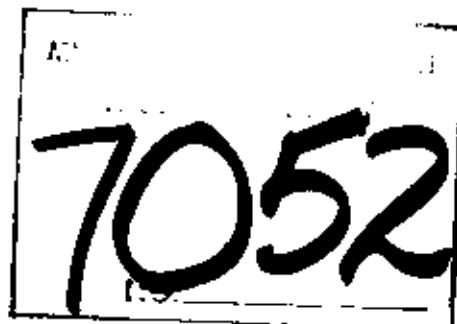


COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

NTS: 92I/10E



INDUCED POLARIZATION GEOPHYSICAL SURVEY

ROPER LAKE PROPERTY

HAPPY DAYS CLAIMS

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

Latitude: $50^{\circ}35'N$; Longitude: $120^{\circ}39'W$

Work Performed: July 5 - 16, 1978

On Claims: Happy Days, Happy Days No. 3

NOVEMBER 1978

ALAN SCOTT

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CONCLUSIONS	2

ATTACHMENTS

Plate 145-78-1	General Location Map
Plate 145-78-2	Claims and Grid Map
Plate 145-78-3 to 9	Induced Polarization and Apparent Resistivities Pseudo Sections
Appendix I	Statement
Appendix II	Cost Statement
Appendix III	Certification

* * * * *

INTRODUCTION

The Happy Days claims are located some 35 kilometers west southwest of Kamloops, B.C., just south of the fire tower on Greenstone Mountain. They are accessible by gravel road, south from Cherry Creek on highway 97, west of Kamloops. The general location of the property is indicated on plate 145-78-1, and the location of the grid surveyed relative to the claims is shown on plate 145-78-2.

During the period July 5-16, 1978, a Cominco geophysical crew completed some 20.5 line kilometers of two separation induced polarization survey over parts of the Happy Days claims.

This report describes this induced polarization survey, presents the data, and discusses the results.

INDUCED POLARIZATION SURVEY

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

A Scintrex IPR-8 receiver, in combination with a Huntac 7.5 kw motor generator/transmitter were used on the survey. This equipment operates in the time domain, employing a 2 second current on/2 second current off alternating square wave. The chargeability (IP) values plotted are the M₂₃₂ values, and the units are millivolts/volt. To convert to the more common millisecond value (such as would be obtained with the older model IPR-7), the numbers should be multiplied by 0.7, for a "typical" decay curve. For a more detailed discussion of this instrument, the reader is referred to the Scintrex manual for the IPR-8.

The pole-dipole electrode array was used on the survey, with an "a" spacing of 90 meters and "n" separation of 1 and 2 only. The current electrode was kept to the south of the potential dipole.

The apparent resistivity data is given in units of ohm-meters. It was calculated from the relation:

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

where V is the voltage across the potential measuring dipole

due to a current I, and K is a constant dependant upon the "a" spacing and "n" separation.

DESCRIPTION OF RESULTS

The chargeability and apparent resistivity values are plotted in standard pseudo section format on accompanying plates 145-78-3 to 145-78-9. Plate 145-78-2 shows the location of the survey lines relative to the claims and geographical features. Chainages on the survey lines is also indicated along with any observed errors in the picket numbers.

A zone of high chargeability was detected along the northern portion of all the survey lines. This zone has readings of greater than 50 millivolts/volt on all lines except 350 East, and peaks at 74 millivolts/volt on line 15+50E at station 1170 North.

Chargeability highs, outside this main zone, were detected at:

Line 0+00 ; stations 1080 - 990S; peak value 20 mv/v
Line 3+50E; stations 90N- 360N; peak value 51 mv/v
Line 6+50E; stations 360S- 90N; peak value 31 mv/v
Line 15+50E; stations 540S- 450S; peak value 20 mv/v

CONCLUSIONS

Portions of the Happy Days claims were surveyed by time domain IP in the summer of 1978.

