Fenton Scott Management Inc.
17 Malabar Place, Don Mills, Ontario M3B 1A4
416-444-1717

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REPORT ON

AIRBORNE GEOPHYSICAL SURVEYS

HEPBURN & SARGENT TOWNSHIPS

ONTARIO

FOR

EASTERN MINES LIMITED

BY

H. FERDERBER GEOPHYSICS

DON MILLS, ONTARIO
NOVEMBER 29, 1986

FENTON SCOTT, P. ENG.

INTRODUCTION

An airborne geophysical survey was carried out over a claim group in Hepburn and Sargent Townships, Cochrane District of Ontario, by H. Ferderber Geophysics.

Data was collected on VLF and magnetometer responses. The survey was flown from a base at Rouyn, Quebec.

PURPOSE OF SURVEY

The survey was designed to provide data which would:

1. Permit an interpretation of geological structures through recording variations in the magnetic mineral content of the formations underlying the areas.

2. Identify potentially economic mineral concentrations which may have marked variations in accessory magnetic minerals.

3. Identify linear structures, such as major shear zones, which may result in current concentrations of VLF signals. Such structures may contain economic minerals, notably precious metals.

4. Identify shallow, potentially valuable metallic sulfide deposits whose lower electrical resistances give resultant secondary VLF - EM fields.

SURVEY AREA

The survey covered a claim block in Hepburn and Sargent Townships, Cochrane District, Ontario. The unpatented mining claims included in the survey are shown in an attached pocket.

EQUIPMENT

The aircraft used in the survey was a Cessna 172 owned and operated by H. Ferderber Geophysics. The sensors for geophysical data were mounted in modified wing tip installations.

Magnetometer The instrument used was a GEM GSM - 18 proton precession type. The sensitivity of the device was set at 2 gammas at a 1 second sampling rate. Analogue profiles were recorded on on-board paper tapes.

VLF - EM System The instrument used was a Herz Totem 2 A. The total field and vertical resultant field was recorded on analogue tape. The line transmitter station for this survey was Cutler, Maine, (NAA) at a frequency of 24.0 kiloherz, with an orthogonal signal also recorded from Seattle, Washington, at a frequency of 24.8 kiloherz.

SURVEY METHOD

The aircraft was flown at a terrain clearance of 300 feet and 500 feet. Navigation concisted of reference to an air mosaic, with manual fiducials recorded on the mosaic simultaneously with the geophysical tapes.

Line directions were North-South, and line spacing was one-twelfth mile (440 feet).

DATA PRESENTATION

Flight lines, fiducial points, and geophysical responses are shown on three sets of maps produced from air photo mosaics at a scale of 1/15, 840 (quarter mile). These maps also show the outlines of the claim group.

Vertical Gradient Magnetic Airborne profiles from surveys at elevations of 300 and 500 feet were compared. The differences between the total field at the two elevations are expressed on the contoured gradient plans with intervals of 0.5, 2.5 and 12.5 nanoteslas per meter.

Magnetic Contour Maps Correction of the areomagnetic data for diurnal variation was by reference to a cross-line. The corrected profiles were then reduced to appropiate field strength intervals, and presented as contours at 20 gamma intervals.

VLF - EM Maps The axes of conductivity were selected on each analogue tape, and transferred to the mosaics with reference to fiducial points. These axes are further discriminated between those conductors showing a variation on total field strength, and those whose position only relates to "crossover" points on the resultant vertical field geometry.

At each conductor axis is shown the "peak to peak" amplitude of the resultant field geometry, together with a measure of the so-called "quadrature" or variable field strength at 90° to the primary field direction.

The descriptive numbers at each conductor intercept are basically a function of the effective length of the responding body, or alternately its distance from the detecting coils. In no case should these measurements be considered to be related to any conductivity-thickness measurements or estimates.

INTERPRETATION OF RESULTS

The dominant magnetic feature is an east-west high crossing the north half of the survey area and ranging from 100 to 2000 nanoteslas above the background of 59,000 nanoteslas. This is interpreted as mafic and ultramafic intrusives associated with the Abitibi Fault Zone.

Three magnetic highs trend east by northeast through the south half of the survey area, These are interpreted as caused by magnetite concentrations in late diabasic gabbro dikes.

