #3
HAPPY DAYS #4
HAPPY DAYS #7
HAPPY DAYS #10
HAPPY DAYS #8
HAPPY DAYS #16
HAPPY DAYS #15
HAPPY DAYS #17
AMRON 1
AMRON 2
HAPPY DAYS #13
BASELINE 20N
NOTE LINE 15+00E IS MARKED ON AT STATION BL 20N
1978 BASELINE
BASELINE 0+00N
LINE 0+00
LINE 3+00E
LINE 6+00E
LINE 9+00E
LINE 12+00E
LINE 15+00E
LINE 18+00E
LINE 12+50E
LINE 15+50E
LINE 32+00W
LINE 29+00W
LINE 24+00W
LINE 21+00W
LINE 3+00W
29+00N
49+00N
44+00N
40+00N
20+00N
38+72N
36+07N
36+69N
30+00N
31+61N
31+77N
31+89N
29+12N
20+00N
16+25N
16+00N
10+00N
6+00N
3+64N
4687
6+25N
2+00S
7+00S
10+00S
14+00S
17+00S
20+00S
21+50S
21+81S
23+50S
30+00S
31+00S
35+00S
41+00S
42+00S
6+78S
6+46S
7+75S
14+83S
15+00S
15+80S
16+00S
I.P.
DOMINIC LAKE
ROPER LAKE
LAKE FACE

LEGEND

COMINCO 1980 GEOCHEM - I.P. GRID - MAG. GRID

30+00S GRID LOCATION TIE-IN POINT

MAIN ROADS

LEGAL CORNER POST (or Initial Post where indicated)

