

COMBINED EM AND MAGNETOMETER SURVEY
SCOTCH GROUP OF MINERAL CLAIMS
KAMLOOPS MINING DIVISION

NTS 82L/14W
82L/13#
LAT. 50° 57'
LONG. 119° 30'

OWNER: Kenneth L. Daughtry
Brican Resources N.P.L.

OPERATOR: Esso Resources Canada Limited
314-1281 West Georgia Street
Vancouver, B.C.

by

Lloyd Wilson
Esso Resources Canada Limited
2300 Young Street
Toronto, Ontario

November 21, 1979

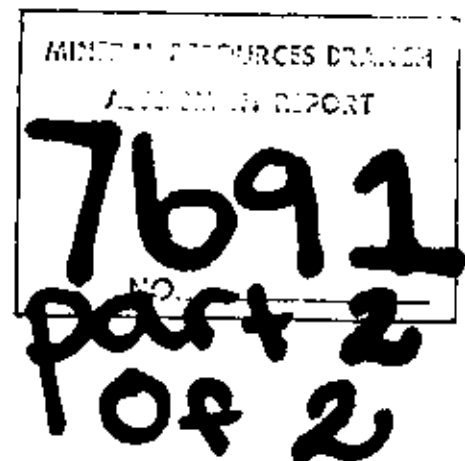


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DETAIL Horizontal Loop EM Survey (L3E, L4E)	In Pocket
Magnetometer Survey (data)	In Pocket
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Property Map	In Pocket

General Introduction

The Scotch Group of mineral claims is located near the community of Scotch Creek, B.C. in the valley of Corning Creek. A combined EM and magnetometer survey was undertaken on these claims in 1979.

(1) Property

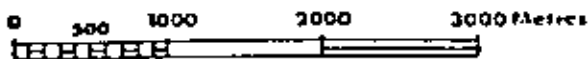
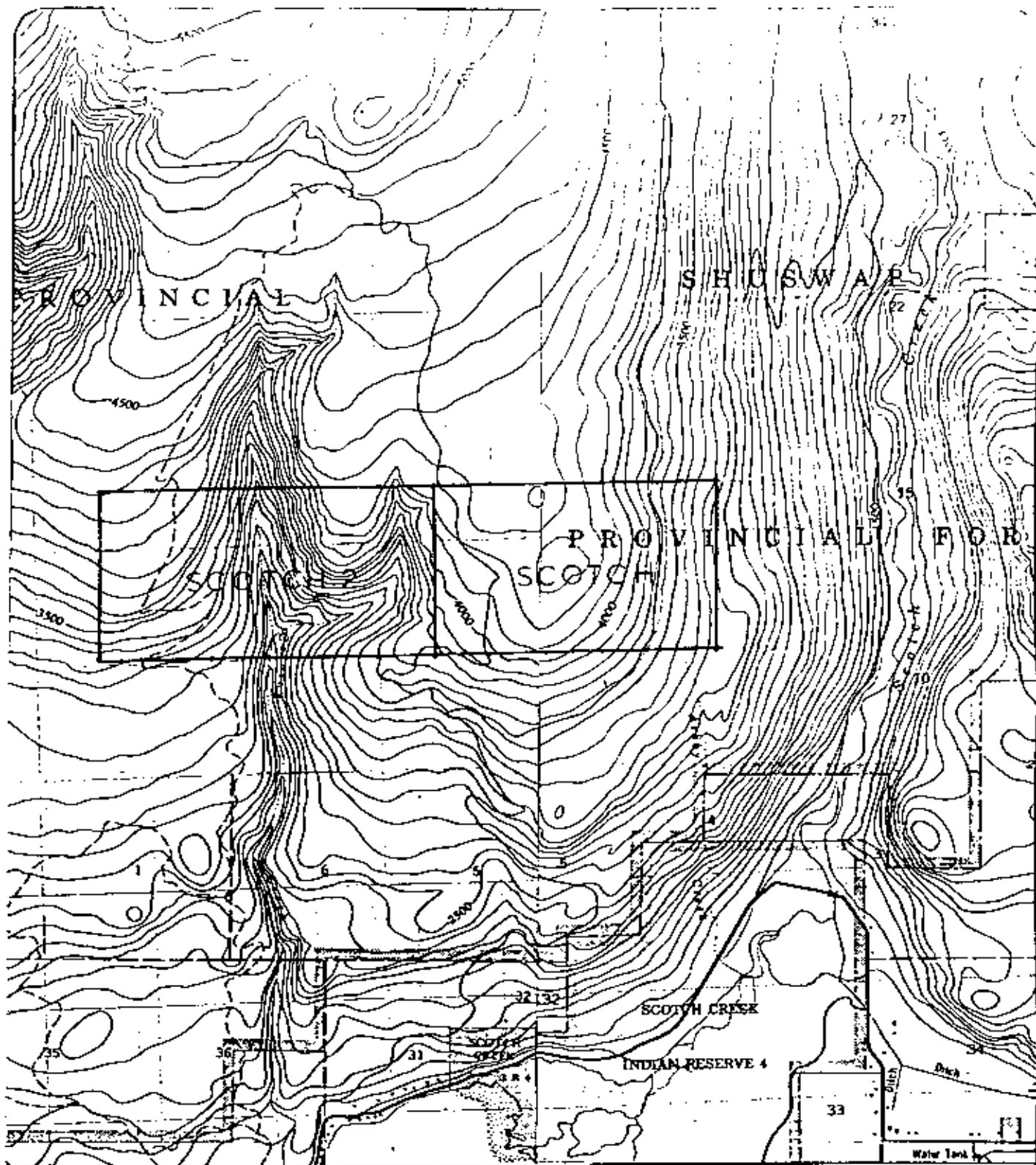
Claim	Record No.	No. of Units
Scotch	371	15
Scotch 2	1587	18

