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REPORT ON THE
COMBINED AIRBORNE GEOPHYSICAL SURVEYS
ON THE PROPERTY OF
MR. T. OBRADOVICH
TANNAHILL TOWNSHIP, ONTARIO

RECEIVED

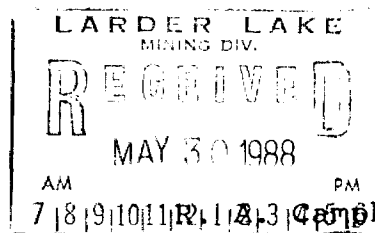
BY

JUN 1 1988

MINING LANDS SECTION

H. FERDERBER GEOPHYSICS LTD.

May 26, 1988
Val d'Or, Quebec



bell, B.Sc.
Geologist

REPORT ON THE COMBINED AIRBORNE GEOPHYSICAL SURVEY
ON THE PROPERTY OF MR. T. OBRADOVICH
TANNAHILL TOWNSHIP, ONTARIO

INTRODUCTION

On April 17, 1988 a combined airborne geophysical survey was completed on the property of Tom Obradovich in Tannahill Township, Ontario. Magnetic and VLF-electromagnetic data was collected by the airborne division of H. Ferderber Geophysics Ltd. The survey was flown from a base at Val d'Or, Quebec. A total of 28.8 miles of data was collected, along north-south flight lines.

The magnetic survey provides information which helps define the underlying geological structures and identifies any potential economic concentrations which may contain variations in accessory magnetic minerals. The VLF-electromagnetic survey outlines conductive zones which may represent shear zones and/or metallic sulphide deposits containing gold mineralization.

PROPERTY DESCRIPTION, LOCATION AND ACCESS

The Obradovich property is composed of 19 claim in one "U-shaped" claim block in Tannahill Township, Ontario. The claims cover approximately 304 hectares, are registered with the Office of the Mining Recorder at Kirkland Lake, Ontario, and are listed in Appendix 1.

The property is located approximately 20 miles north of Larder Lake, 22 miles northeast of Kirkland Lake, and approximately 35 miles southeast of the town of Matheson. The Canadian National Railway passes within 28 miles of the property to the west, and the closest station is Wavell. Access can be obtained by Highway 101 and one of several bush roads extending south from the highway. As well, Highway 66 passes to the south of the property, and a secondary road extends north from Northland Park, and bush roads continue to extend north to the property.

Physiography of the claim group is essentially that of a low lying area, having low relief. Just east and south of the claim block is Pinaws Lake. Approximately 95% of the property is forested.

Supplies, services, and qualified manpower is readily available locally in the Abitibi-Temiskaming area.

GEOLOGY

The Obradovich property is located in the central portion of the Abitibi Volcanic Belt of the Superior Province of the Canadian Shield. The Abitibi Volcanic Belt extends for nearly 350 miles in an east-west direction from Timmins to Chibougamau. It is host to a variety of precious and base metal deposits including the Timmins, Kirkland Lake, Noranda, Val d'Or, and Chibougamau mining camps.

The Abitibi Volcanic Belt is composed of a complex assemblage of interbedded volcanic and sedimentary rocks intruded by a variety of intrusives from ultrabasic to granitic in composition. The rocks are Archean in age and have been metamorphosed to the greenschist facies. Numerous late Precambrian diabase dykes cut formations of the belt. The rocks generally strike east-west, have a vertical dip and are highly folded and faulted. Geological interpretation of the Abitibi Volcanic Belt is complicated by both the wide scattering of outcrops and the complex structural relationships.

The Ontario Department of Mines Geological Compilation Series, Timmins-Kirkland Lake Sheet, map 2205, outlines the geology underlying the property. According to Map 2205, the Obradovich claim block is predominantly underlain by Early Precambrian intermediate flows and pyroclastic rocks. The central part of the claim block includes a small felsic intrusive of trondhjemite, granodiorite, quartz monzonite composition. Small bodies of metamorphosed mafic and ultramafic rocks lie south of the property. Because of the extensive drift cover over most of the claim group accurate interpretation is difficult and the contacts on the maps should be assumed to be inferred.

