Report on Geophysical Surveys

2.868

REPORT ON

GEOPHYSICAL SURVEYS OF CARLSON CLAIMS,

HALLIDAY TOWNSHIP, ONTARIO.

INTRODUCTION:

This report describes magnetometer and electromagnetic surveys which have been performed over the following forty-eight (48) contiguous, unpatented mining claims in Halliday township, Larder Lake Mining Division, Ontario:

L. 298959 to L. 299006 inclusive.

The recorded holder of these claims on the date of this report is H. D. Carlson, the writer of this report.

LOCATION AND ACCESS:

This claim group forms a rectangular block roughly two miles long in the north-south direction and one and one-half miles wide in the east-west direction. The Grassy River traverses the eastern side of the property; the north end of Relic Lake covers the southwest corner of the claim group; the N.E.P.C. high-tension transmission line runs diagonally across the western part of the property. The claims are accessible by boat or canoe via the Grassy River, and by suitable automotive vehicles via a rough gravel road which follows generally the course of the transmission line. This road is joined near the center of the property by an old timber road which skirts the north and west sides of Relic Lake and extends through Sothman and Semple townships to join another gravel access road connecting the towns of Timmins and Matachewan. Another gravel access road connects

the southern part of Sothman township with Highway 560 between the villages of Gowganda and Gogama.

HISTORY OF EXPLORATION:

In 1965 Cominco Limited held a group of claims around Annie Lake which covered part of the present subject property. This company drilled several holes to investigate electromagnetic conductors in a wide band of intermediate pyroclastic rocks containing disseminated pyrite, pyrrhotite and minor chalcopyrite. The drill holes intersected zones of graphitic tuff containing disseminated to massive pyrite and nodular marcasite.

In 1967, Amax Exploration Incorporated held a block of claims northwest of Annie Lake, which covered part of the present subject property. This company put down a drill hole some 2,000 feet north of Annie Lake which intersected andesitic-dacitic lapilli-tuff and graphitic tuff-breccia containing disseminated pyrite, pyrrhotite, and minor chalcopyrite.

During the past ten years Halliday and adjacent townships have been explored by a number of different mining companies by means of airborne geophysical techniques followed by drilling of suitable targets so found. Apparently no mineralization of commercial interest was found as a result of this work. However very few parts of Halliday township appear to have been explored in any detail by comprehensive ground geophysical and geological survey methods. At any rate no such surveys have been filed for assessment work credit with the Ontario Department of Mines and Northern Affairs for the ground which is the subject of this report.

In the 1970 and 1971 field seasons, two Timmins prospectors, John Larche and Alfred Rousseau, using old-fashioned grub-hoe stripping followed by the blasting of pits and trenchs, have found widespread zinc-gold-silver-lead-copper mineralization in rhyolite agglomerates between the south end of Campbell Lake in Halliday township and the south side of Patricia Lake in Midlothian township. The nature of this mineralization is such that

it is extremely doubtful that it could be detected by any airborne geophysical surveys.

TOPOGRAPHY:

Maximum relief in Halliday township may be as much as 100 feet; however on the subject claim group the local relief seldom is as much as 50 feet. Outcrop areas may make up as much as ten percent of the property, being concentrated mainly in the northern part; however rock exposures are few and far between since the outcrops are covered by a thin but persistent layer of moss, humus, fallen trees and decayed vegetation, and there are no sizeable bare rock ridges or hills. Between the outcrop areas the overburden appears to consist of thin glacial boulder-clay tills overlain by outwash sand and gravel deposits of variable thicknesses.

REGIONAL GEOLOGY:

All of the bedrock underlying Halliday township is of Precambrian Age. The bulk of the rock consists of felsic pyroclastics (including agglomerates, breccias and tuffs) having a domal structure in the central part of the township; on the margins of this domal structure, in the northern and southern parts of the township, these rocks are interstratified with felsic, intermediate and mafic flow rocks and pyroclastic units, and there, all these intercalated formations appear to have been more or less closely folded along east-west trending axes. Ultramafic and mafic sills, stocks and plugs intrude the outer (and therefore younger) formations of the dome, and younger diabase dikes occupy some north-trending fracture patterns that traverse the area.