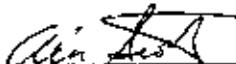
A continuous zone of high chargeability values was detected on the northern portion of the survey lines. Four other chargeability highs were detected, outside of this zone, as noted above.

Correlation of this data to geological and geochemical information may indicate if further work is required.

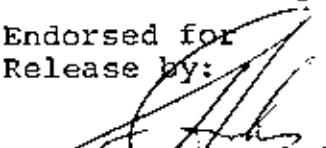
ARS/deb
27 November 1978

Distribution:
Mining Recorder (2)
Western District (1)
Geophysics File (1)

Respectfully submitted:


Alan Scott, Geophysicist

Endorsed for
Release by:


G. Harden
Manager, Exploration
Western District

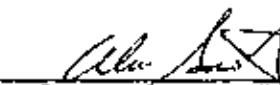
APPENDIX I

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 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 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 HAPPY DAYS MINERAL CLAIMS;
3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE 5TH OF JULY AND 16TH OF JULY 1978, FOR THE PURPOSE OF MINERAL EXPLORATION OF THE ABOVE NOTED CLAIMS.



Alan Scott, Geophysicist

ARS/deb

27 November 1978

APPENDIX II

ROPER LAKE PROPERTY (HAPPY DAYS CLAIMS)

STATEMENT OF EXPENDITURES

(Induced Polarization Survey, Linecutting)

SALARIES:

G.J. Niemeyer	July 5-12, 15, 16	10 days @ \$120=\$1,200
R. Grant	July 5-12, 15, 16	10 days @ \$ 82=\$ 820
I. Cummings	July 5-12, 15, 16	10 days @ \$ 82=\$ 820
M. Siefert	July 5-12, 15, 16	10 days @ \$ 82=\$ 820
C. LaPrairie	July 5-12	8 days @ \$ 82=\$ 656
J.M. Niemeyer	July 15	1 days @ \$ 82=\$ 82
J. Reader	July 16	1 days @ \$ 82=\$ 82
		\$ 4,480.00

MISCELLANEOUS:

Food, lodging, gas, consumables	\$ 1,303.86
---------------------------------	-------------

OPERATING CHARGES:

(towards report, drafting, supervision)

8 days IP survey @ \$175/day	\$ 1,400.00
------------------------------	-------------

EQUIPMENT RENTALS AND CHARGES:

8 survey days @ \$282/day	\$ 2,256
1 day truck rental only @ \$30	\$ 30
	\$ 2,286.00

LINECUTTING:

20 line kilometers @ \$180	\$ 3,600.00
----------------------------	-------------