The major structural features in the area are the north limb of the northeast striking Kirkland lake Fault located 4.4 miles south of the property and the west-east striking Destor-Porcupine Fault, 10 miles to the north. Three splays from the Kirkland Lake Fault are shown on Map 2205 to end near the southern boundary of the claim block. Numerous gold deposits are associated with this zone and its related structures. Foremost among these are the deposits of the Timmins-Porcupine camp (ie. McIntyre Mine, Hollinger Mine, Ross Mine and Croesus Mine).

Various copper, zinc, lead, gold and silver occurrences are located south of the Obradovich Property in Clifford Township, and are related to the northern splays of the Kirkland Lake Fault. North of the property in Harker and Holloway Townships, numerous gold, silver, lead, copper and zinc are associated with the Destor-Porcupine Fault. The Holt-McDermott Mine of American Barrick Resources Corp. in Harker and Holloway Townships is scheduled to go into production in mid-1988 with probable reserves of 2,587,000 tons at .196 oz/ton Au. Canamax Resources Inc. reports reserves of 576,400 tons averaging 0.215 oz Au/ton in its east and Matawasaga Zones, east of the Holt-McDermott Mine. Gold in the Teddy Bear Prospect, located in the southwest corner of Holloway Township and the southeast corner of Harker Township, is located in quartz stringers and veins of up to three feet in width and is hosted by carbonatized basalts.

The Harker Prospect, discovered in 1924, is located in the southeastern part of Harker Township. The country rocks are basaltic in nature and strike north 70 degrees east and dip steeply south. This vein zone is six to twelve feet wide and 3,000 feet in length. Above the 500 foot level, 37,555 tons at 0.273 oz Au/ton has been estimated, and 10,000 tons averaging 0.25 oz Au/ton below the 500 foot level.

Sulphide mineralization is shown on Map 2205 within the south central part of the Obradovich claim group and on the eastern shores of Pinaws Lake.

INSTRUMENTATION AND SURVEY METHODS

The survey was completed using a 1972 Cessna 172, fixed-wing aircraft, call letters CF-EWK, owned and operated by H. Ferderber Geophysics Ltd. The pilot and navigator/operator were Y. Saucier and F. Longpre, respectively, of Val d'Or. Geophysical sensors were mounted in modified wing tips. The geophysical, navigation and data acquisition systems are described below.

Magnetometer

The magnetometer used was GEM Systems GSM-11, high sensitivity airborne proton (Overhauser) magnetometer. The instrument continuously measures the Earth's magnetic field at a 0.01 gamma sensitivity for 1 reading per second or 0.05 gamma to 10 readings per second at a 0.1 gamma absolute accuracy. The analog output is on 3 channels, from 1 to 10,000 gammas full scale.

VLF-EM System

A Herz Totem 2A VLF-EM System was used to measure the changes in the total field and in the vertical quadrature field on two frequencies simultaneously, with an accuracy of 1%. The primary transmitting station of Cutler, Maine, (NAA), frequency 24.0 KHz was employed in survey.

Radar Altimeter

The ground clearance was measured with a King 10/10 A radar altimeter. The survey was flown at a mean clearance of 300 feet with the altimeter producing an accuracy of 5% (15 feet) at this altitude.

Tracking Camera and Video Centre

A RCA TC-200 colour video camera and Galaxy 200 video centre was used to record the flight path on standard VHS type video tapes. Manual fiducials were indicated on the picture

frames for reference with digital printout. Flight path recovery was aided using a Panasonic Colour Video Monitor-S1300 and Video Cassette Recorder AG-2500.

Data Acquisition System

A Picodas Group Inc. PDAS 1100 data acquisition system featuring seven analog inputs with two frequency inputs and external interfacing was used. A Termiflex Corp. ST/32 Keyboard control unit and Sharp Corp. LCD display unit are connected to the data acquisition system. At present this system stores the altimeter VLF-1 inphase, VLF-1 quadrature, VLF-2 inphase, VLF-2 quadrature, magnetic field (coarse), magnetic field (fine), and the fourth difference (noise), and fiducials on 3.5 inch floppy disk drive. The data is then printed out in digital and profile form.