(2) Work Done

A 42.3 kilometer grid was contracted to Scope Exploration Services covering the Scotch and Scotch 2 claims. This work was carried out between May 15 and June 7, 1979. A Max Min II horizontal Loop EM survey was conducted between June 14 and June 22, 1979. A magnetometer survey was carried out between June 17 and June 22. The geophysics party chief was Gordon Cooper.

(3) History

The Scotch property was originally staked in the early 1970's during a regional silt geochem reconnaissance program operated by Derry Michener and Booth. Their program had located anomalous copper in silt values in Corning Creek and tributaries on the east side of Scotch Creek. Follow up from this program located zones of heavy pyrrhotite and sparse chalcopyrite mineralization disseminated in schists, by diamond drilling in the area presently covered by the Scotch claim. Various companies have explored the property since that time. Esso Resources Canada Limited optioned the property in 1979.



IMPERIAL OIL LIMITED — MINERALS

INDEX MAP

Project No. _____
 Mining Division Kamloops
 Latitude _____
 Longitude _____
 NTS 82 L/13 82 L/14
 To Accompany a Report By
Lloyd Wilson
 Dated May 21/79
 Map No. _____

PURPOSE OF SURVEY

The purpose of the survey was to assess a number of airborne anomalies occurring along a belt of favourable host rocks (Eagle Bay Formation).

INTRODUCTION

In July of 1979 a total of 41 kilometres of horizontal loop EM and 35 kilometres of proton precession magnetometer profiling was carried out over the Scotch Grid, Shuswap Lake area, British Columbia by Esso Minerals Canada.

Details of the equipment, survey procedures and data reduction form a part of this Appendix.

INTERPRETATION

HORIZONTAL LOOP EM SURVEY (Map #10, 134)

The horizontal loop EM survey results indicate a broad zone of anomalous conductivity extending from east to west across the southern portion of the Scotch grid corresponding to an area that has been mapped as graphitic argillites and thinly bedded limestones of the Sicamous Formation.

Variations in the conductivity and/or width of the conductors from line to line create problems in determining the continuity or strike direction. There are indications that those anomalous responses outlined as Zones P, R and T in the southwest portion of the survey area may in fact be part of the same conductive band or zone of graphitic material. Another example is Zones O, Q, S and U.

The broad, anomalous EM responses within the area defined as Sicamous Formation are probably related to thin, closely spaced bands of graphitic material (for example, Zones C, D, F, M, P and R).

In general the conductors within this area show poor to moderate conductivity as evidenced by the fact that the out-of-phase readings are equal to or greater than the in-phase readings. However, the very strong amplitude responses indicate that these conductors are very shallow and in many cases probably outcropping.

Zones J, K and L (Lines 16W to 20W, 1+00S to 4+50S) appear to be at or near the contact between the Sicamous Formation and volcanics of the Eagle Bay Formation. These zones show poor conductivity with maximum strike length of 200 to 400 metres. The low amplitude responses possibly indicate that these conductors are either weaker or deeper than those outlined within the Sicamous Formation to the south.

Zones V, W and X occur within an area mapped as Eagle Bay Formation and may be of interest. However, there is no outcrop in this area and the indicated contact between the Eagle Bay and Sicamous Formations is questionable. Zone W, which appears to be the strongest of these conductors, has a moderately strong response on Line 24E and is open to the east.

MAGNETOMETER SURVEY (Map #10, 135)

The proton precession magnetometer survey data for the Scotch grid has been corrected for the assumed mean Geomagnetic field strength in the area (58,000 gammas) and the residual data contoured at an interval of 200 gammas.

Over half of the contoured map is rather featureless and there is no indication of a consistent magnetic horizon to assist in distinguishing volcanics of the Eagle Bay Formation from graphitic argillites of the Sicamous Formation, both of which are mapped in the survey area.

Numerous isolated one-station anomalies of 200-400 gammas intensity, with no certain strike direction, are indicated. The positive linear magnetic features extending from Line 12W to 14W, 4+50S to 6+50S may be caused by either weakly magnetic dykes or lenses within the Eagle Bay Formation.

In the southeast corner of the survey area, several parallel, dyke-like features occur along an interpreted magnetic horizon within the Sicamous Formation. These magnetic features generally strike east-west. However a change in strike direction (to the northeast) is indicated in the vicinity of Lines 14E to 20E.