Exploration activities in Halliday and surrounding townships to date indicate that the following types or kinds of mineral occurrences may have considerable economic potential in this region:

(1) stringers and veinlets of cross-and-slip-fibre

chrysotile asbestos are present in at least some of the serpentinized ultra-mafic intrusive rocks of the map-area;

(2) zones of disseminated pyrite-pyrrhotite-minor chalcopyrite and lenses of graphite-pyrite-marcasite in interstratified sialic and mafic fragmental volcanics;

(3) zones of nickel-and-copper-bearing sulphides in the ultra-mafic intrusives of the area;

(4) gold-bearing quartz veins occupying sheared and altered zones in steeply dipping rocks around the margins of the domal structure;

(5) zones of disseminated sphalerite-pyrite-gold-galena-chalcopyrite in coarse highly siliceous rhyodacitic agglomerates.

GEOLOGY OF THE PROPERTY:

The geology of Halliday township and adjacent Midlothian township is described in Ontario Department of Mines Geological Report 79 and shown on the accompanying Map 2187, both by E. G. Bright. These publications indicate that the subject claim group is underlain mainly by sialic pyroclastic and flow rocks; however, extending across the northern part of the property there is a prominent band, about 2,000 feet wide, of andesitic to dacitic pyroclastic rocks which is cross-faulted in at least three places, strongly sheared and locally carbonatized. This unit contains some zones of disseminated pyrite-pyrrhotite-minor chalcopyrite mineralization, and the nature and variety of the rock fragments within it suggest a nearby explosive volcanic vent source for this formation.

GEOPHYSICAL SURVEYS:

A control system for these surveys was established by chaining and marking the north and south boundaries of the property, the H.E.P.C. powerline right-of-way, and old tote road that trends northeasterly across the northern part of the property, and some sections of the powerline access road. A total of

8.7 line-miles of control lines were established in this way.

Survey lines were run north and south over the length of the property by the chain-and-compass method, and survey stations were established at 100 foot intervals along these survey lines. The survey crew consisted of two men, one operating the compass and the electromagnetic instrument, the other operating the magnetometer. The instruments used for the survey were a Ronka EM16 VLF electromagnetic unit manufactured by Geonics Limited, and a Craelius Miximag magnetometer which has an overall accuracy of ±50 gammas on the scale range used throughout the present survey. A main magnetic base station with a value of 1,000 gammas was established near the survey camp close to the northwest corner of the property, and subsidiary magnetic base stations were established at regular intervals along the survey control system. In plotting the results of the magnetic survey the usual corrections were made for diurnal variations, etc. In plotting the results of the electromagnetic survey, polarities were so adjusted that all survey lines read as if they had been run from south to north. The transmitter stations tuned in for the survey were Station NAA, Cutler, Maine, at a frequency of 17.8 kHz, and Station NPG, Seattle, Washington, at a frequency of 18.6 kHz. The surveys were conducted during the months of November and December, 1971, and January and February, 1972. Personnel engaged in the survey work included H. D. Carlson, W. Dallaire and Arvo Salo, all from the Timmins-Porcupine district of Ontario. A total of 39.8 line-miles of north-south survey lines were completed over the property (1,948 survey stations). In addition a total of 8.7 line-miles of survey control lines were read with the magnetometer (461 survey stations). To avoid clutter and confusion on the accompanying maps, only those survey control stations which coincide with the traverse line stations are shown on these maps.

RESULTS:

The maximum magnetic reading on the property is 1,470 gammas, and the minimum reading is 410 gammas, so that the maximum magnetic relief over the ground is little more than one

thousand (1,000) gammas. In general such magnetic relief as exists over the claim group as a whole is to be ascribed to such factors as:

(1) variations in the sub-surface bedrock topographic relief;
(2) variations in the accessory mineral magnetite content of the bedrocks underlying the survey station sites.

The survey work has not indicated the presence of any mafic or ultra-mafic intrusive bodies in the bedrock underlying the property. The presence of a somewhat higher than background magnetic zone in the region north of Annie Lake, where there are known to be both airborne and ground electromagnetic conductors present, may have some significance concerning the possible presence of sulphide mineralization of commercial interest there.