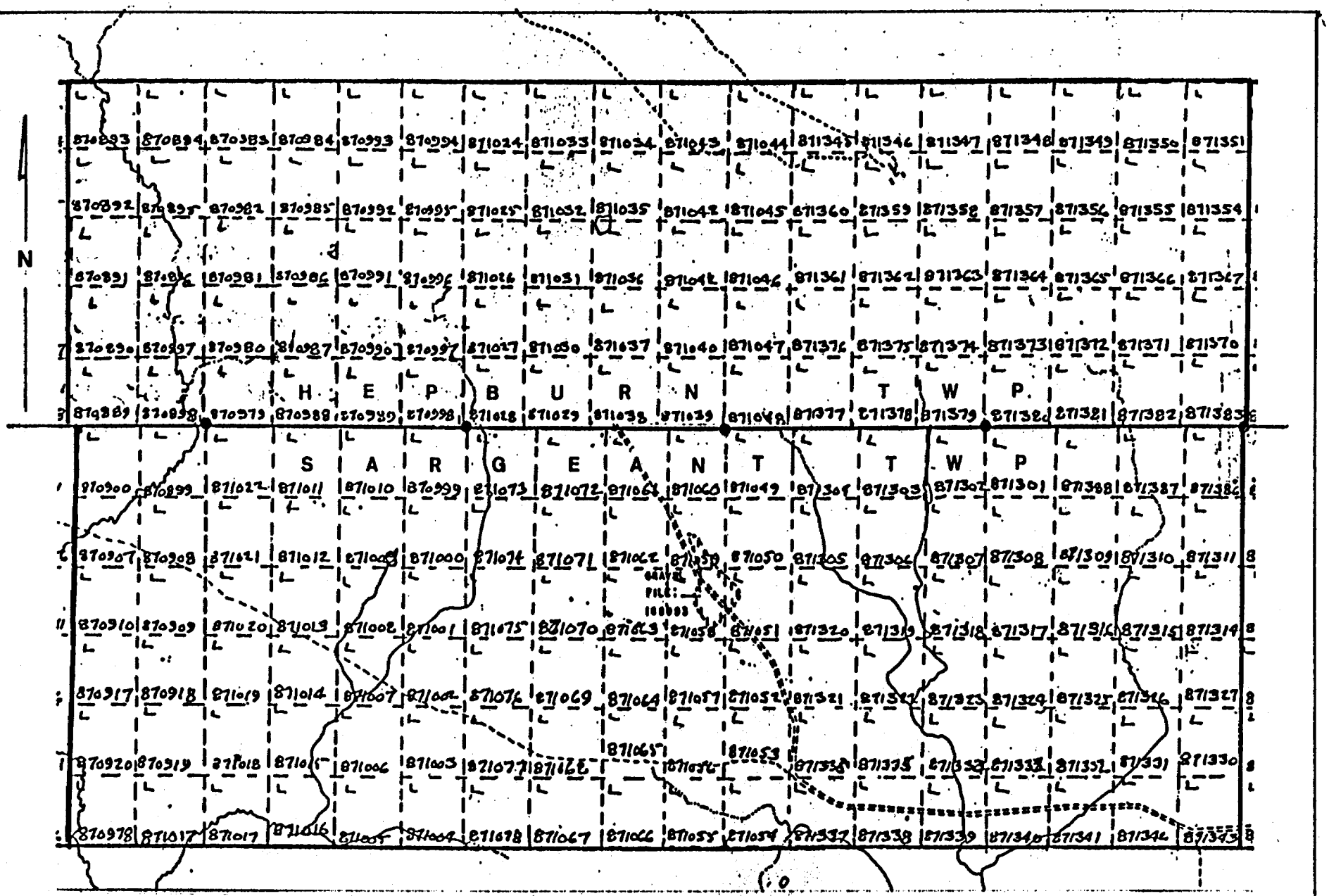
VLF - EM RESULTS

A total of 21 conductor axes were selected from the airborne survey data. Four of these are interpreted as responses to conductor overburden.

The seventeen remaining conductor axes are interpreted as responses to bedrock structures, which may be enhanced by sharp clay overburden "edge" effects.