The positive magnetic features outlined by this survey have no coincident electromagnetic responses and are probably caused by magnetite bearing dykes in the area.

EQUIPMENT AND DATA REDUCTION

ELECTROMAGNETIC SURVEY

The survey was carried out with an Apex Parametrics Max Min II Electromagnetic system using the horizontal loop configuration. This "configuration" consists of two loops, in the horizontal plane, connected by a cable which delivers a reference signal from the transmitter loop to the receiver loop and also provides a fixed separation.

A primary electromagnetic field is generated by the transmitter loop. In the absence of a conductor, this field induces in the receiver loop a voltage identical to that of the primary field. If a conductor is located between the loops, eddy currents are established producing a secondary field in the area of the conductor. The resultant electromagnetic field existing at the receiver is a vector addition of the primary field and the secondary field. The primary, or reference field is electronically removed and the remaining secondary field is separated into an "in-phase" component at 0° or 180° to the primary and a second component oriented at 90° or 270° to the primary field so that it is "out-of-phase". These two components are then expressed as a percent of the primary field strength.

Both the in-phase and out-of-phase components are read at the receiver for a predetermined frequency or frequencies. For a particular frequency, a measure of apparent conductivity (σ') is given by the ratio of the in-phase to out-of-phase components. Poor conductors are characterized by ratios much less than 1, fair to good conductors are around 1, while the excellent conductors will show a ratio greater than 1.

The horizontal loop EM survey results for the Scotch Grid, Shuswap Project, were obtained using a cable separation of 100 metres and a transmitter frequency of 1777 Hz. Readings were taken at 25 metre intervals along lines spaced 200 metres apart. The data is plotted at a horizontal scale of 1:5000 and a vertical scale of 1 cm = 10% of primary field strength.

Three lines - 2W, 4W and 8S - were detailed using a smaller cable separation of 50 metres and transmitter frequency of 1777 Hz. These results are plotted at a horizontal scale of 1:2500 and a vertical scale of 1 cm = 10% of primary field strength.

MAGNETOMETER SURVEY

A Geometrics C-816 portable proton precession magnetometer was used. This instrument digitally displays the total magnetic field strength by measuring the frequency at which protons (hydrogen nuclei) precess about the prevalent earth's magnetic field. The precession frequency is directly proportional to the total magnetic field strength at the point of measurement. Sensitivities of + 1.0 gamma can be achieved with this magnetometer.

Time variations of the magnetic field (diurnal) were obtained by repeated readings at base stations established within the survey area. The base station values were then fixed and any time variations of the magnetic field along the traverse lines were linearly distributed by tying in to one or more of the base stations at the end of each traverse. These linearly distributed variations in the traverse station values were then removed from the field data.

Magnetometer readings for the Scotch Grid were taken at 25 metre intervals along lines spaced 200 metres apart. The data is presented in plan form at a horizontal scale of 1:5000 and contoured at 200 gamma intervals.

COMBINED EM AND MAGNETOMETER SURVEY
SCOTCH GRID
SHUSWAP PROSPECT, B.C.

CONCLUSIONS AND RECOMMENDATIONS

The horizontal loop EM survey results (Map #10, 134) indicate a broad zone of anomalous conductivity extending across the southern portion of the Scotch grid. This area is mapped as Sicanous Formation consisting of graphitic argillites and thinly bedded limestones. The anomalous EM responses in this area are probably related to bands of graphitic material within the Sicanous Formation and as such are not exploration targets.

Further surface investigation and geological mapping may be warranted in the vicinity of Zones J, K and L on Lines 16W to 20W and Zones V, W and X on Lines 20E to 24E to determine the significance of these conductors as they may be caused by sulphide mineralization within volcanics of the Eagle Bay Formation.

Loyal M. Wilson

COST STATEMENT

Linecutting	
42.3 kms @ \$290.43/km	\$12,285.00
Geophysics Surveys	
Geophysicist - 11 man days @ \$75/day	825.00
Helper - 16 man days @ \$50/day	800.00
Instrument Rental	
Max Min EM Unit	600.00
Magnetometer	350.00
Truck Rental	
14 days @ \$30.00	420.00
Supervision and Report Preparation	<u>325.00</u>
TOTAL	\$15,605.00