TOTAL:..... \$ 13,069.00

ARS/deb
27 November 1978

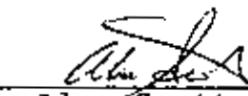


APPENDIX III

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

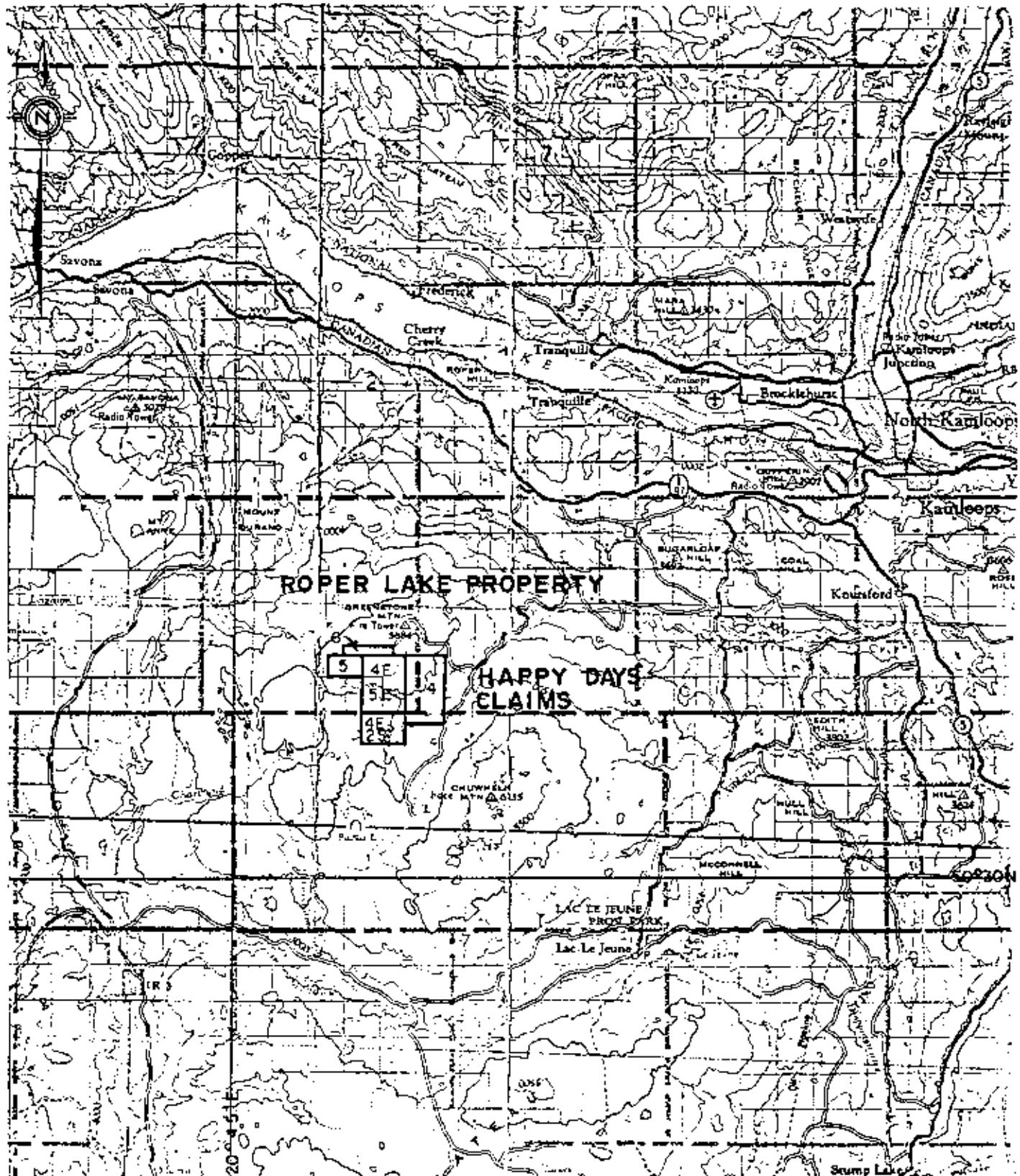
I, Alan Scott, of 4013 West 14th Avenue, in the city of Vancouver, in the Province of British Columbia, do hereby certify that: -