Some remarks on the various conductor axes follow:

1. Overburden
2. Isolated
3. Overburden
4,5. Bedrock, parallel to stratigraphy
6. Bedrock, parallel to stratigraphy
7. Isolated
8. On north flank of magnetic feature, may be fault
9. On magnetic high
10. Coincides with magnetic high - serpentine?
11. Probable cross structure
12. Bedrock, north flank of magnetic high
13. Overburden
14. Probable cross structure
15. Some structural influence
16. South flank of magnetic feature, on trend with 15
17. Isolated
18. Strong cross structure
19. Isolated
20. Overburden
21. Isolated



NOTES

1. Data from ODM Maps M500 and M582
2. This map to accompany report dated January 20, 1986 by J. F. White

EASTERN MINES LIMITED

CLAIM MAP

Scale 1in. = ½ mi

Ontario Resources

(Geophysical, Geological, Geochemical and Expenditures)

371/86

W8608-371

The Mini

32D13NE0004 2.9589 HEPBURN

900

Type of S

Airbo[illegible] VLF-EM, Total Field and Gradient Mag

Hepburn & Sargeant

Claim Holder(s)

See List

Prospector's Licence No.

See List

Address

C/O Eastern Mines Ltd., Suite 1900, BCED Building, 999 West Hastings Street Vancouver, B.C. V6C 2W2

Survey Company	Date of Survey (from & to)						Total Miles of line Cut
	Day	Mo.	Yr.	Day	Mo.	Yr.	
H. Ferderber Geophysics Ltd.	19	08	86	20	08	86	166

Name and Address of Author (of Geo-Technical report)

F. Scott, 17 Malabar Place, Don Mills, Ontario M3B 1A4

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

RECEIVED

SEP 17 1986

MINING LANDS SECTION

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	34
	Magnetometer	46
	Radiometric	

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures $ ÷ 15 = Total Days Credits

Instructions

Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	870889	
	et al.	
	See attached	
	list	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

L RIVER LAKE DIV. RECEIVED SEP 11 1986 AM 7 8 9 10 11 12 1 2 3 4 5 PM 6

11.5

See revised work statement

Total number of mining claims covered by this report of work. 198

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
15,840	SEP 11 1986	
	Date Approved as Recorded	Branch Director
	See revised Statement	

Date Sept. 10, 1986

Recorded Holder or Agent (Signature)

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying

H. Ferderber, 169 Perreault Avenue, Val d'Or, Quebec J9P 2H1

Date Certified: Sept. 10, 1986

Certified by (Signature)

0362 (81/9)

L. Grondin	M21611
L. Sado	M20010
J. Dallaire	M21384
H. St[illegible]is	M21084

LIST OF MINING CLAIMS

L870889	L870980	L871003	L871027
L870890	L870981	L871004	L871028
L870891	L870982	L871005	L871029
L870892	L870983	L871006	L871030
L870893	L870984	L871007	L871031
L870894	L870985	L871008	L871032
L870895	L870986	L871009	L871033
L870896	L870987	L871010	L871034
L870897	L870988	L871011	L871035
L870898	L870989	L871012	L871036
L870899	L870990	L871013	L871037
L870900	L870991	L871014	L871038
L870907	L870992	L871015	L871039
L870908	L870993	L871016	L871040
L870909	L870994	L871017	L871041
L870910	L870995	L871018	L871042
L870917	L870996	L871019	L871043
L870918	L870997	L871020	L871044
L870919	L870998	L871021	L871045
L870920	L870999	L871022	L871046
L870977	L871000	L871024	L871047
L870978	L871001	L871025	L871048
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Ministry of Northern Development and Mines

Ontario

Geophysical-Geological-Geochemical Technical Data Statement

File _____

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) AIRBORNE MAG, VLF, EM -

Township or Area HEPBURN SAGBENT

Claim Holder(s) EASTSEN MINES LTD

Survey Company H. FERDERER GEOPHYSICS

Author of Report FERGUS SCOTT

Address of Author 17 MANNOR PARK DON MILLS

Covering Dates of Survey _____

Total Miles of Line ~~Cut~~ FROM 150. (linecutting to office)

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

DAYS per claim

Geophysical

--Electromagnetic _____

--Magnetometer _____

--Radiometric _____

--Other _____

Geological _____

Geochemical _____

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer 30 Electromagnetic 30 Radiometric _____
(enter days per claim)

DATE: Nov 30/84 SIGNATURE: _____
Author of Report or Agent

Res. Geol. _____ Qualifications 63.1263

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

L 870889 CT A
(prefix) (number)

TOTAL CLAIMS 198

If space insufficient, attach list

OFFICE USE ONLY

837 (85/12)

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

_____

Corrections made _____

_____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

_____

Additional information (for understanding results) _____

_____

_____

AIRBORNE SURVEYS

Type of survey(s) VLF-EM MAGNETOMETER GRADIENT

Instrument(s) TOTEM 2A GEM – GSM-18

(specify for each type of survey)