Alfred Stewart

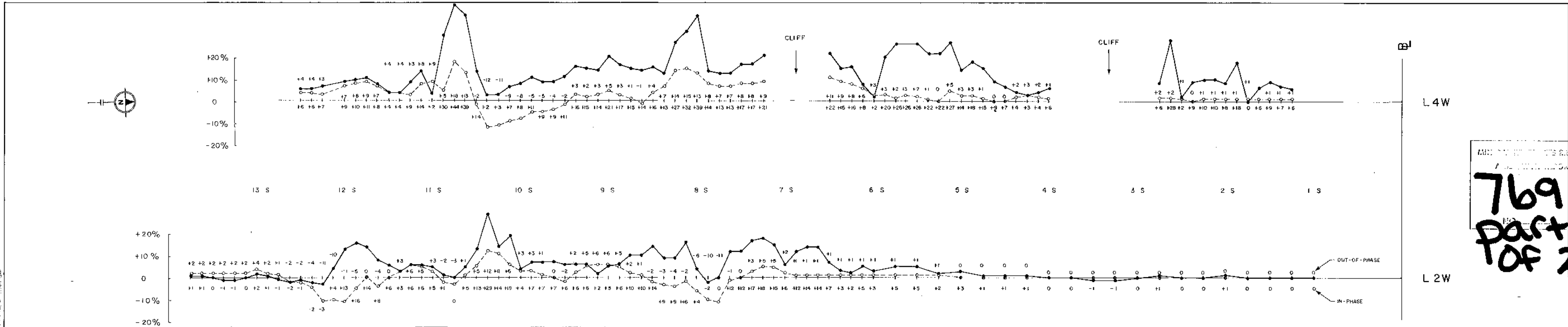
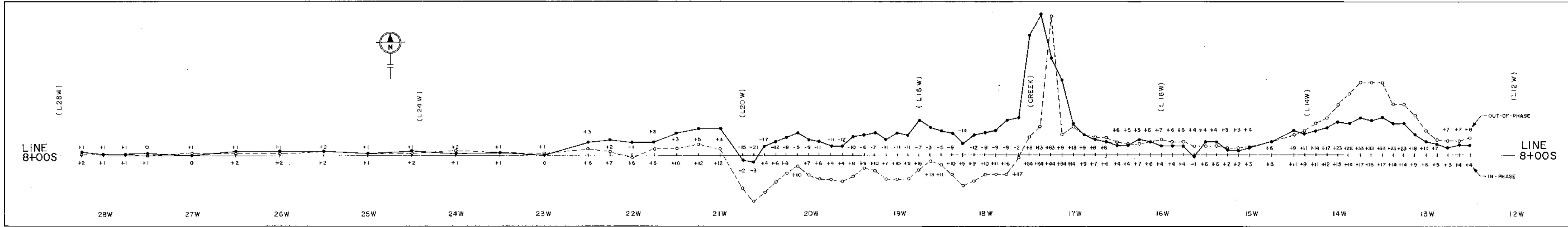
ABOUT THE AUTHOR

Lloyd M. Wilson attended Memorial University of Newfoundland between 1966 and 1971, graduating with a B.A. (Honors) degree in Mathematics. From May, 1971 to October, 1973, Mr. Wilson worked full-time in oil and gas exploration for Amoco Canada Petroleum Co. Ltd. in Calgary, Alberta, specializing in gravity, magnetics and seismic methods. Since then he has had over four and a half years of experience as a mineral exploration geophysicist. For the past one and a half years he has been in charge of geophysical field activities and training of summer personnel for Esso Minerals Canada. He is a member of the Society of Exploration Geophysicists and the Prospectors and Developers Association.

Lloyd M. Wilson

WILLIAM GORDON COOPER, PARTY CHIEF

Mr. Gordon Cooper is currently a student at the University of Waterloo in Ontario where he is completing the requirements for his B.Sc. in Earth Sciences, and will be graduating in December of 1979. Mr. Cooper has worked for Esso Minerals Canada for the past four years during the summer field season. In the past two years he has been acting as geophysical party chief conducting gravity, I.P. and E.M. surveys throughout all of Canada.