4687 PLASTIC SURVEY MARKER

I.P. UNSURVEYED AIRPHOTO TARGET IRON PIN

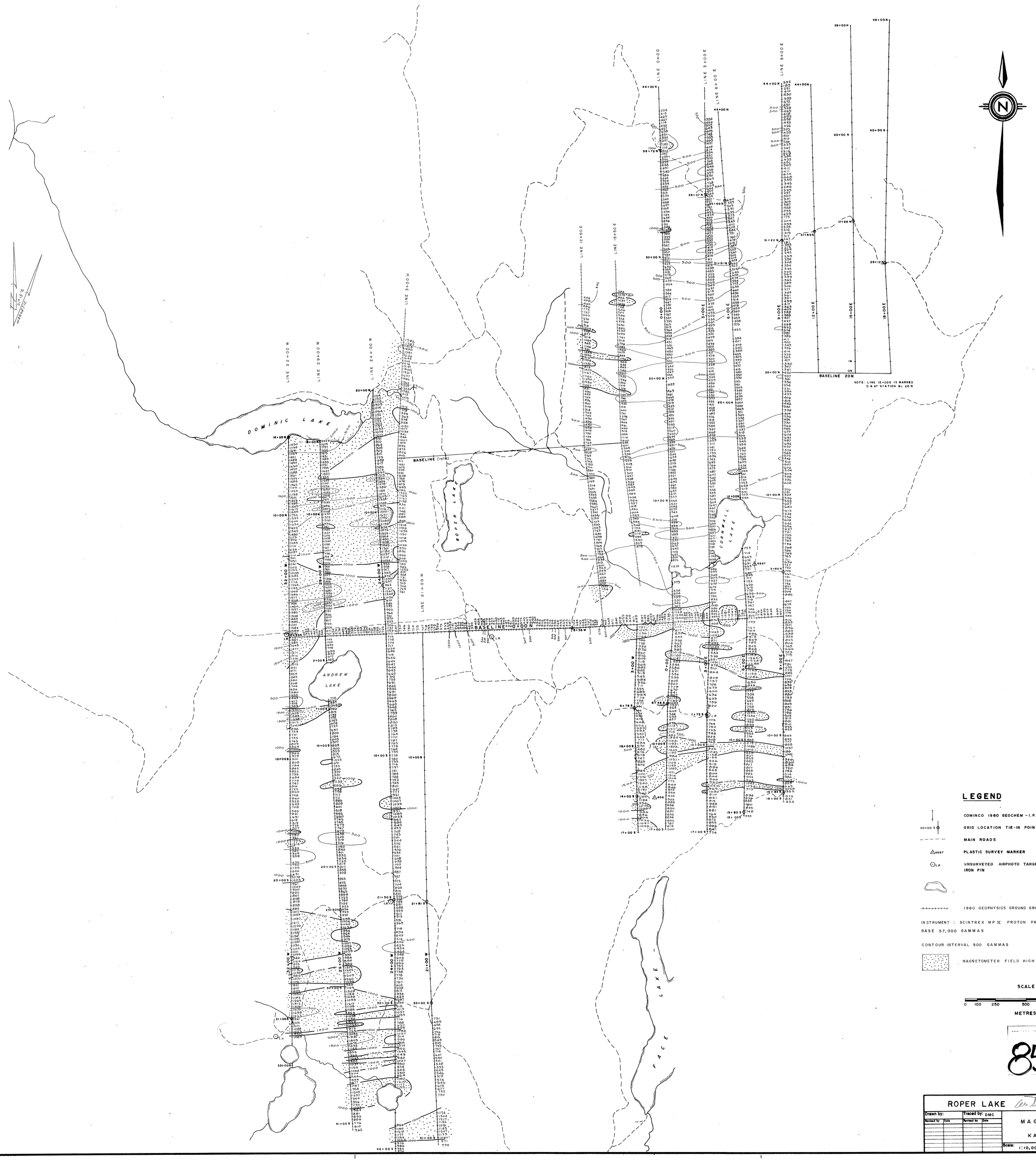
SCALE

0 100 250 500 1000

METRES

ROPER LAKE	NTS 92 I/10	NTS 92 I 10
Drawn by:	Traced by: DMC	CLAIM MAP
Revised by / Date	Revised by / Date	KAMLOOPS M.D., B.C.
		Scale 1:10,000 · Date OCT 1980 · Plate 184-80-2