Nineteen electromagnetic conductive zones were located by the survey work. These all trend at least roughly parallel to the general strike of the underlying volcanic rock formations. It is very probable that the majority of these conductors are not genuine bedrock conductive zones, but are due to electrical conductivity associated with inclined wet interfaces between the bedrock surface and the overburden. It will be necessary to check these various conductors with another type of electromagnetic unit, preferably a horizontal loop, before any estimate of their economic significance can be made.

CERTIFICATE

Concerning this report, I herewith make the following statement:

(1) I have been granted these degrees in the geological sciences:

B.Sc. - 1949 - Queen's University
M.A.Sc. - 1950 - University of Toronto
Ph.D. - 1953 - Queen's University

(2) I am a Fellow of the Geological Association of Canada, a member of the Ontario Association of Professional Engineers, and a member of the Canadian Institute of Mining and Metallurgy.

(3) I am a Consulting Geologist and Prospector, resident at 110 Martin Street, Porcupine, Ontario.

(4) I am the recorded holder of the claims comprising the property described in this report.

H. D. Carlson

March 23, 1972.
Porcupine, Ontario.

H. D. Carlson,
Ph.D., P. Eng.,
Consulting Geologist.

GEOPHYSICAL – GEOLC
TECHNICAL DA...

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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 Geophysical
Township or Area Halliday Township
Claim holder(s) H. D. Carlson

Author of Report H. D. Carlson
Address 110 Martin Street, Porcupine, Ont.
Covering Dates of Survey Nov. 2, 1971 to Feb. 24, 1972
(linecutting to office)
Total Miles of Line cut N.I

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	20
--Magnetometer	20
--Radiometric	
--Other	
Geological	
Geochemical	

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

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

DATE: May 10, 1972 SIGNATURE: H D Carlson.
Author of Report

MINING CLAIMS TRAVERSED
List numerically

L. 298959 to
(prefix) (number)
L. 299006 inclusive

If space insufficient, attach list

TOTAL CLAIMS 48

OFFICE USE ONLY

PROJECTS SECTION

Res. Geol. _____ Qualifications On this file
Previous Surveys L.D

Checked by _____ date _____

GEOLOGICAL BRANCH

Approved by _____ date _____

GEOLOGICAL BRANCH

Approved by _____ date _____

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 1948 Number of Readings 2409

Station interval 100 feet

Line spacing 400 feet.

Profile scale or Contour intervals 300 gammas (mag.)
(specify for each type of survey)

MAGNETIC

Instrument Cæsius Minimag.

Accuracy - Scale constant ± 5c gammas for the ± 2500 gamma range.

Diurnal correction method Check to sub. magnetic base station each hour.

Base station location 200 feet S.W. of camp.

ELECTROMAGNETIC

Instrument Geonics Ronka E.M. 16 (V.L.F.)

Coil configuration

Coil separation

Accuracy ± 1 %

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

Frequency Sta. NAA (17.8 KHz) and Sta. NPG (18.6 KHz).
(specify V.L.F. station)

Parameters measured Vert. In-Phase Component and Quadrature.