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 of 2

DETAIL

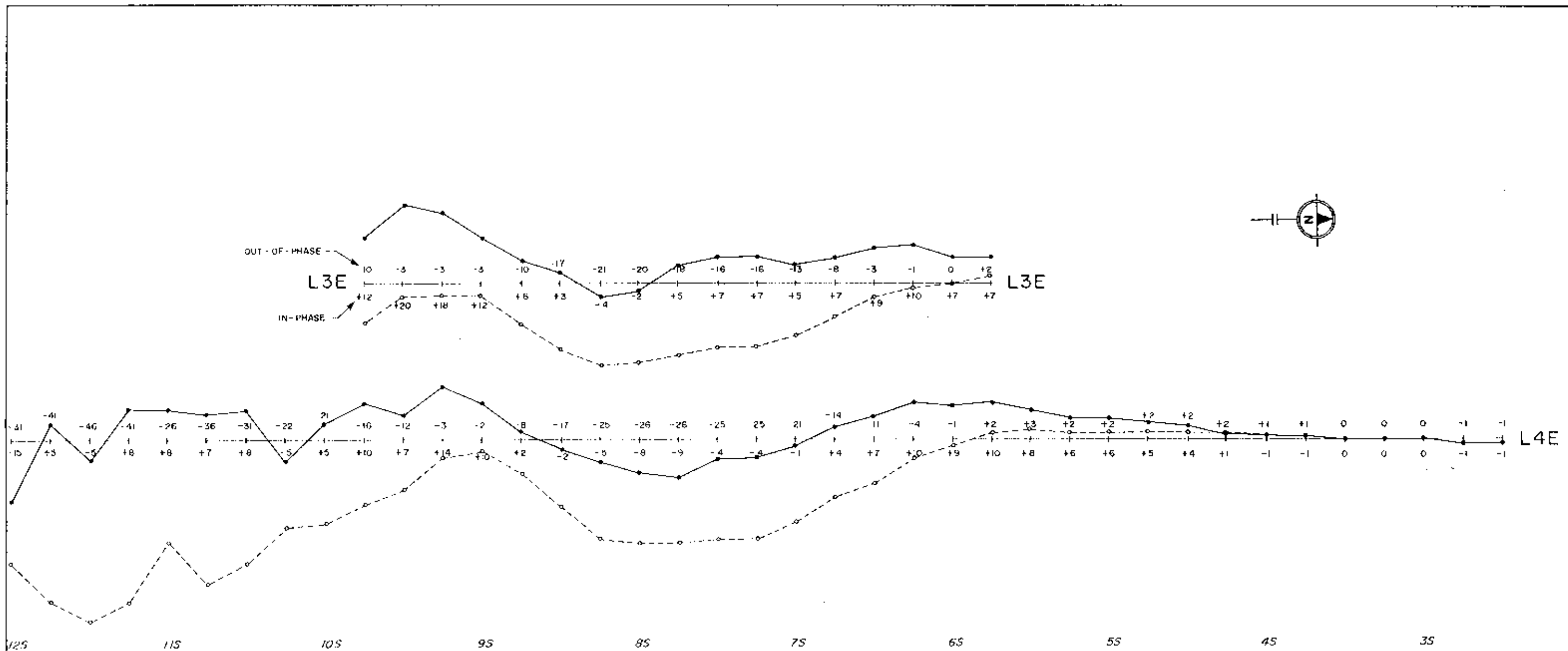
ESSO MINERALS CANADA
 DIVISION OF ESSO RESOURCES CANADA LIMITED

PROSPECT
SHUSWAP PROJECT
 BRITISH COLUMBIA
 HORIZONTAL LOOP EM SURVEY
 SCOTCH GRID

ACCOUNT No 02-025-320 File No B.C. 28 TORONTO
 2178-901

AUTHOR L. WILSON NTS B2-L-14 DATE NOV 1973 DWG No 10-1756


SCALE 100 125 150 175
 METRES

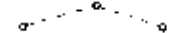


MINERAL RESOURCES CANADA
 TECHNICAL REPORT
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 NO. 1
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LEGEND

FREQUENCY 1777 Hz
 CABLE SEPARATION 200 m
 HORIZONTAL SCALE 1 cm = 25 m
 VERTICAL SCALE 1 cm = 10%

IN-PHASE 

OUT-OF-PHASE 

DETAIL

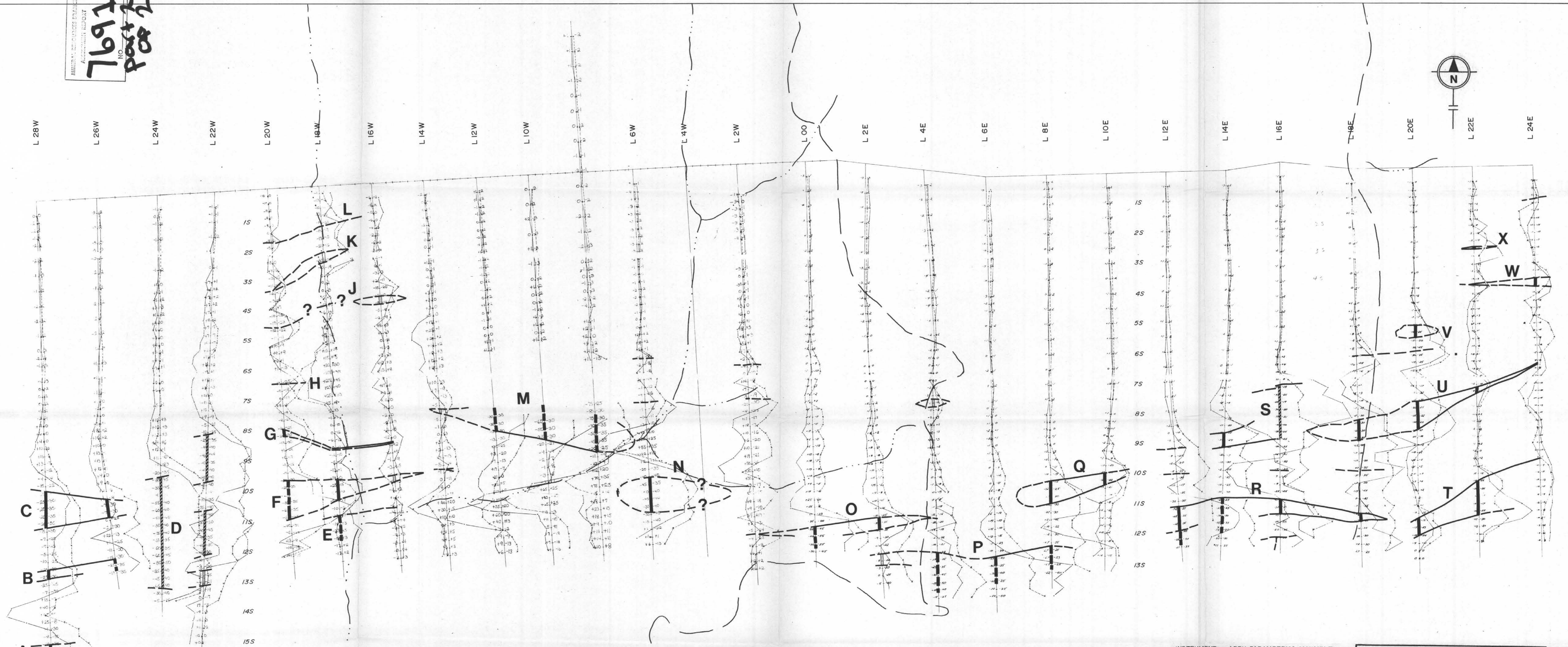
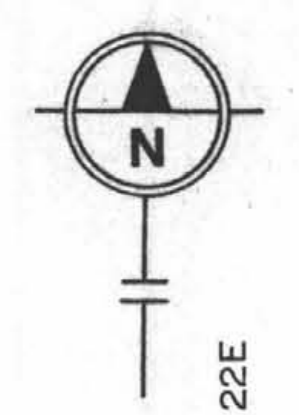
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 DIVISION OF ESSO RESOURCES CANADA LIMITED