FORM 210 - 0000



LEGEND

COMINCO 1980 GEOCHEM - I.P. GRID

30+00 S — GRID LOCATION TIE-IN POINT

MAIN ROADS

△4687 — PLASTIC SURVEY MARKER

I.P — UNSURVEYED AIRPHOTO TARGET IRON PIN

1980 GEOPHYSICS GROUND GRID

INSTRUMENT : SCINTREX MP II PROTON PRECESSION MAGNETOMETER

BASE 57,000 GAMMAS

CONTOUR INTERVAL 500 GAMMAS

MAGNETOMETER FIELD HIGH > 58 000 GAMMAS

SCALE

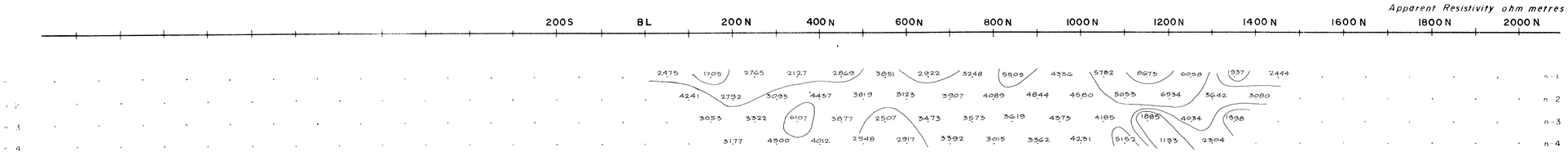
0 100 250 500 1000

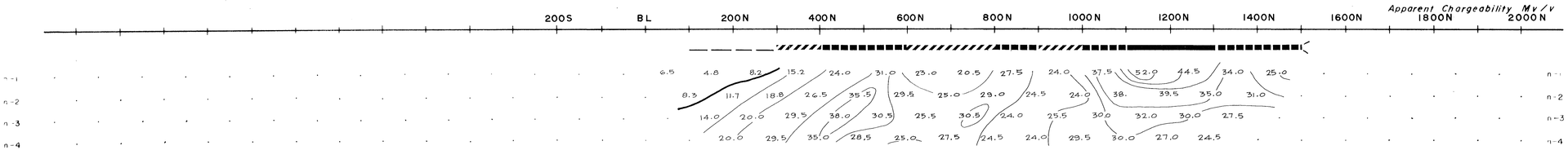
METRES

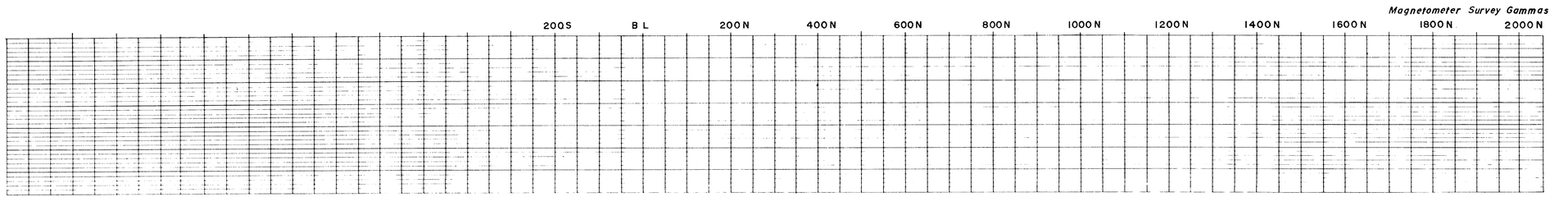
8580

ROPER LAKE	NTS 92 I/10	NTS 92 I 10
Drawn by:	Traced by: DMC	MAGNETOMETER SURVEY
Revised by / Date	Revised by / Date	KAMLOOPS M.D., B.C.
Scale: 1:10,000	Date: NOV. 1980	Plate: 184-80-3

FORM 210 - 0080







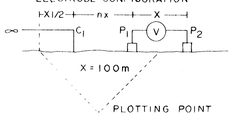
N.T.S. 92 I 10

DWG. NO. 184-80-4

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 3200 W

POLE – DIPOLE
ELECTRODE CONFIGURATION



CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY (IP) INTERPRETATION

- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- IP HIGH AT FURTHUR SEPARATIONS

DATE SURVEYED AUG 9, 1980

CONTOUR INTERVALS:

APP. RES. – 1, 1.5, 2, 3, 5, 7.5, 1.0 ohm metres

APP. CHARG – 5.0 Mv/V

APPROVED

DATE

MINERAL RESOURCES BRANCH

8580

NO.

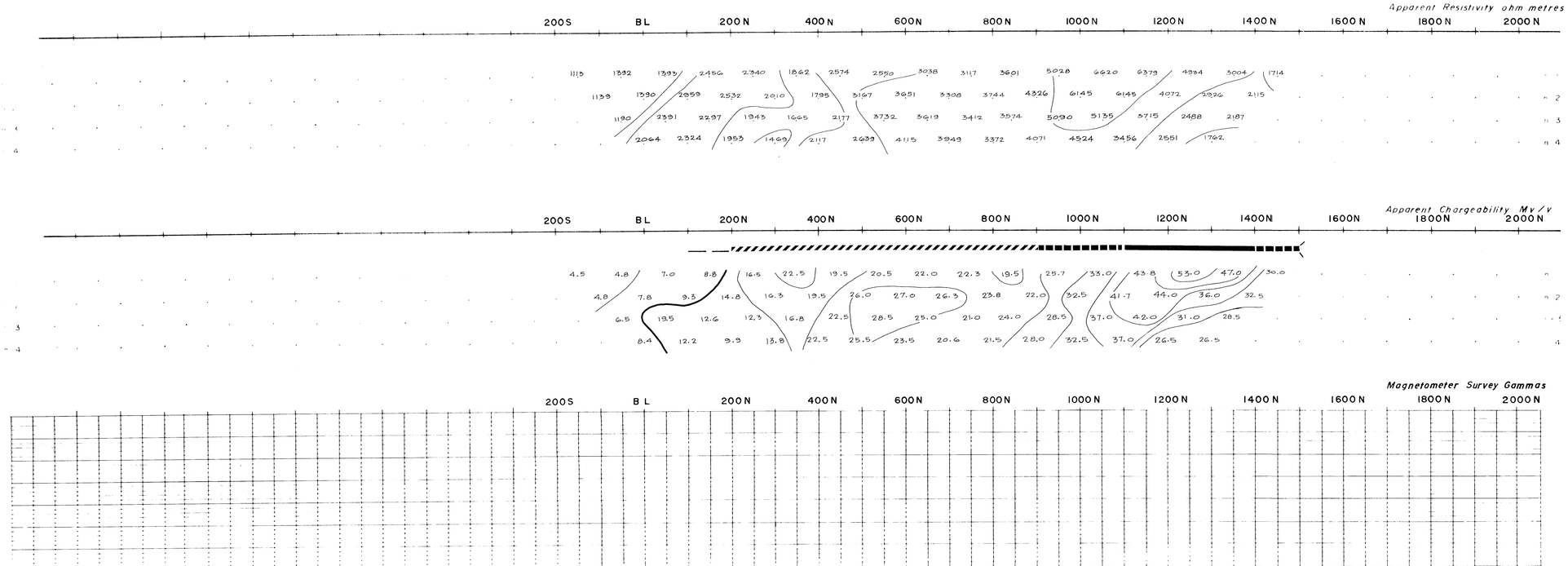
TRANSMITTER – HUNTEC 7.5 Kw

RECEIVER – SCINTREX IPR8

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

LINE 3200 W



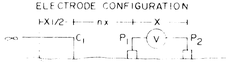
N.T.S. 92 I 10

DWG. NO. 184-80-5

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 2900 W

POLE - DIPOLE
ELECTRODE CONFIGURATION



X = 100m

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

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY (IP) INTERPRETATION

- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- IP HIGH AT FURTHUR SEPARATIONS