The survey was conducted on north-south lines were flown at spacings of 300 feet at a speed of approximately 90 miles per hour. Navigation was visual using airphoto mosaics, at a scale of one inch to 1320 feet, manual fiducials and the flight path recovery system as references.

DATA PRESENTATION

Flight lines, fiducial points and geophysical responses were reproduced from the airphoto mosaics at a scale of one inch to 1320 feet (1:15,840). The outline of the claim blocks and claim map are shown on each map sheet.

The aeromagnetic data was corrected for diurnal variations by using a base line as reference. The data was then reduced to a base level of 58,000 gammas, contoured at 25 and 100 gamma intervals and presented on Map MG-1.

The VLF-EM was transferred from the Totem 2AG memory to printed form. A base value was determined for the VLF-EM profiled data. These values were used to correct for variations in transmitter strength and the corrected changes in the total field strengths were plotted on Map EM-1. The positive values were contoured at intervals of 2%. The conductor axes were determined and labelled 1, 2, 3, etc. No priority was attached to the labelling system.

SURVEY RESULTS AND INTERPRETATION

Magnetic Survey

The results of the magnetic survey delineated an elipitical shaped magnetic high in the central part of the Obradovich claim group. The south central portion of the high extends southward across the southern boundary. Map 2205 indicates that this area is underlain by felsic intrusive rocks. The magnetic data contradicts this conclusion, and it appears that the central part of the property is underlain by metamorphosed mafic and ultramafic rocks, possibly gabbro, diorite and/or lamprophyre.

The magnetic relief over the rest of the property is low indicating that the rocks underlying these regions are relatively homogeneous in composition, containing similar amounts of magnetite. Map 2205 shows that mafic flows and pyroclastic rocks underlie these areas.

VLF-Electromagnetic Survey

Four conductive zones were outlined on the property by the VLF=EM survey.

Zone 1 strikes roughly east-west across the northern claims. Near the eastern boundary the conductor lies over a creek. The

zone could outline the position of a shear zone in metavolcanic rocks.

Zone 2 is comprised of 3 short conductors located in the south-central and southwestern parts of the property. The three eastern conductors lie in the magnetic high and the western conductor is situated in an area of low magnetic relief. This zone may represent a shear striking across metamorphosed mafic and metavolcanic rocks.

Zone 3 is comprised of two short one-line conductors lying in the southern part of the claim group. Zone 3 is located over the eastern and western edges of the magnetic high and may be small shears along a gabbro-metavolcanic contact. The western conductor lies near a sulphide occurrence.

Zone 4 is situated across the eastern boundary, near a small creek, and could be caused by conductive overburden or a change in topographical relief.

In the vicinity of lines 12 to 14, zones 1 and 2 and the west end of zone 3 appear to be cut-off and the contours distorted in a north-south direction. This indicates that a small splay north from the Kirkland Lake Fault may strike through the claim group.

CONCLUSIONS AND RECOMMENDATIONS

The results of the combined airborne magnetic and VLF-electromagnetic surveys were successful in helping outline the geology and in delineating 4 conductive zones underlying the Tom Obradovich property in Tannahill Township, Ontario. The claims appear to be underlain by an elliptical shaped body of metamorphosed mafic and ultramafic rocks surrounded by metavolcanics.

Three of the four conductive zones are caused by possible bedrock features, (shears). Zone 1 and the western conductor of zone 2 are situated in metavolcanic rocks, the eastern conductors of zone 2 lie in metamorphosed mafic or ultramafic rocks and the conductors of zone 3 cross possible metavolcanics-metamorphosed mafic or ultramafic contacts near known sulphide occurrences. A north striking splay of the Kirkland lake Fault may pass through the claim block.

Further exploration work should be conducted over the property in the vicinities of the possible bedrock conductors. Ground magnetic and horizontal loop-electromagnetic surveys should be performed to better define the underlying geology and to delineate and classify conductive zones.

Respectfully submitted,

H. FERDERBER GEOPHYSICS LTD.

A handwritten signature in cursive script, appearing to read "R.A. Campbell".

R.A. Campbell, B.Sc.

Geologist.