PROJ. No. 1
SHUSWAP PROJECT
 BRITISH COLUMBIA
 HORIZONTAL LOOP SURVEY
 SCOTCH GRID

ACCOUNT No. 02 075 420 FILE No. B.C. 28 TYPING 10
 228-901
 L. WILSON WFS 82 L14 DATE NOV 1975 DRAWING No. 10.138
 AUTH'D BY G. COOPER

0 25 50 75 100 METERS

MINERAL RESOURCES BRANCH
 ATTACHMENT REPORT
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 Page 2



INSTRUMENT: APEX PARAMETRICS MAXMIN II
 FREQUENCY: 1777 HZ
 TX-RX SEPARATION: 100 METRES
 ——— IN PHASE COMPONENT
 - - - - - OUT OF PHASE COMPONENT
 ——— IP/OP
 20
 0
 -20
 % OF PRIMARY EM FIELD
 100 200 300 METRES
 ——— DEFINITE ANOMALY
 - - - - - POSSIBLE ANOMALY
 ===== MULTIPLE ANOMALY

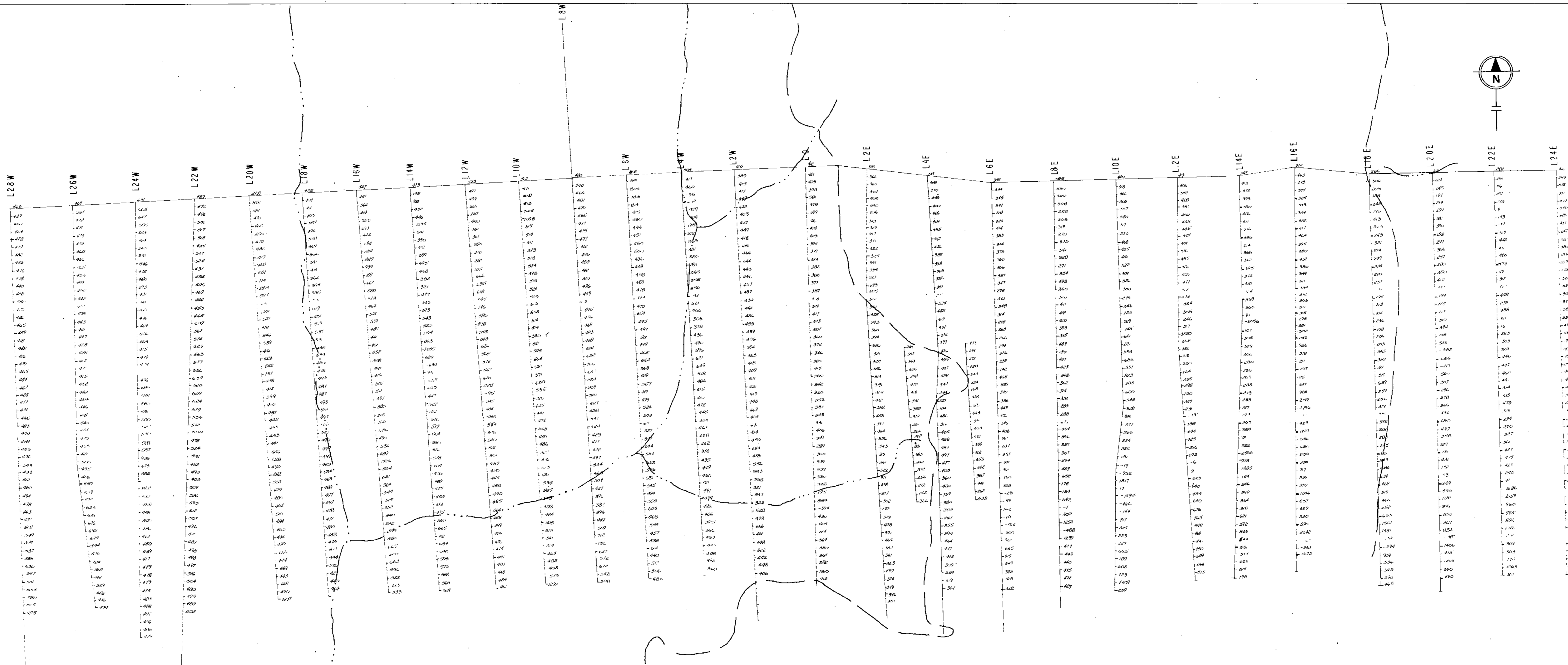
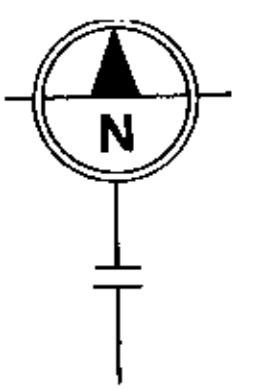
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 DIVISION OF ESSO RESOURCES CANADA LIMITED