DATE SURVEYED AUG 9, 10, 1980

CONTOUR INTERVALS:

APP RES. 1, 1.5, 2, 3, 5, 7.5, 1.0 ohm metres
APP CHARG — 5.0 Mv/V

APPROVED

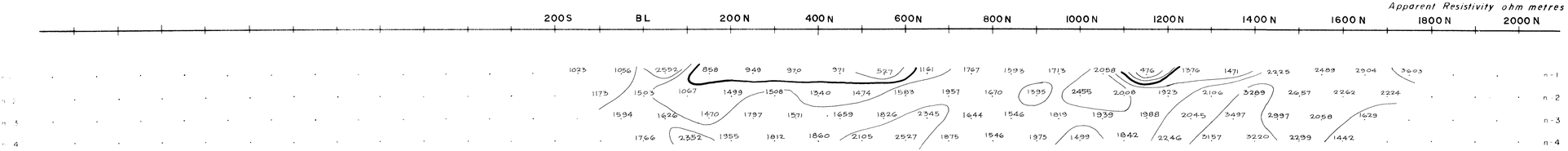
DATE

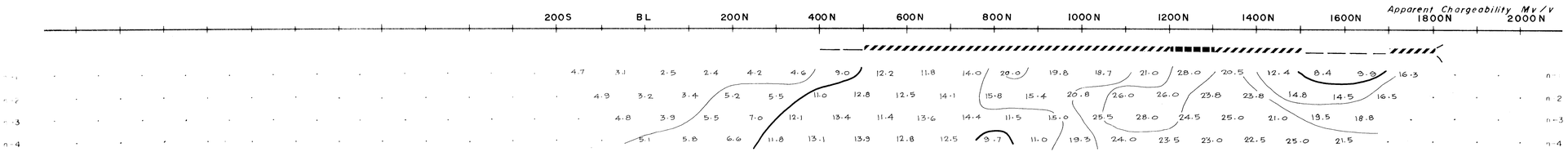
MINING RECORDER
8580
NO.

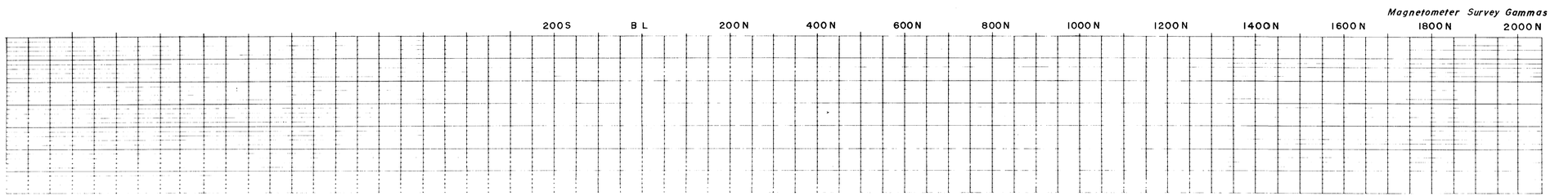
TRANSMITTER — HUNTEC 7.5 Kw
RECEIVER — SCINTREX IPR8

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

LINE 2900W







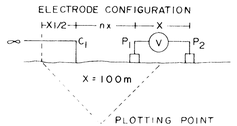
N.T.S. 92 I 10

DWG. NO. 184-80-6

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 2400 W

POLE – DIPOLE
ELECTRODE CONFIGURATION



CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY (IP) INTERPRETATION

- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- IP HIGH AT FURTHUR SEPARATIONS

DATE SURVEYED AUG 10, 1980

CONTOUR INTERVALS:

APP RES — 1, 1.5, 2, 3, 5, 7.5, 1.0 ohm metres
APP CHARG — 5.0 Mv/V

APPROVED

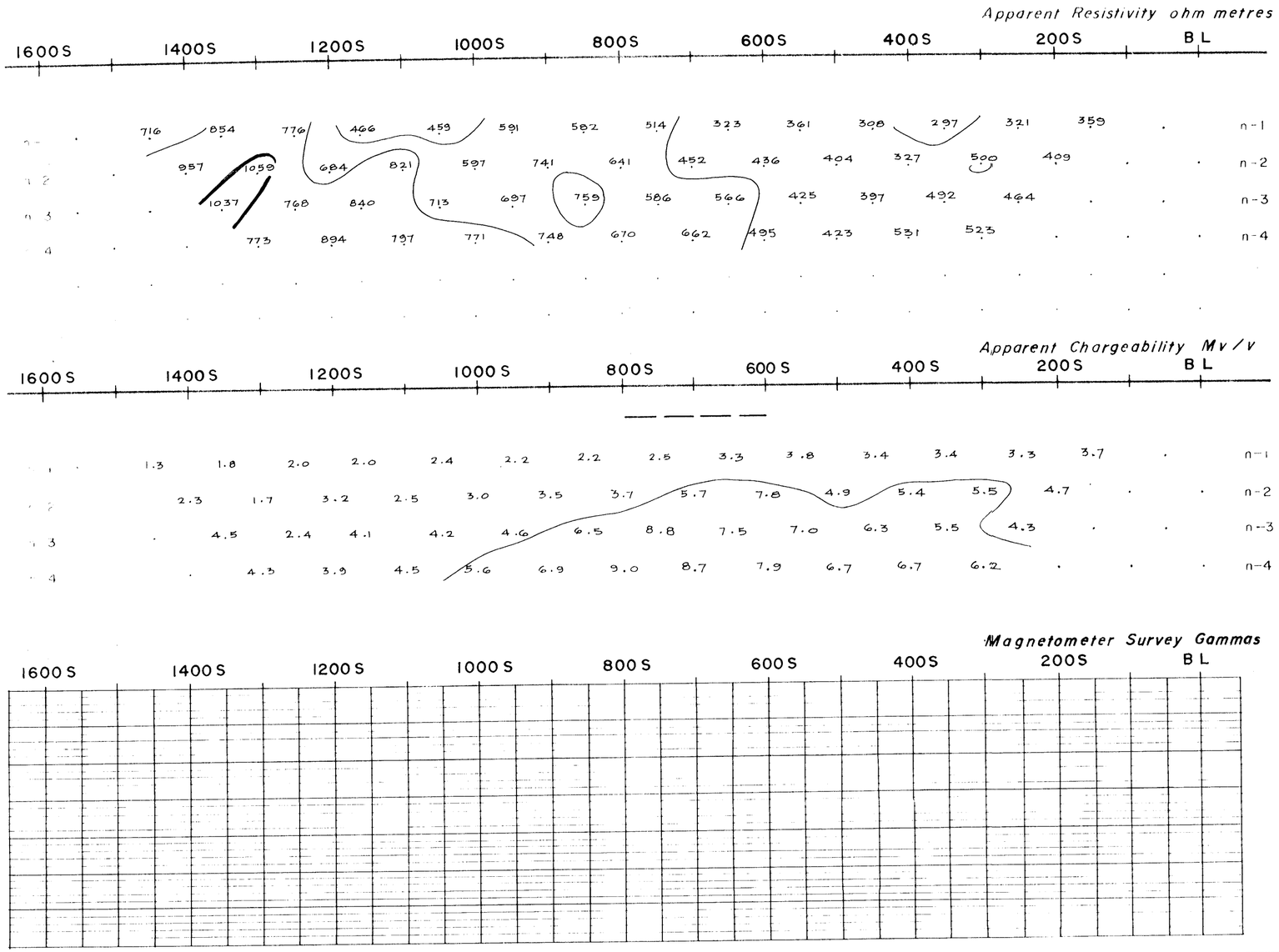
DATE

TRANSMITTER – HUNTEC 7.5 Kw
RECEIVER — SCINTREX IPR8

8580

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

LINE 2400 W



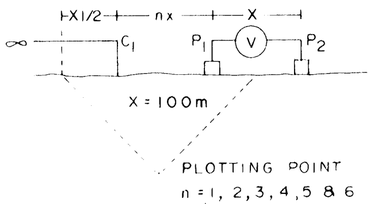
N.T.S. 92 I 10

DWG. NO. 184-80-7

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 300 W

POLE-DIPOLE
ELECTRODE CONFIGURATION



CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY (IP) INTERPRETATION

- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- IP HIGH AT FURTHUR SEPARATIONS