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
27 November 1978



Drawn by	Traced by
W. H. COOPER	D. COOPER

ROPER LAKE PROPERTY



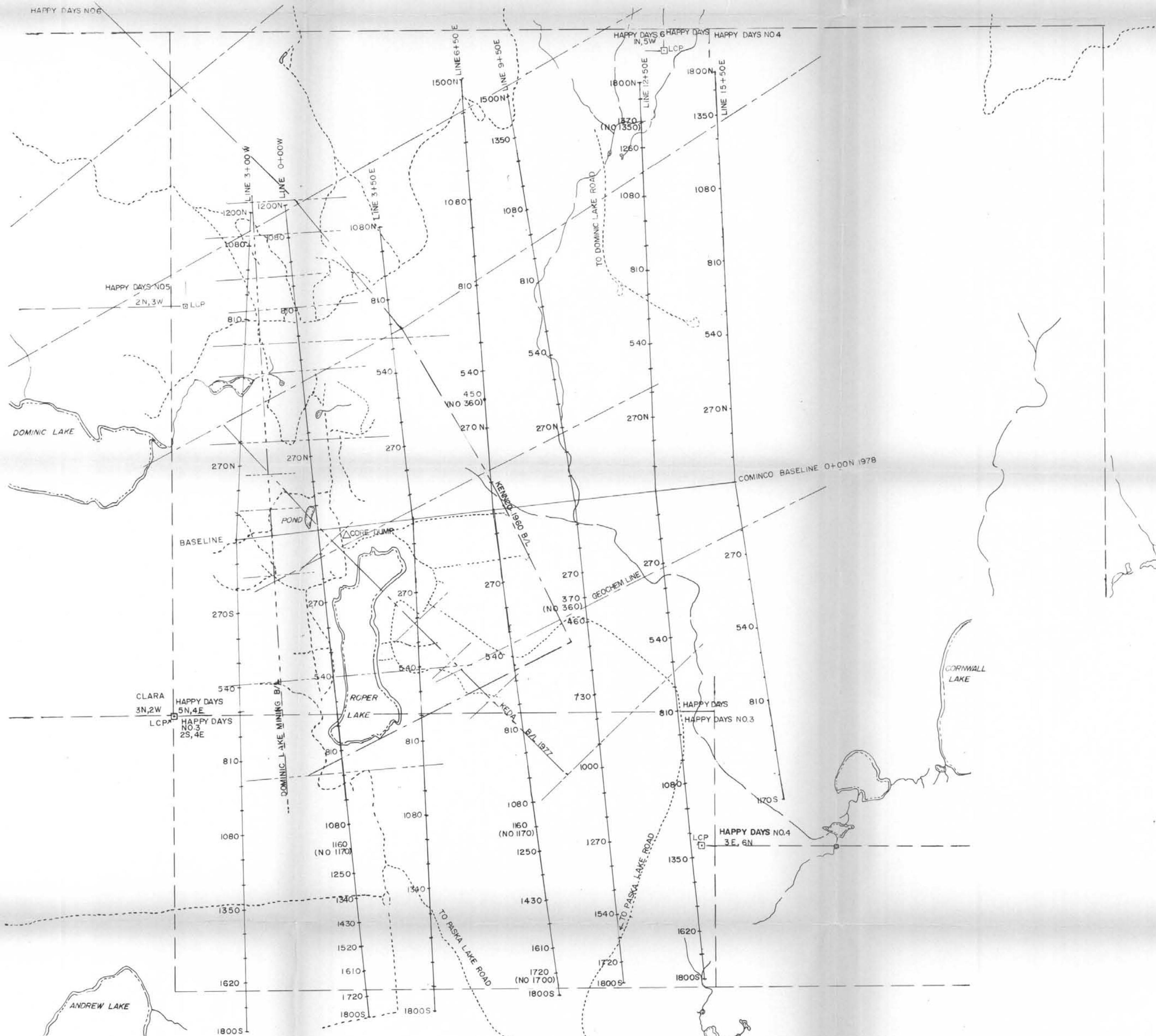
LOCATION MAP

Scale 1:250,000

Date DEC 1978

Plate 145-78-1

MAGNETIC
23°



- 1978 GEOPHYSICS GROUND GRID
- KENNCO 1960 GRID
- KEDA 1977 GRID
- DOMINIC LAKE MINING - REF GAVIN DIRON, 1976 GRID
- LAKE, POND
- CREEKS
- ROADS, TRAILS
- LEGAL CORNER POST
- CORE DUMP
- APPROXIMATE LOCATION OF THE CLAIM BOUNDARY

0 100 200 300 400 500
METRES

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
7052
NO.

ROPER LAKE PROPERTY		HAPPY DAYS CLAIMS	
Drawn by:	Traced by:	Revised by:	Date:
CLAIM MAP			
KAMLOOPS M.D., B.C.			
Scale: 1:10000	Date: OCT 1978	Plate: 145-78-2	FORM 210 0660

The figure displays three geological logs, labeled S-1, S-2, and S-3, arranged horizontally. Each log consists of two main parts: the top part shows 'Apparent Resistivity' and the bottom part shows 'Apparent Charge'. The logs are plotted against a common vertical axis representing depth, indicated by tick marks at the bottom.