PROSPECT

SHUSWAP PROJECT
 BRITISH COLUMBIA
 HORIZONTAL LOOP EM
 SURVEY
 SCOTCH GRID

ACCOUNT No. 02-025-420 2128-901	FILE No. B.C. 28	TORONTO
AUTHOR G. COOPER	NTS 82 L 14	DATE NOV 1979
SCALE 1:5000		DWG No. 10,134

0 100 200 300 400 METRES

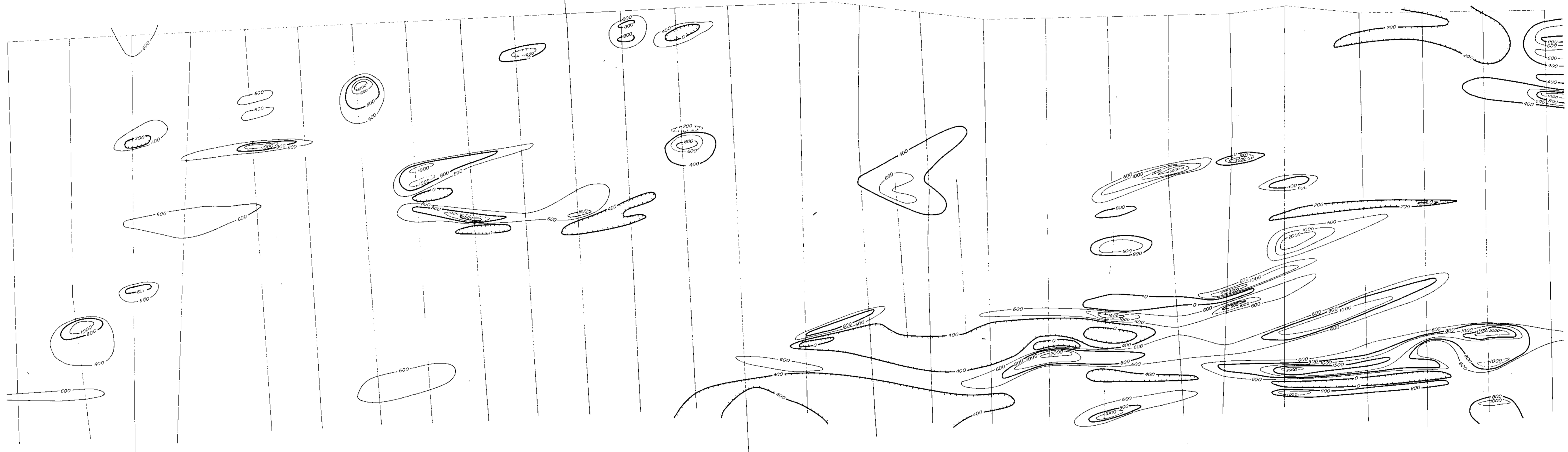
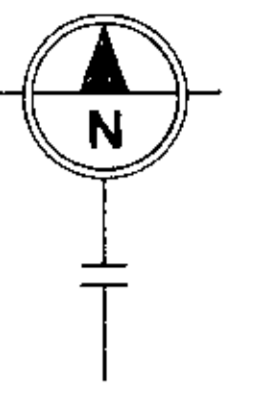


LEGEND
 INSTRUMENT-GEOMETRICS G816 PROTON PRECISION MAGNETOMETER
 SENSITIVITY *10 GAMMAS
 ASSUMED MEAN GEOMAGNETIC FIELD STRENGTH = 58000 G

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 AGREEMENT REPORT
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 OF 2

ESSO MINERALS CANADA DIVISION OF ESSO RESOURCES CANADA LIMITED			
PROSPECT SHUSWAP PROJECT BRITISH COLUMBIA			
MAGNETOMETER SURVEY SCOTCH GRID			
ACCOUNT No. 02-025-420 228-909	FILE No. B.C. 28	TORONTO	
AUTHOR L. WILSON E. COPPER	NTS 82 L 14	DATE NOV 1979	DWG No. 10, 136
SCALE 1:5000 			

28W 26W 24W 22W 20W 18W 16W 14W 12W 10W 8W 6W 4W 2W 0 2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E 24E