Accuracy 1% 2+

(specify for each type of survey)

Aircraft used CESSNA 172

Sensor altitude 300' 300'+500'

Navigation and flight path recovery method VISUAL NAVIGATION USING AIR PHOTO MOSAICS AND MANUAL FIDUCIALS

Aircraft altitude 300 Line Spacing 440'

Miles flown over total area 150 Over claims only 150

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent ☐
p. p. m. ☐
p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others _____

Field Analysis (_____ tests)
Extraction Method _____
Analytical Method _____
Reagents Used _____

Field Laboratory Analysis
No. (_____ tests)
Extraction Method _____
Analytical Method _____
Reagents Used _____

Commercial Laboratory (_____ tests)
Name of Laboratory _____
Extraction Method _____
Analytical Method _____
Reagents Used _____

General _____

106192

EASTERN MINES LTD.

ABITIBI AREA - ONTARIO

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January 30, 1987

Your File: 371/86
Our File: 2.9589

Mining Recorder
Ministry of Northern Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

RE: Notice of Intent dated January 9, 1987
Airborne Geophysical (Electromagnetic & Magnetometer) Surveys on Mining Claims L 870889, et al, in Hepburn and Sargeant Townships

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The assessment work credits, as listed with the above-mentioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

J.C. Smith, A/Manager
Mining Lands Section
Mineral Development and Lands Branch
Mines and Minerals Division

Whitney Block, Room 6610
Queen's Park
Toronto, Ontario
M7A 1W3

Telephone: (416) 965-4888

DK/mc
cc: Y. Grondin, J. Dallaire
L. Salo, H. St. Louis
c/o Eastern Mines Ltd
Vancouver, B.C.

Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

Encl.