APPENDIX 1

CLAIM LIST

L	918984	L	918994
	918985		918996
	918986		918997
	918987		918998
	918988		918999
	918989		919000
	918990		919001
	918991		983195
	918992		983196
	918993		



Type of Survey(s) Airborne Magnetic and VLF-Electromagnetic Township or Area Tannahill Township

Claim Holder(s) W. Golden and T. Obradovich Prospector's Licence No. K21497 and K19837

Address 19 Comfort St. Kirkland Lake, Ontario P2N 3A8

Survey Company H. Ferderber Geophysics Ltd. Date of Survey (from & to) 17 04 88 17 04 88 Total Miles of line Cut 33

Name and Address of Author (of Geo-Technical report) R.A. Campbell - G.N. Henriksen

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
For each additional survey: using the same grid: Enter 20 days (for each)	Geological	
	Geochemical	
Man Days Complete reverse side and enter total(s) here	Geophysical	Days per Claim
	- Electromagnetic	
	- Radiometric	
Airborne Credits	Electromagnetic	40
	Magnetometer	40
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
	918984				
	918985				
	918986				
	918987				
	918988				
	918989				
	918990				
	918991				
	918992				
	918993				
	918994				
	918996				
	918997				
	918998				
	918999				
	919000				
	919001				
	983195				
	983196				

ONTARIO GEOLOGICAL SURVEY
 ASSESSMENT FILES
 OFFICE
 JUN 13 1988
 RECEIVED

RECEIVED
 MAY 26 1988
 MINING LANDS SECTION

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.

LARDER LAKE
 MINING DIV.
 RECEIVED
 MAY 12 1988
 AM 4:00 PM
 7 8 9 10 11 12 13 14 15 16

Total number of mining claims covered by this report of work. 19

Date May 8 1988 Recorded Holder or Agent (Signature) [Signature]

For Office Use Only

Total Days Cr. Recorded 1520 Date Recorded MAY 12 1988 Mining Recorder [Signature]

Date Approved as Recorded [Signature] Branch Director [Signature]

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 Harry Ferderber, 169 Perreault Ave. Val d'Or, Que.

Date Certified May 5, 1988 Certified by (Signature) [Signature]



Ontario

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 Magnetic and VLF-Electromagnetic

Township or Area Tannahill

Claim Holder(s) W. Golden and T. Obradovich

Survey Company H. Ferderber Geophysics Ltd.

Author of Report R.A. Campbell

Address of Author 169 Perreault ave. Val d'Or, Quebec

Covering Dates of Survey April 17, 1988
(linecutting to office)

Total Miles of Line ~~Cut~~ flown 28.8

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
L 918984	
918985	
918986	
918987	
918988	
918989	
918990	
918991	
918992	
918993	
918994	
918996	
918997	
918998	
918999	

**SPECIAL PROVISIONS
CREDITS REQUESTED**

**DAYS
per claim**

- Geophysical
 - Electromagnetic _____
 - Magnetometer _____
 - Radiometric _____
 - Other _____
- Geological _____
- Geochemical _____

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

ENTER 20 days for each additional survey using same grid.

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

Magnetometer 40 Electromagnetic 40 Radiometric _____
(enter days per claim)

DATE: May 26, 1988 SIGNATURE: RA Campbell
Author of Report or Agent

Res. Geol. _____ Qualifications 2-6609

Previous Surveys

File No.	Type	Date	Claim Holder

91-9990
LARDER LAKE
 RECEIVED
 MAY 28 1988
 7 8 9 10 11 12 1 2 3 4 5 6
 AM PM

TOTAL CLAIMS 19

OFFICE USE ONLY

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) Airborne Magnetic and VLF-Electromagnetic

Instrument(s) GEM GSM-11 Herz Totem 2A
(specify for each type of survey)

Accuracy 0.04 gamma and 1%
(specify for each type of survey)

Aircraft used Cessna 172

Sensor altitude 300 feet

Navigation and flight path recovery method Navigation was visual on airphoto mosaics. Flight path recovery was obtained with a RCA colour video camera Panasonic Colour Video Monitor