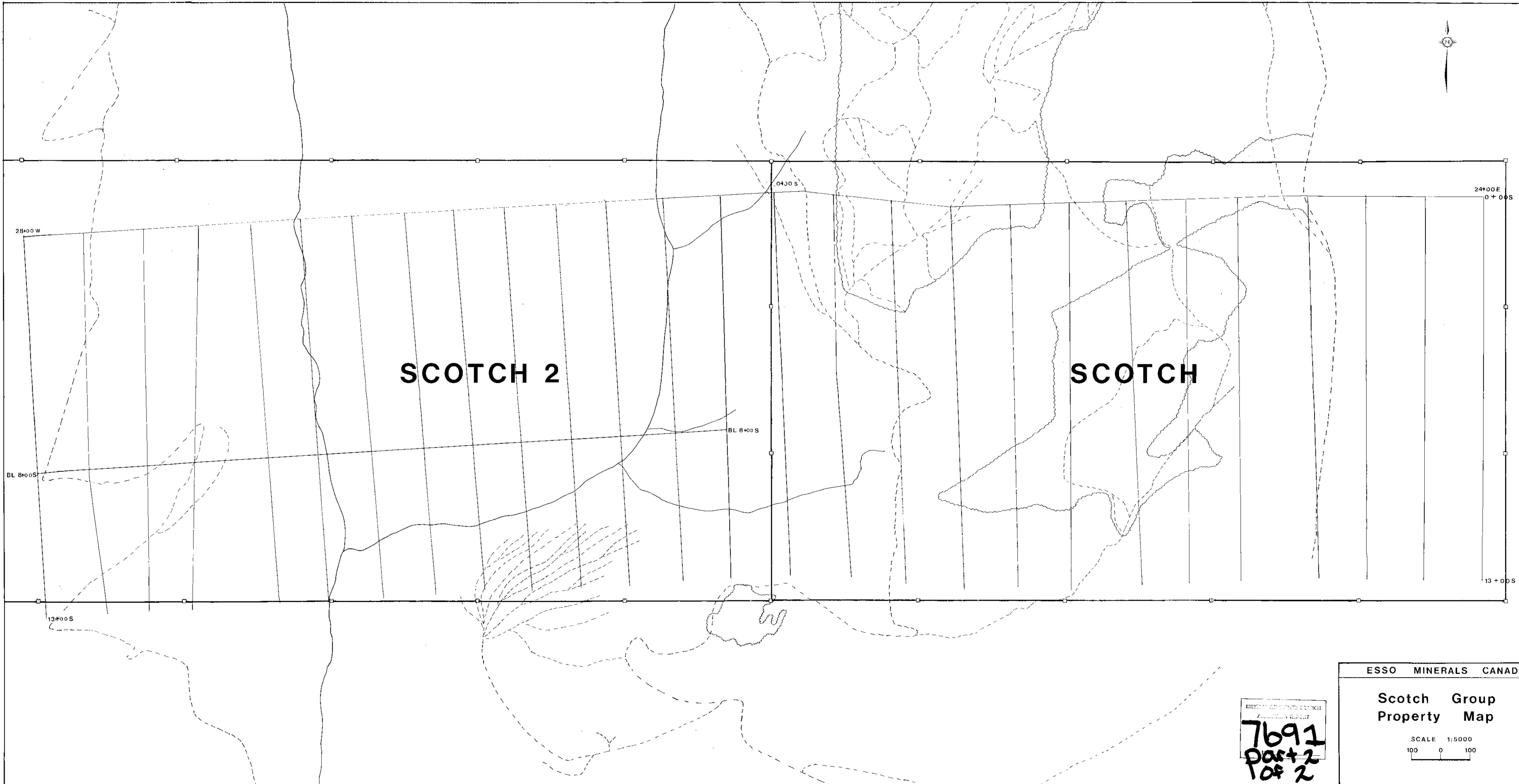
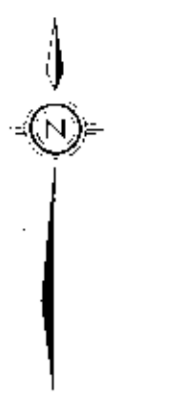


LEGEND

INSTRUMENT - GEOMETRICS G916 PROTON PRECESSION MAGNETOMETER
 SENSITIVITY ± 10 GAMMAS
 ASSUMED MEAN GEOMAGNETIC FIELD STRENGTH = 58000 G
 CONTOUR INTERVAL 200 GAMMAS

ESSO MINERALS CANADA DIVISION OF ESSO RESOURCES CANADA LIMITED			
PROSPECT			
SHUSWAP PROJECT BRITISH COLUMBIA			
MAGNETOMETER SURVEY SCOTCH GRID			
ACCOUNT No. 02 025 420 2129 301	FILE No. B.C. 26	TORONTO	
AUTHOR: SWAN	NTS: 02 L 14	DATE: NOV 1979	DWG. No. 01.35 CONTINUED

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part 2
OF 2



SCOTCH 2

SCOTCH

ESSO MINERALS CANADA

**Scotch Group
Property Map**

SCALE 1:5000

MIRAMINISTOGAN
PROPERTY REPORT
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