Top Row (Apparent Resistivity):

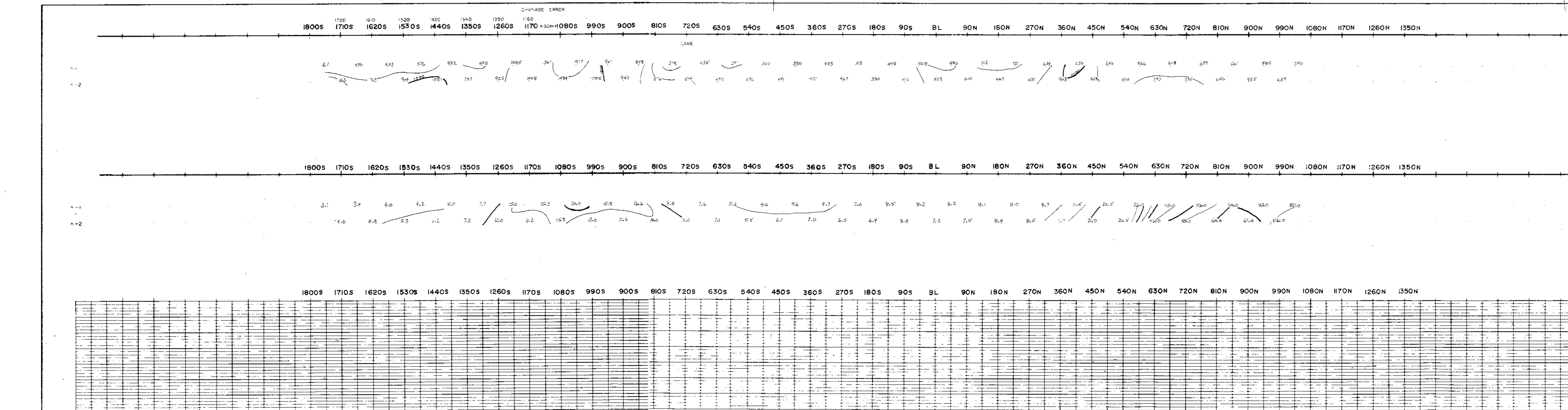
- S-1:** Labeled with values from 1800s to 1350N. Key features include a prominent peak at 1800s (value ~537), a dip at 1710s (~503), a rise at 1620s (~581), a dip at 1530s (~532), a rise at 1440s (~627), a dip at 1350s (~652), a rise at 1260s (~682), a dip at 1170s (~610), a rise at 1080s (~713), a dip at 990s (~605), a rise at 900s (~720), a dip at 810s (~601), a rise at 720s (~624), a dip at 630s (~603), a rise at 540s (~627), a dip at 450s (~605), a rise at 360s (~624), a dip at 270s (~603), a rise at 180s (~624), a dip at 90s (~603), and a baseline (BL).
- S-2:** Labeled with values from 1800s to 1350N. Key features include a peak at 1800s (~537), a dip at 1710s (~503), a rise at 1620s (~581), a dip at 1530s (~532), a rise at 1440s (~627), a dip at 1350s (~652), a rise at 1260s (~682), a dip at 1170s (~610), a rise at 1080s (~713), a dip at 990s (~605), a rise at 900s (~720), a dip at 810s (~601), a rise at 720s (~624), a dip at 630s (~603), a rise at 540s (~627), a dip at 450s (~605), a rise at 360s (~624), a dip at 270s (~603), a rise at 180s (~624), a dip at 90s (~603), and a baseline (BL).
- S-3:** Labeled with values from 1800s to 1350N. Key features include a peak at 1800s (~537), a dip at 1710s (~503), a rise at 1620s (~581), a dip at 1530s (~532), a rise at 1440s (~627), a dip at 1350s (~652), a rise at 1260s (~682), a dip at 1170s (~610), a rise at 1080s (~713), a dip at 990s (~605), a rise at 900s (~720), a dip at 810s (~601), a rise at 720s (~624), a dip at 630s (~603), a rise at 540s (~627), a dip at 450s (~605), a rise at 360s (~624), a dip at 270s (~603), a rise at 180s (~624), a dip at 90s (~603), and a baseline (BL).