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION -- RESISTIVITY

Instrument

Time domain Frequency domain

Frequency Range

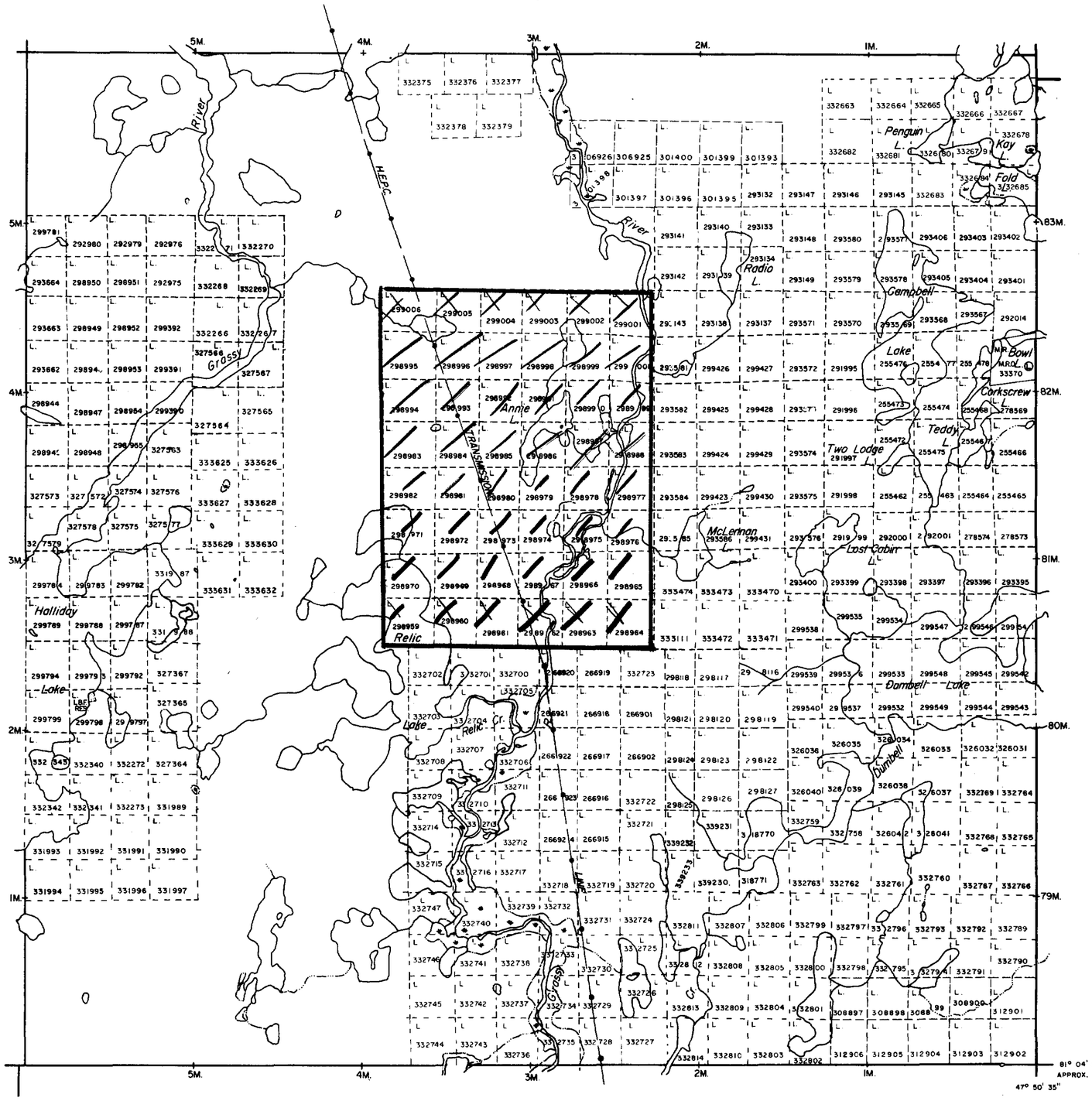
Power

Electrode array

Electrode spacing

Type of electrode

HUTT Twp. M-943



SOTHMAN Twp. M-1121

MIDLOTHIAN Twp. M-235

MOND Twp. M-870

NOTES

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

DATE OF ISSUE
MAY 2 1972
DEPT. OF MINES AND NORTHERN AFFAIRS

LEGEND

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

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

TOWNSHIP OF

HALLIDAY

DISTRICT OF
SUDBURY

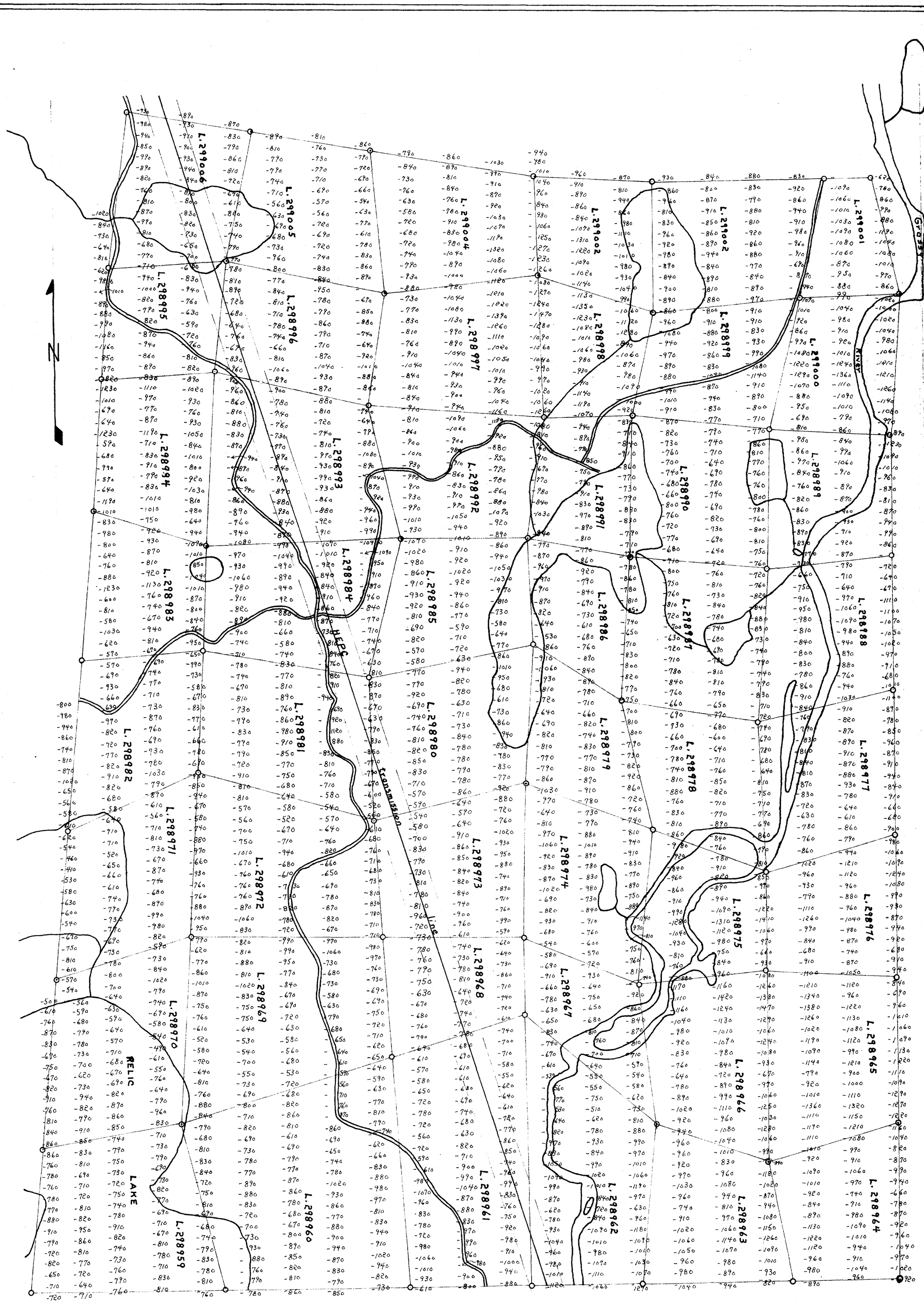
LARDER LAKE
MINING DIVISION

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

DR. R.W.N	PLAN NO. M-910
DATE FEB. 2, 71.	

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS

2.868



MAGNETOMETER SURVEY

CARLSON CLAIMS

HALLIDAY TWP. ONTARIO.

SCALE ÷ 1 INCH = 400 FEET.

LEGEND

580 / 740 / 910 / 860 / 1020 — Survey traverse line with magnetometer readings in gammas at survey stations.

Claim post and claim lines.

Forest cover is a mixed growth of spruce, pine, balsam, birch, poplar, willow and alder.

H.L. Carlson

ELECTROMAGNETIC SURVEY

CARLSON CLAIMS

HALLIDAY TWP. ~~ONTARIO~~.

SCALE ÷ 1 INCH = 400 FEET.

LEGEND

+6 | -5
+11 | -13
+17 | -4
+2 | -3
-3 | +2
-7 | +4
-5 | -2

Survey traverse line with RonKa EM16 readings at survey stations. In-Phase components plotted on the left, Quadrature on the right. Polarities adjusted so that all lines are plotted as if run from south to north.

Electromagnetic conductor axis.

Claim post and claim lines.

Forest cover is a mixed growth of spruce, pine, balsam, birch, poplar, willow and alder.

H.O.C. H.O.Carlson.