Aircraft altitude 300 feet Line Spacing 328 feet

Miles flown over total area 28.8 Over claims only 19.2

HOLLOWAY TWP. M-356

ELLIOTT TWP. M-347

DOKIS TWP. M-342

BEN NEVIS TWP. M-325

NOTES

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

NOTICE OF FORESTRY ACTIVITY

THIS TOWNSHIP / AREA FALLS WITHIN THE ABITIBI MANAGEMENT UNIT AND MAY BE SUBJECT TO FORESTRY OPERATIONS. THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129 SWASTIKA, ONT. POK ITO 705-642-3222

LEGEND

- PATENTED LAND (P or ●)
- PATENTED FOR SURFACE RIGHTS ONLY (●)
- LEASE (L)
- LICENSE OF OCCUPATION (L.O.)
- CROWN LAND SALES (C.S.)
- LOCATED LAND (Loc.)
- CANCELLED (C)
- MINING RIGHTS ONLY (M.H.O.)
- SURFACE RIGHTS ONLY (S.R.O.)
- HIGHWAY & ROUTE NO. (17)
- ROADS (—)
- TRAILS (---)
- RAILWAYS (---)
- POWER LINES (---)
- MARSH OR MUSKEG (---)
- MINES (X)

*used only with summer resort locations or when space is limited

TOWNSHIP OF

TANNAHILL

DISTRICT OF COCHRANE

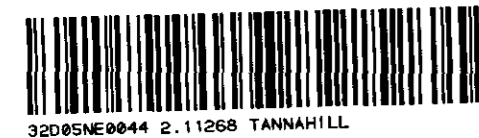
LARDER LAKE MINING DIVISION

SCALE: 1 INCH = 40 CHAINS (1/2 MILE)

