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APR - 9 1981

MAGNETOMETER SURVEY

MINING LANDS SECTION

HEARST AND SKEAD TOWNSHIPS, ONTARIO

Introduction

A magnetometer survey was carried out over cut lines in Hearst and Skead Townships by Utah Mines Ltd. The results are shown on the enclosed plan.

Location, Access and Ownership

The property is a block of 44 claims straddling the boundary of Hearst and Skead Townships. Thirty claims are located in north central Skead Township and the remaining fourteen in southern Hearst Township. The claims are numbered L341838 L342531, L396263, L442035 to 442038 inclusive, L442040 to 442042 inclusive, L442062, L512137, L522783 to 522786 inclusive, L522790 to 522791, L531335 to L531336, L532083 to 532085 inclusive, L398188 to 398189, L532087 to 532092 inclusive, L531360 to 531362 inclusive, L531367 to 531369 inclusive, L532253 to 532255 inclusive, L545052 to 545053 and L545055 to 545056.

Highway 624 from Larder Lake passes through the west half of the property in a northeast to southwest direction. Branching off from Highway 624 are several logging roads in the northwest corner and one main gravel road which extends from the highway, near the township line to the southeast corner of the property. This road serves as access to a main gravel pit off the south boundary of the property and is accessible by two-wheel drive vehicles in the late summer and fall only.

There are a number of shorter bush roads in the northwest sector of the property which served as access for timber cutting and later reforestation projects. These roads however, do not provide access to a large part of the property.

Previous Exploration

1) Geological Mapping

The first work done on the property was around 1906-1911 by prospectors from the Cobalt Mining Camp. Several pits in the eastern half of the property and the northwest sector were

Previous Exploration (Continued)

excavated at this time. The pits encountered graphitic shale, felsic agglomerate with pyrrhotite and pyrite fragments and minor chalcopyrite. One small pit in the northwest corner was excavated on a quartz vein containing minor amounts of chalcopyrite.

In 1920 a shaft was sunk near the south boundary of the property, several hundred feet southeast of Highway 624. It was sunk on a property originally known as the Manor Property. This work followed the discovery of visible fine grained gold on a slicken sided contact between quartz-porphyry and a narrow band of green carbonate. The shaft was sunk to a depth of 500 ft. and approximately 1800 ft. of lateral development was completed. The shaft occurred within or immediately south of the Manor fault, a major structural feature striking in a south east direction. The predominant host rock in the shaft was a chloritized sheared gabbro. The prospectors who found the showing were Manly and O'Rilley after whom the property was named.

A second shaft was sunk to a depth of 500 ft. off the property to the east, one-quarter mile southwest of Grace Lake. The shaft was sunk on a visible gold occurrence, occurring within a granite or synite dyke body. Visible gold was found in a quartz veined system within the body. More than 500 ft. of lateral drifting and cross cutting were done from three levels in the shaft. This property was known as Lafond Gold Mines.

Official mapping done by the Ontario Department of Natural Resources was completed over a period of 1941 to 1948. The mapping projects were done in two phases; the first phase covering Hearst and McFadden Townships by J.A. Thomson; the latter phase was conducted by D.F. Hewitt covering Skead Township. Both phases were well co-ordinated and rock types and stratigraphic correlations were matched between the three townships.

The eastern half of the property hosting a major felsic volcanic belt has seen more activity in the recent past. Kennco, in 1970, drilled two holes to test ground E.M. conductors, a possible follow-up of an airborne survey. Hole #1 was drilled in claim #532094 to a depth of 538 ft. It intersected mostly porphyritic rhyolite with a banded brown pyritiferous chert section at 134-153.5 ft. This section assayed .5% Zn at 139-143 ft. The entire chert section was anomalous in zinc and copper. Hole #2 by Kennco, was drilled in claim #532089 to a depth of 325 ft. It intersected cherty to porphyritic rhyolite and some black slate units. The black slate units were probably graphitic and may have been the conductor targets. Both holes also encountered low grade sulfides within the cherty rhyolite and felsic pyroclastic units.

### Previous Exploration(Continued)

In 1972 Noranda established a grid over the same area which covered 14 claims. They completed a McPhar vertical loop E.M. and magnetometer survey over the grid. Six conductors were discovered two of them having co-incident mag highs. No reported drilling was followed up.

In 1968 a Dighem airborne electromagnetic survey was flown for Superior Northwest Inc. over the entire property.

In 1977 the property was optioned to the Dighem Syndicate, a subsidiary of Teck Corporation, who carried out investigations of 20 airborne targets. The work done was VLF-EM, fluxgate magnetometer and reconnaissance geological mapping. Thirteen of the conductors were interpreted as barren graphite or graphitic sulfide horizons. The remaining seven were considered to be too weak or located in geologically unfavorable environments to merit diamond drilling.