Bottom Row (Apparent Charge):

- S-1:** Labeled with values from 1800s to 1350N. Key features include a peak at 1800s (~5.1), a dip at 1710s (~5.1), a rise at 1620s (~5.5), a dip at 1530s (~4.3), a rise at 1440s (~3.1), a dip at 1350s (~3.4), a rise at 1260s (~6.5), a dip at 1170s (~7.0), a rise at 1080s (~6.0), a dip at 990s (~7.0), a rise at 900s (~9.5), a dip at 810s (~8.0), a rise at 720s (~8.9), a dip at 630s (~4.5), a rise at 540s (~15.6), a dip at 450s (~10.0), a rise at 360s (~10.0), a dip at 270s (~8.5), a rise at 180s (~10.0), a dip at 90s (~8.5), and a baseline (BL).
- S-2:** Labeled with values from 1800s to 1350N. Key features include a peak at 1800s (~5.1), a dip at 1710s (~5.1), a rise at 1620s (~5.5), a dip at 1530s (~4.3), a rise at 1440s (~3.1), a dip at 1350s (~3.4), a rise at 1260s (~6.5), a dip at 1170s (~7.0), a rise at 1080s (~6.0), a dip at 990s (~7.0), a rise at 900s (~9.5), a dip at 810s (~8.0), a rise at 720s (~8.9), a dip at 630s (~12.5), a rise at 540s (~30.0), a dip at 450s (~12.5), a rise at 360s (~30.0), a dip at 270s (~30.0), a rise at 180s (~30.0), a dip at 90s (~30.0), and a baseline (BL).
- S-3:** Labeled with values from 1800s to 1350N. Key features include a peak at 1800s (~5.1), a dip at 1710s (~5.1), a rise at 1620s (~5.5), a dip at 1530s (~4.3), a rise at 1440s (~3.1), a dip at 1350s (~3.4), a rise at 1260s (~6.5), a dip at 1170s (~7.0), a rise at 1080s (~6.0), a dip at 990s (~7.0), a rise at 900s (~9.5), a dip at 810s (~8.0), a rise at 720s (~8.9), a dip at 630s (~4.5), a rise at 540s (~15.6), a dip at 450s (~10.0), a rise at 360s (~10.0), a dip at 270s (~8.5), a rise at 180s (~10.0), a dip at 90s (~8.5), and a baseline (BL).

Depth Columns:

- S-1:** Depth values range from 0 to 1000 meters, with labels at 0, 200, 400, 600, 800, and 1000.
- S-2:** Depth values range from 0 to 1000 meters, with labels at 0, 200, 400, 600, 800, and 1000.
- S-3:** Depth values range from 0 to 1000 meters, with labels at 0, 200, 400, 600, 800, and 1000.



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

LINE NO. 0+00BL

POLE-DIPOLE

ELECTRODE CONFIGURATION



X = 90m

PLOTTING POINT
 $n = 1/2$

CURRENT ELECTRODE SOUTH OF POTENTIAL DIPOLE

DATE SURVEYED JULY 8, 1978

CONTOUR INTERVALS:

APP RES - LOGARITHMIC SCALES

APP CHARG - 5.0 mV

APPROVED

DATE

MINIMUM SURVEY DISTANCE

TRANSMITTER - HUNTEC 7.5 Km

RECEIVER - IPR 8

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

7052

	CHIANAGE ERROR	Apparent Resistivity $\int \rho$
800S	1720	800
170S	620S	1520
530S	1440S	1430
1350S	1340	1340
1260S	1250	1250
1170S	1160	1160
1080S	1080S	1080S
990S	990S	990S
900S	900S	900S
810S	810S	810S
720S	720S	720S
630S	630S	630S
540S	540S	540S
450S	450S	450S
360S	360S	360S
270S	270S	270S
180S	180S	180S
90N	90N	90N
80N	80N	80N
70N	70N	70N
60N	60N	60N
50N	50N	50N
40N	40N	40N
30N	30N	30N
20N	20N	20N
10N	10N	10N
SIGN	SIGN	SIGN
900N	900N	900N
800N	800N	800N
700N	700N	700N
600N	600N	600N
500N	500N	500N
400N	400N	400N
300N	300N	300N
200N	200N	200N
100N	100N	100N

155 92-110 200 NO 145-28-5

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

ME NO 3

1974-1975 - NF 6487-15

CURRENT ELECTRODE SOUTH : POTENTIAL

$$A^{(n)} = \{x \in \mathbb{R}^n : x_i \geq 0, \forall i\}$$

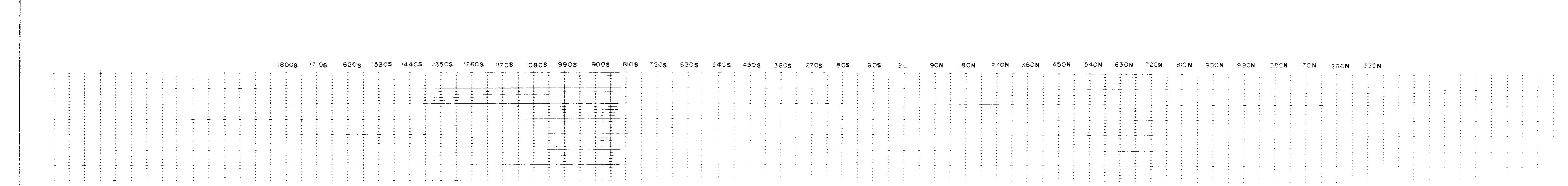
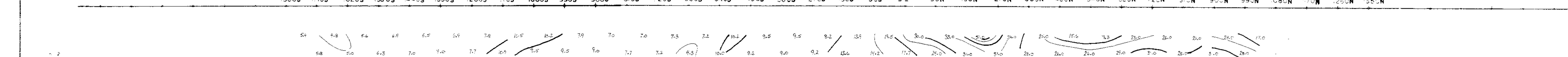
WEEKLY INTERVAL