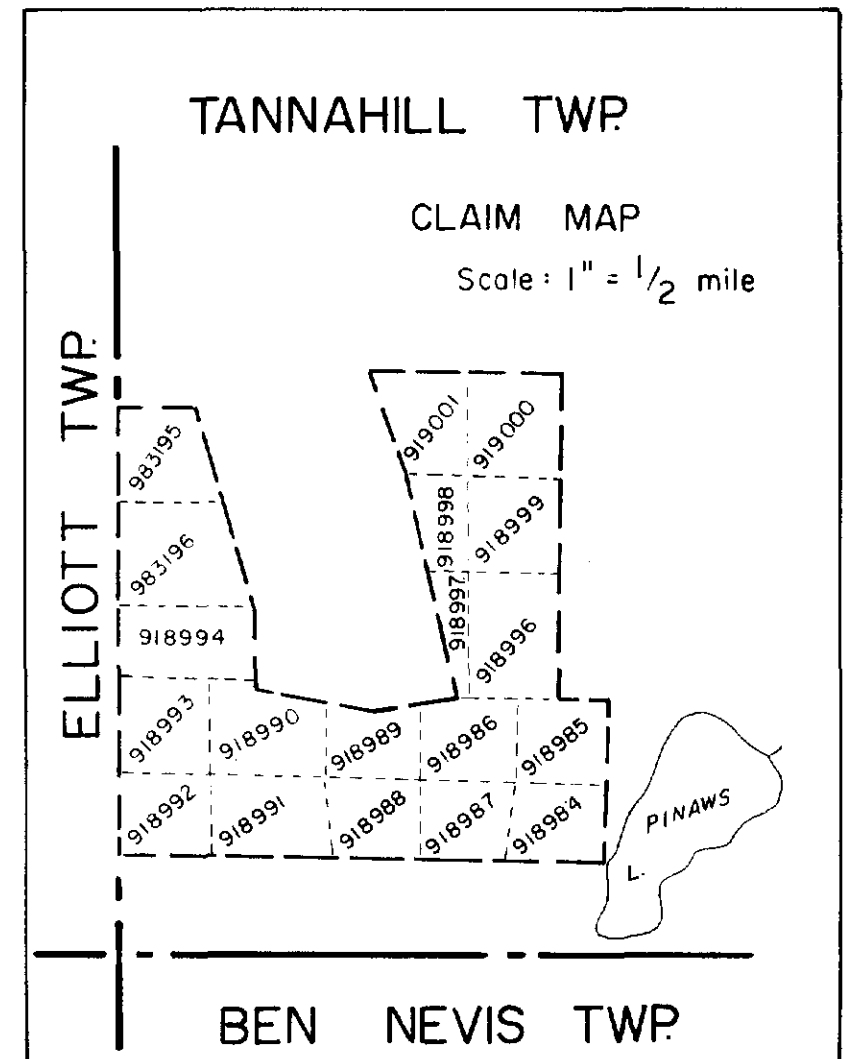
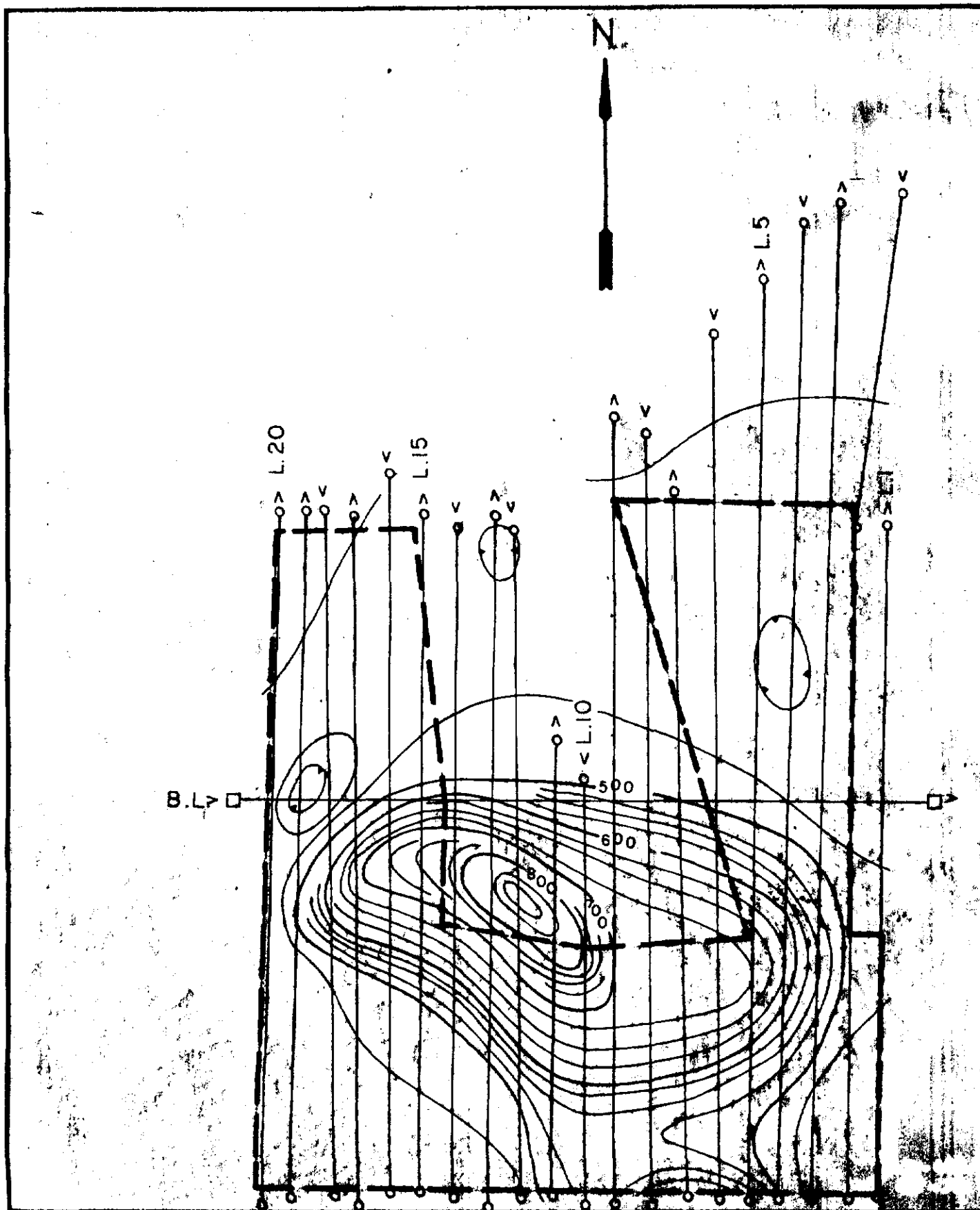
DR. RW NOBLE
DATE: JAN 27, 72
PLAN NO. **M-390**

MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

APPROX 48° 21' 45" 79° 45' 30"



2.11268



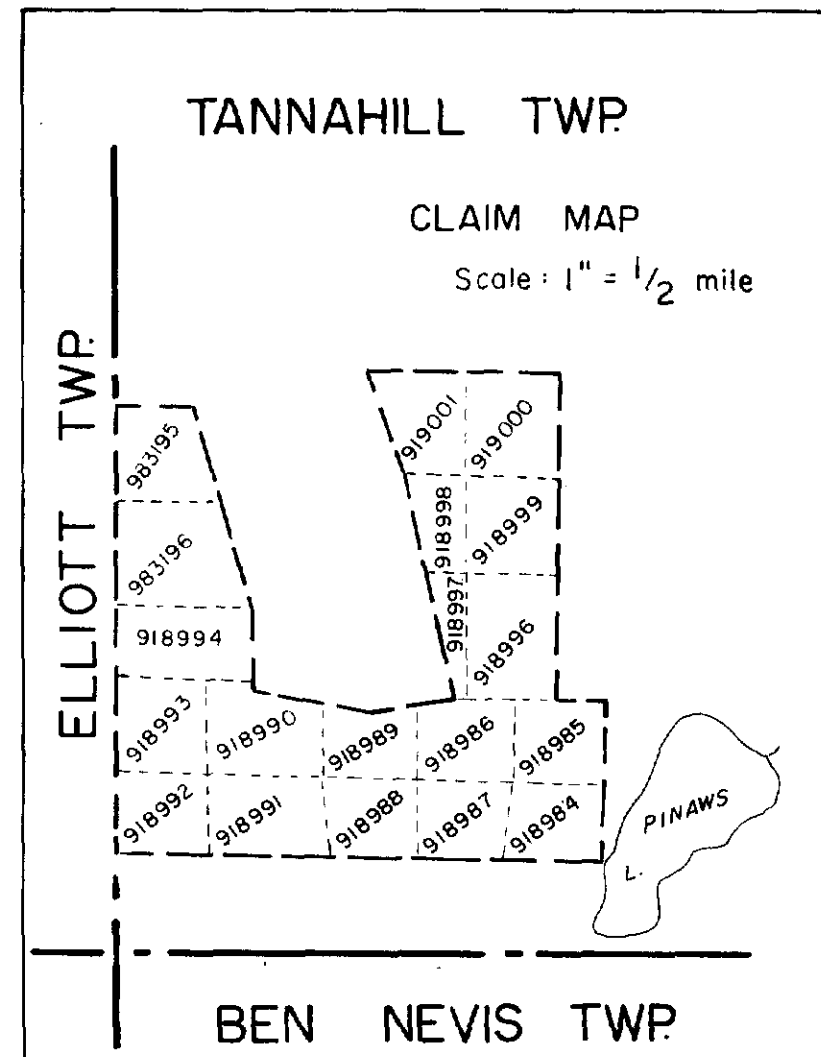
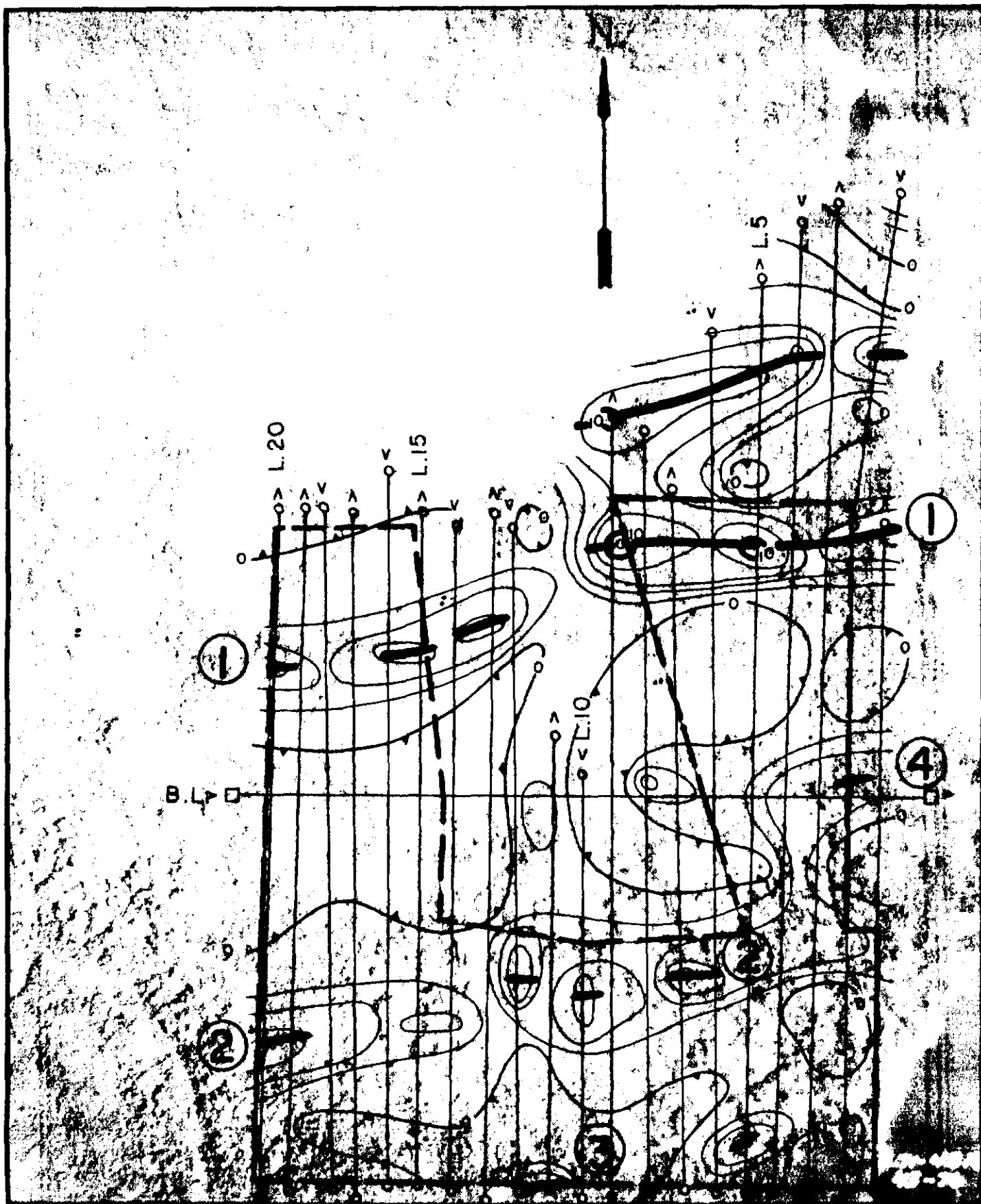
LEGEND