DATE SURVEYED AUG. 11, 1980

CONTOUR INTERVALS:

APP RES — 1, 1.5, 2, 3, 5, 7.5, 1.0 ohm metres
APP CHARG — 5.0 Mv/V

APPROVED

DATE

TRANSMITTER — HUNTEC 7.5 Kw

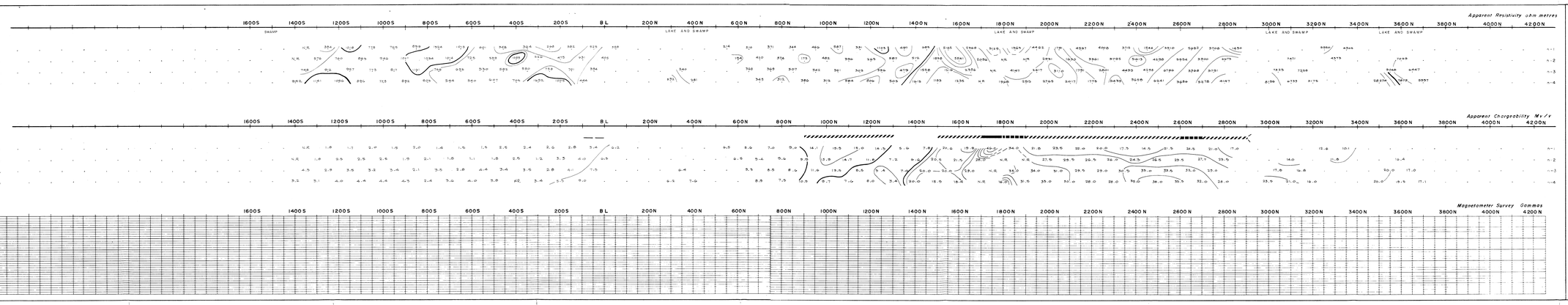
RECEIVER — SCINTREX IPR8

NO. 8580

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

LINE 300 W



N.T.S. 92 I 10

DWG. NO. 184-80-8

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 0

POLE-DIPOLE
ELECTRODE CONFIGURATION

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY INTERPRETATION
- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- I.P. HIGH AT FURTHER SEPARATIONS

DATE SURVEYED AUG 11, 12, 16, 1980

CONTOUR INTERVALS:
APP. RES. — 1, 2, 3, 5, 7, 10 ohm metres
APP. CHARG — 5.0 Ms/V

APPROVED

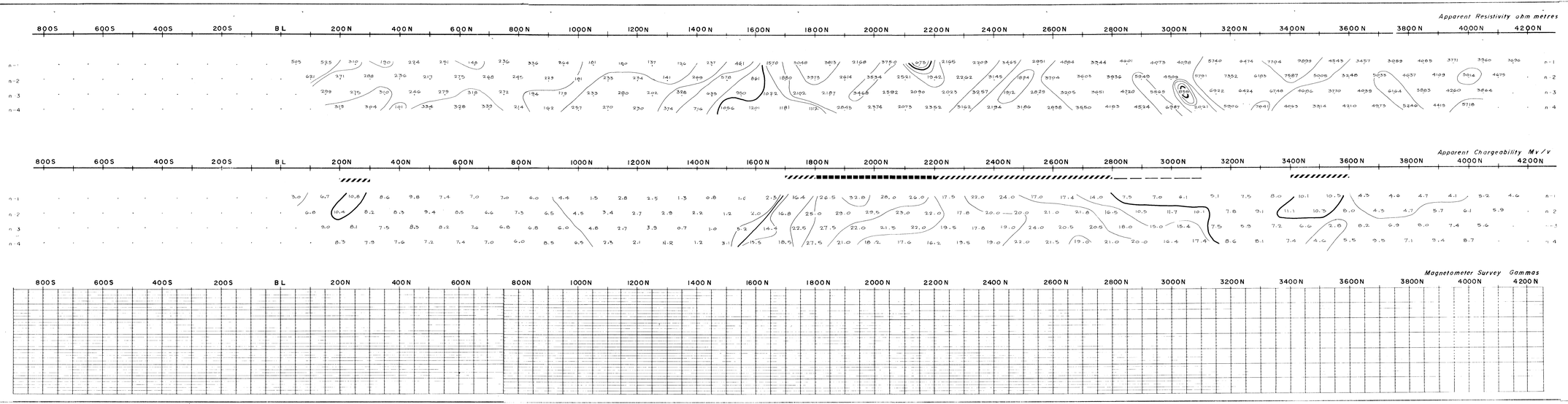
DATE

TRANSMITTER — HUNTEC 7.5 Kw
RECEIVER — SCINTREX IPR8

8580

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

LINE 0



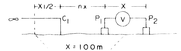
N.T.S. 92 I 10

DWG. NO. 184-80-9

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 300 E

POLE - DIPOLE
ELECTRODE CONFIGURATION



CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY (IP) INTERPRETATION

- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- IP HIGH AT FURTHUR SEPARATIONS