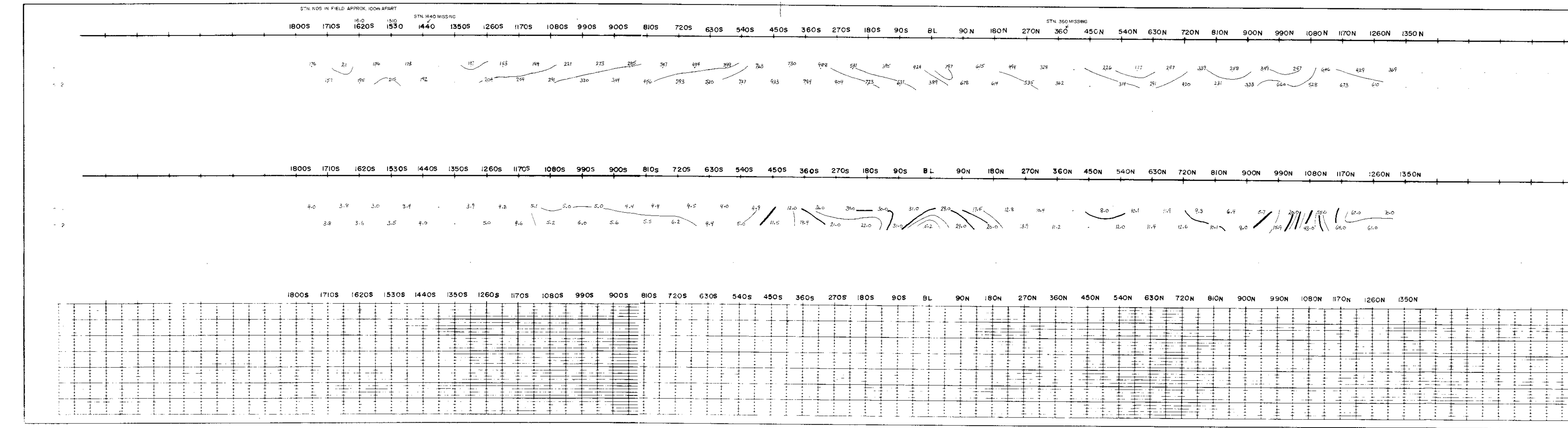
LOGARITHMIC sum

10. The following table shows the number of hours worked by 1000 employees in a company.

100-1000 mg/day of ibuprofen or naproxen may be used as an alternative to aspirin.

• 1990 • 1991 • 1992 • 1993 • 1994 • 1995 • 1996 • 1997 • 1998





N T S - 92-1-10

DWG NO. 145-78-6

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

LINE NO. 6+50E

POLE-DIPOLE

ELECTRODE CONFIGURATION

Hx1/2 + - x - x -

P1 P2

PLOTTING POINT

n-2

APPARENT CHARGEABILITY M_a

1800S 1710S 1620S 1530S 1440S 1350S 1260S 1170S 1080S 990S 900S 810S 720S 630S 540S 450S 360S 270S 180S 90S BL 90N 180N 270N 360N 450N 540N 630N 720N 810N 900N 990N 1080N 1170N 1260N 1350N

CONTOUR INTERVALS

APP. RES. - 1000m apart
APP. CHARG. - 5 mV

DATE SURVEYED JULY 9, 1978

APPROVED - AJ

DATE - 1978

TRANSMITTER - HUNTEC 7.5 Km

RECEIVER - IPR 8

INDUCED POLARIZATION AND RESISTIVITY SURVEY

SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

7052

NTS - 92-1-10

DWG NO - 145-78-7

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

LINE NO. 9+50E

POLE DIPOLE

ELECTRODE CONFIGURATION

EXVR + X P1 + X P2

X - X

X - X

X - X

X - X

X - X

X - X

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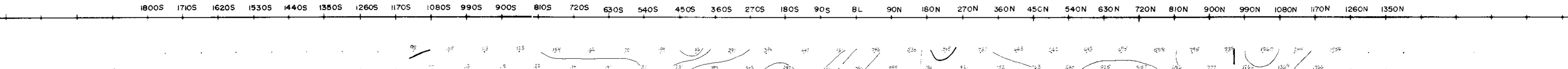
X - X

X - X

X - X

- 93 - 1-10

DWG. NO - 14



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

LINE NO. 1

800

ELECTRODE

$\text{X12} + \text{X}$

∞ ——— (..) n

X = 3.05

π 2

Figure 1. The effect of the number of training samples on the performance of the proposed model.

00-114 116 1001 021

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CONTOL R INTERVALS

APP. RES. = LOGARITHMIC LOG.

APP CHARG = 5.0 MV/V

29

—
—
—

TRANSMITTER - HUNTEC 75 Km

EXCELENCE

Digitized by srujanika@gmail.com

INDUCED POLARIZATION AND

SURVEYED BY COMINCO LTD.

The figure consists of a 4x6 grid of panels, each representing a different atmospheric variable. The columns represent time periods: 1800S, 1710S, 1620S, 1530S, 1440S, 1350S, 1260S, 1170S, 1080S, 990S, 900S, 810S, 720S, 630S, 540S, 450S, 360S, 270S, 180S, 90S, 270N, 360N, 450N, 540N, 630N, 720N, 810N, 900N, 990N, 1080N, 1170N, 1260N, and 1350N. The rows represent spatial coordinates: BL, 90N, 180N, 270N, 360N, 450N, 540N, 630N, 720N, 810N, 900N, 990N, 1080N, 1170N, 1260N, and 1350N.