- TOTAL FIELD CONTOUR INTERVAL 25 GAMMAS
- FIDUCIAL POINT
- > LINE DIRECTION
- BASE VALUE 58000 GAMMAS
- MAGNETIC LOW
- 100 GAMMAS
- 25 GAMMAS



TYPE OF WORK		
AIRBORNE MAGNETIC SURVEY		
CLIENT		
TOM OBRADOVICH		
DATE	MAP NO:	AREA
MAY 1988	MG-1	TANNAHILL TWP. ONT.
SCALE		DRAWN BY
1" = 1/4 mile		<i>h.f.m.</i>
 <i>R.A. Conley</i> H. Ferderber Geophysics Ltd.		

2.11268



LEGEND

- TOTAL FIELD CONTOUR INTERVAL 2 %
- CONDUCTOR AXIS
- FIDUCIAL POINT
- LINE DIRECTION
- STATION USED: CUTLER, MAINE, USA. (N.A.A. 24.0 kHz.)
- LESS THAN ZERO
- 10 %
- 2 %
- 0 %



32005NE0044 2.11268 TANNAHILL

220

TYPE OF WORK		
AIRBORNE V.L.F.-EM SURVEY		
CLIENT		
TOM OBRADOVICH		
DATE	MAP NO:	AREA
MAY 1988	EM-1	TANNAHILL TWP. ONT.
RA Carver H. Ferderber Geophysics Ltd.		SCALE 1" = 1/4 mile
		DRAWN BY <i>H.M.</i>