DATE SURVEYED AUG 13,14,1980

CONTOUR INTERVALS:

APP RES — 1,1.5,2,3,5,7.5,10 ohm metres

APP CHARG — 5.0 Mv/V

APPROVED

DATE

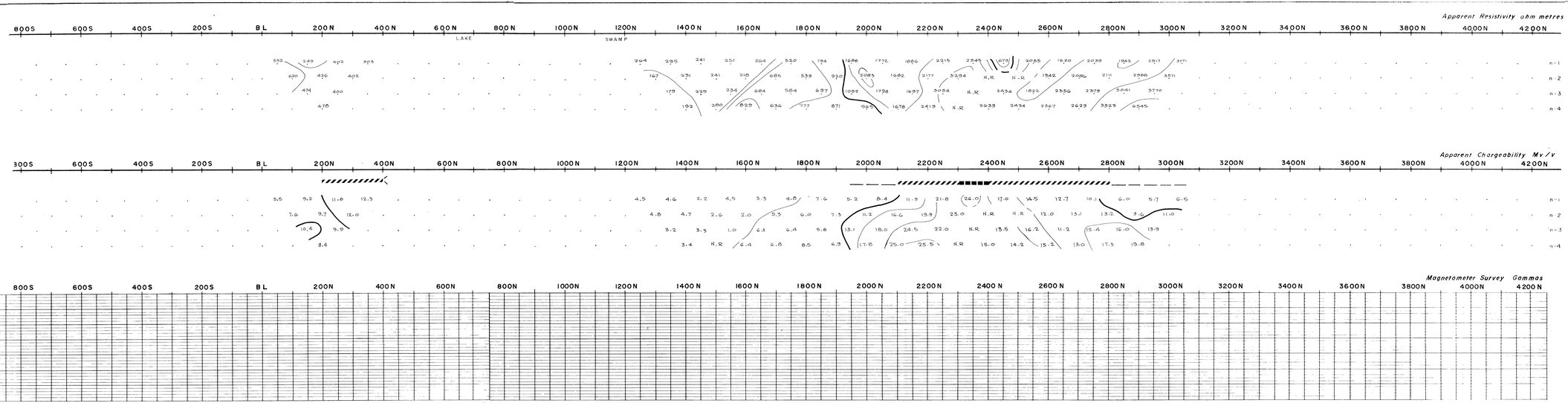
TRANSMITTER — HUNTEC 7.5 Kw

RECEIVER — SCINTREX IPR8

8580

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION



N.T.S. 92 I 10

DWG. NO. 184-80-10

COMINCO LTD.
ROPER LAKE PROPERTY
HAPPY DAYS CLAIMS
KAMLOOPS M.D., B.C.

LINE NO. 600 E

POLE-DIPOLE
ELECTRODE CONFIGURATION

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

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

CHARGEABILITY (IP) INTERPRETATION
- STRONG CHARGEABILITY HIGH
- MODERATE CHARGEABILITY HIGH
- WEAK CHARGEABILITY HIGH
- IP HIGH AT FURTHUR SEPARATIONS

DATE SURVEYED AUG 15, 1980

CONTOUR INTERVALS:
APP RES — 1, 1.5, 2, 3, 5, 7.5, 10 ohm metres
APP CHARG — 5.0 Mv/V