Harry Ferderber Geophysics Limited
Val d'Or, Quebec

Fenton Scott
Don Mills, Ontario

Resident Geologist
Kirkland Lake, Ontario

Ministry of Northern Development and Mines
Ontario

Technical Assessment Work Credits

File 2.9589

Date January 9,1987

Mining Recorder's Report of Work No. 371/86

Recorded Holder: Y. GRONDIN, L. SALO, J. DALLAIRE AND H. ST. LOUIS

Township or Area: HEPBURN AND SARGEANT TOWNSHIPS

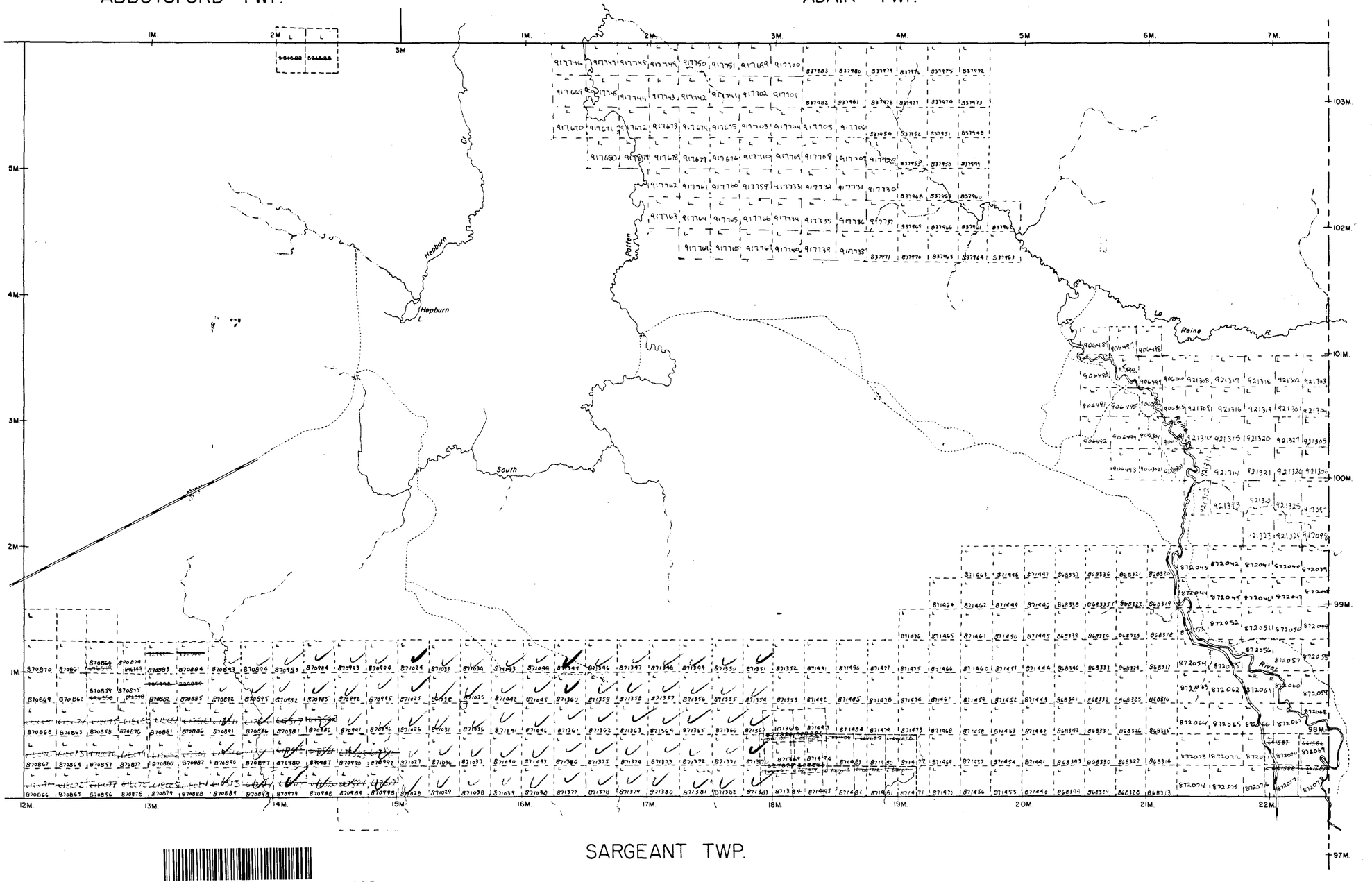
Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic 30 days	See Attached List
Magnetometer 30 days	
Radiometric ____ days	
Induced polarization ____ days	
Other ____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological ____ days	
Geochemical ____ days	
Man days ☐ Airborne ☒	
Special provision ☐ Ground ☐	
☒ Credits have been reduced because of partial coverage of claims.	
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geologocal - 40; Geochemical - 40; Section 77(19) - 60.



THE TOWNSHIP OF

HEPBURN

DISTRICT OF COCHRANE

LARDER LAKE MINING DIVISION

SCALE: 1 INCH = 40 CHAINS

SEP 26 1986

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	C.S.
LEASES	(L)
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C.

NOTES

400' surface rights reservation around all lakes and rivers.

PLAN NO. M.500

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

NOTES

400' surface rights reservation along the shores of all lakes and rivers

The subdivision of the south part of Sargeant TP by A Bell(O.L.S.) as shown on plan dated Oct 3,1912 signed by N.J. Slater(O.L.S.) has been wholly annulled under sec'n II subsec'n I of the Public Lands Act. Jan. 4,1963

HEPBURN TP. M.500

NORTHEAST BAY (Lake Abitibi) M.421

PROVINCE OF QUEBEC

TP OF BONIS
TP OF BERRY

OKIKODOSIK BAY (Lake Abitibi) M.583

Claim holders:

L. Salo et al
c/o Eastern Mines

LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES
  - TOWNSHIPS, BASE LINES ETC.
  - LOTS, MINING CLAIMS, PARCELS ETC.
- UNSURVEYED LINES
  - LOT LINES
  - PARCEL BOUNDARY
  - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LEASE SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
CROWN LAND SALE	C.S.
ORDER-IN-COUNCIL	O.C.
RESERVATION	
CANCELLED	
SAND & GRAVEL	

SCALE : 1 INCH 40 CHAINS

ACRES	HECTARES
40	16

TOWNSHIP

SARGEANT

DISTRICT
COCHRANE

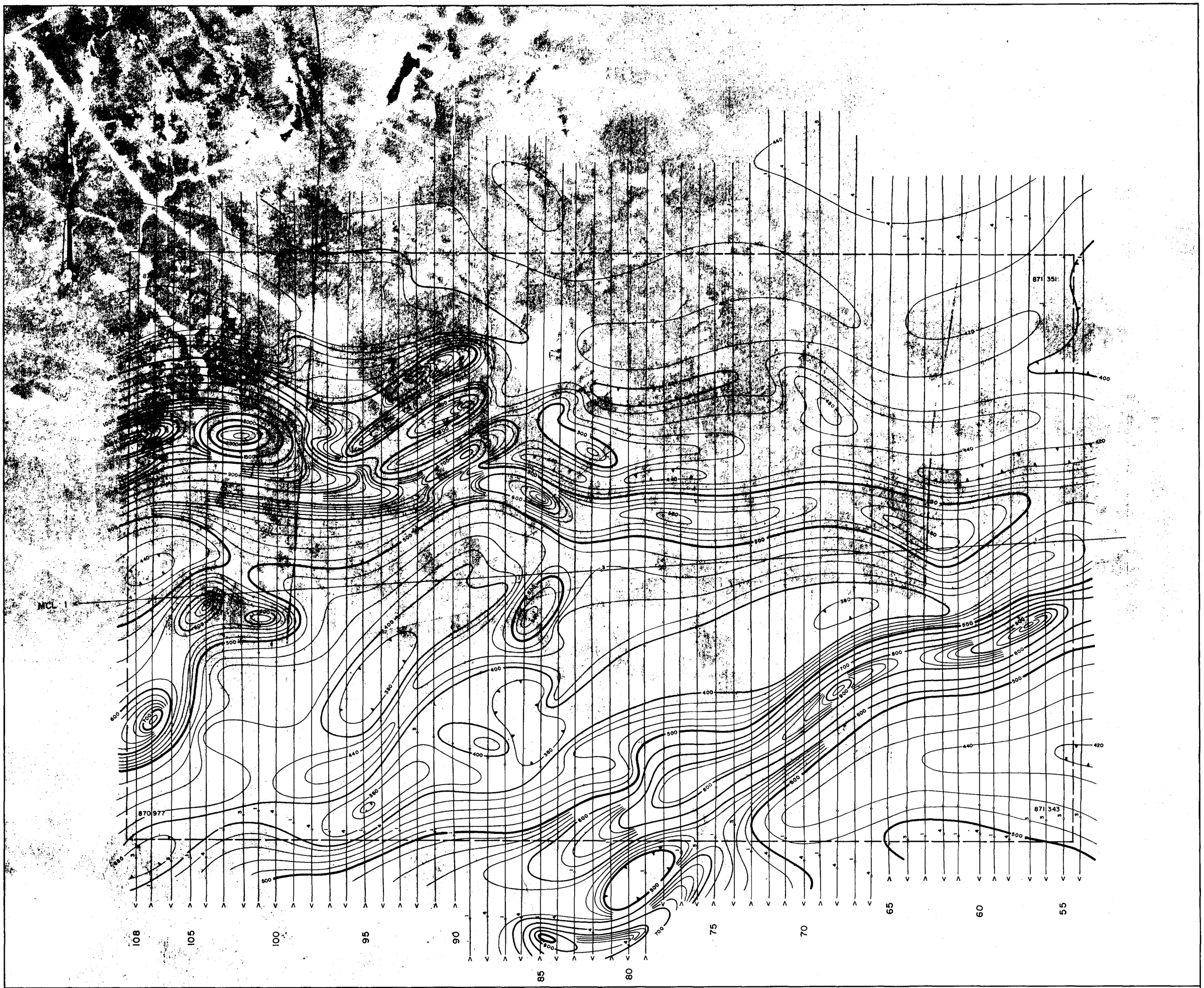
MINING DIVISION
LARDER LAKE

Ministry of Natural Resources
Ontario Surveys and Mapping Branch

Date: MAY 1972

Plan No. M.582

JAN 13 1988



H. FERDERBER GEOPHYSICS LTD.

HEPBURN and SARGEANT TWPS, ONTARIO

EASTERN MINES LTD.