APPROVED

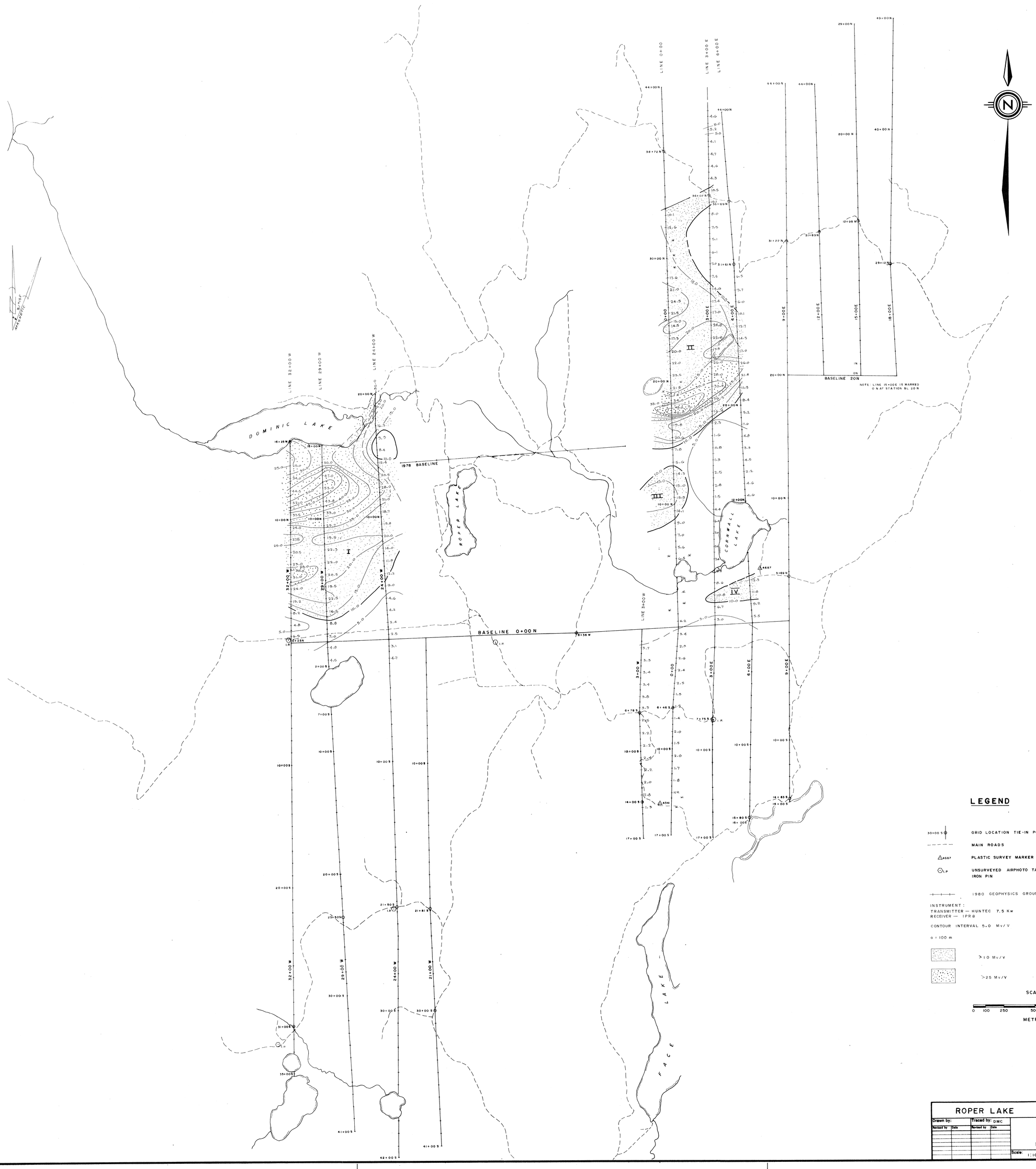
DATE

TRANSMITTER — HUNTEC 7.5 Kw
RECEIVER — SCINTREX IPR8

8580

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMIN



LEGEND

30+00 S	GRID LOCATION TIE-IN POINT
	MAIN ROADS
△4687	PLASTIC SURVEY MARKER
I.P	UNSURVEYED AIRPHOTO TARGET IRON PIN
	1980 GEOPHYSICS GROUND GRID

INSTRUMENT:
TRANSMITTER — HUNTEC 7.5 Kw
RECEIVER — IPR8

CONTOUR INTERVAL 5.0 Mv/V

a = 100 m

>10 Mv/V

>25 Mv/V

SCALE

0 100 250 500 1000

METRES

8580

ROPER LAKE	NTS 92 I/10	NTS 92-I-10
Drawn by:	Traced by: DMC	CHARGEABILITY MAP n = 1 KAMLOOPS M.D., B.C.
Revised by / Date	Revised by / Date	
		Scale: 1:10,000 · Date: NOV 1980 · Plate: 184-80-11

FORM 210 - 0680