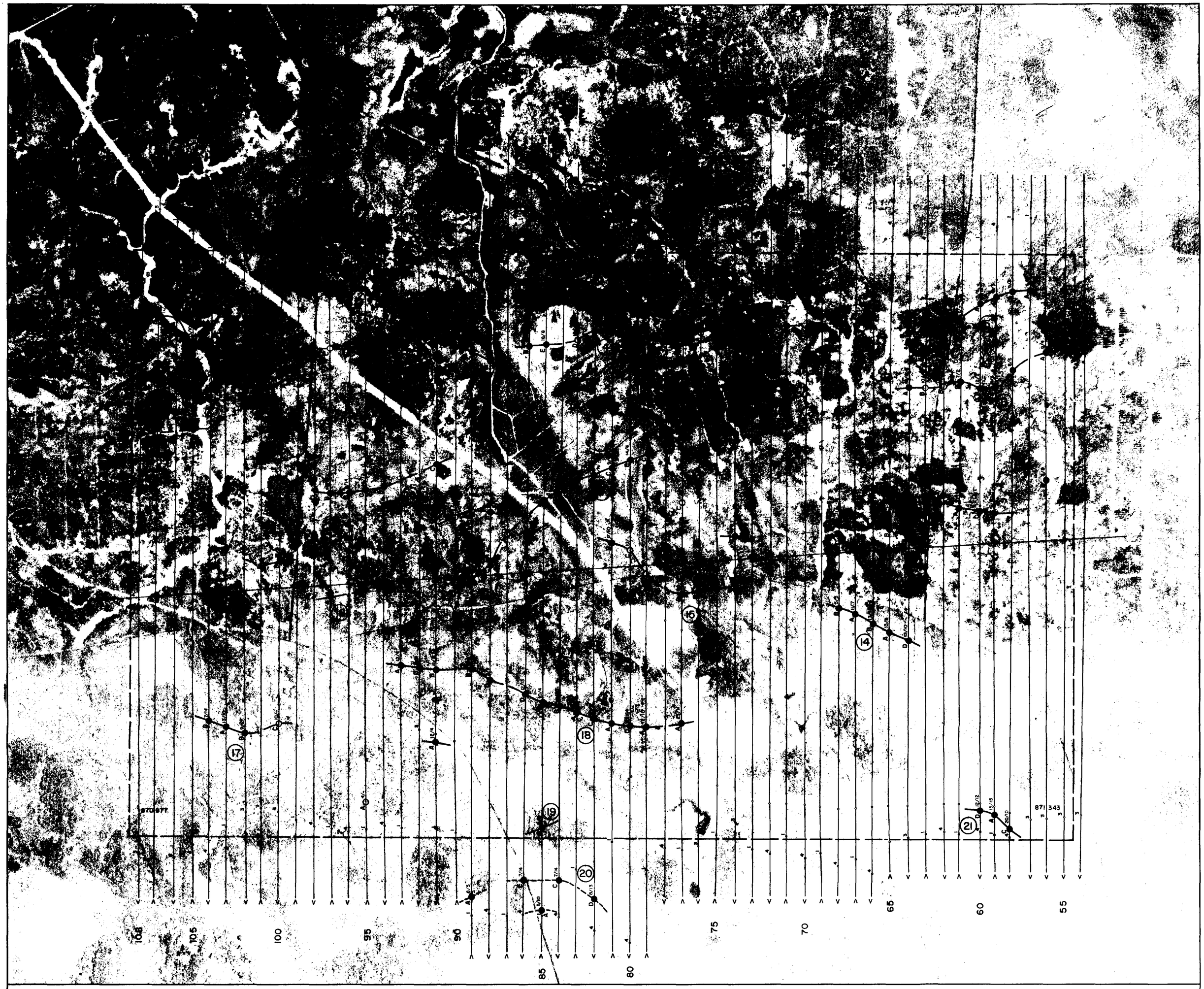
AIRBORNE MAGNETIC SURVEY

INTERPRETED BY:	N.T.S.	DATE
F. SCOTT	32 D / 13	AUG.- 1986
SCALE: 1"=1320' 0 1000 2000 3000 FEET		PLATE 1M

J-1566-86

LEGEND

CONTOUR INTERVAL	20 GAMMAS
500 GAMMA	
100 GAMMA	
20 GAMMA	
MAGNETIC LOW	
BASE VALUE	58,500 GAMMAS
FLIGHT ALTITUDE	300'



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AIRBORNE V.L.F.-EM SURVEY

INTERPRETED BY:	N.T.S.	DATE:
F. SCOTT	32 D / 13	AUG.-1986
SCALE: 1"=1320' 0 1000 2000 3000 FEET		PLATE 1V

J-1566-86

LEGEND

CONDUCTOR AXIS

CONDUCTOR AXIS WITH QUADRATURE FIELD

"Peak to Peak" Amplitude Field Shape Resultant 16/4

Field Distortion at 90° to Primary Field Direction

Note: These Factors Indicate Field Direction Only

INTERPRETATION

OVERBURDEN RESPONSE

BEDROCK RESPONSE (14)