The most recent work was done by Superior Northwest who staked the claims applicable to this report in 1979. Superior Northwest blasted several outcrops along the highway and established a grid in the southwest portion of the property. They carried out mag and VLF-EM surveys primarily to meet assessment work requirements.

The Ontario Department of Natural Resources jointly funded with the Federal Government an Input survey over 24 townships in the spring of 1979. The survey covered 24 townships in the Kirkland Lake-Larder Lake are which included both Hearst and Skead Townships.

### Geology

The property is underlain Keewatin felsic to mafic volcanics, quartz feldspar rhyolite to dacite porphyrys and sheared gabbro. A minor amount of serpentized peridotite which has been dated as post Keewatin by Thomson occurs on the western half of the property. A great unconformity separates the post Keewatin from the overlying Timiskaming sediments. The Timiskaming sediments consist of conglomerates, greywackes, thinly bedded turbidite shales and slates, and metasediments. Intruding the Timiskaming are small lamprophyre and amphibolite dykes which have been dated as Algomian. A second great unconformity separates the Algomian from overlying metasediments and conglomerate belonging to the Huronian Cobalt Series. Wisconsin age Pleistocene sediments, such as varved clays, esker sands and gravels, and tills, overlie the bedrock.

Volcanic rocks occupy approximately 25% of Property.

### Geology (Continued)

They are localized along two limbs of a major synform whose axis strikes northwest-southeast through the mid-west section of the property. They are Keewatin and consist of dacite tuffs, rhyolite, cherty rhyolite tuffs, felsic agglomerates, pillowed basalts and intermediate to mafic volcanics. The volcanic belt on the southwest limb of the synform strikes northwest-southeast. That on the east strikes approximately north-south. Along these limbs is an abundant amount of gabbro which has intruded the volcanics and has irregular crosscutting contacts with them. Eighty percent of the gabbro outcrop occurs on the east half of the property underlying almost 50% of that area. Many of these outcrops resemble mafic to intermediate highly chloritized volcanic material. Outcrops containing fresh textured gabbro grade transitionally into what appears to be highly sheared gabbro with no relict textures or intermediate to mafic volcanics contemporaneous with the gabbro. In many places it was impossible to recognize the true boundaries between volcanic and gabbro phases. During mapping both types were grouped as one and are noted by the number "4" in the legend column.

A somewhat lesser amount of quartz feldspar porphyry (rhyolite) and dacite porphyry has intruded the volcanic belt on the southwest limb. The largest body occurs northwest of Highway 624 and contains large xenolithic zones of similar felsic volcanic material. At one locality the quartz feldspar porphyry body appears to post date the gabbro intrusive. A very minor amount of felsic intrusive occurs on the east half of the property at line 64N station 4E. As previously mentioned the axial area of the synform is occupied by Timiskaming sediments which consist of conglomerate greywacke, thinly bedded turbidite and metasediments. This axial belt is up to 4000 ft. wide along Highway 624. It narrows as it extends to the south-east.

On the extreme east side of the property are large outcrops of Huronian metasediments. These metasediments overlie the gabbro complex being separated by a major unconformity. Stratigraphically above the sediments and further to the east is a conglomerate which is dated as the youngest unit of the Huronian Cobalt Series on the property. Further to the east and east of Grace Lake is a fine grained chloritized metasediment which has been identified as a Timiskaming age sediment. This interpretation agrees with Thomson's.

### Survey Procedure

Magnetometer readings were taken along lines previously cut for a geological survey. Lines were cut at 400-foot intervals normal to several baselines. All lines were chained and picketed at 100-foot intervals.

Survey Procedure (continued)

Magnetometer readings were taken with either a Barringer Proton Precession or Unimag total field magnetomer at 100-foot intervals with 50-intervals in areas of high readings. The looping method was used for control of diurnal variation. In this method a base station is selected and readings taken along lines describing a loop, arriving back at the starting base station in less than two hours. A second loop is then started using either the same base station or another which is tied to the previous loop. Readings are then corrected for diurnal variation by assuming the time between readings is the same and distributing any variation equally among the intervening readings. No correction was applied less than the accuracy of the base station reading. The readings were reduced a base of 58000 gammas total field = 0.

Results and Conclusions

The magnetic profile is largely flat excepting for some local highs probably caused by ultramafics or minor magnetite concentrations on sheets 1 and 4.

On sheet 3 there is a larger area of magnetic high readings just west of the north end of Grace Lake. The area is overlain by Proterozoic Gowganda sediments. The anomaly may be due to magnetite in the sediments or to ultramafic rocks beneath them. There are also some locally high magnetic trends similar to those on sheets 1 and 4 on sheet 3

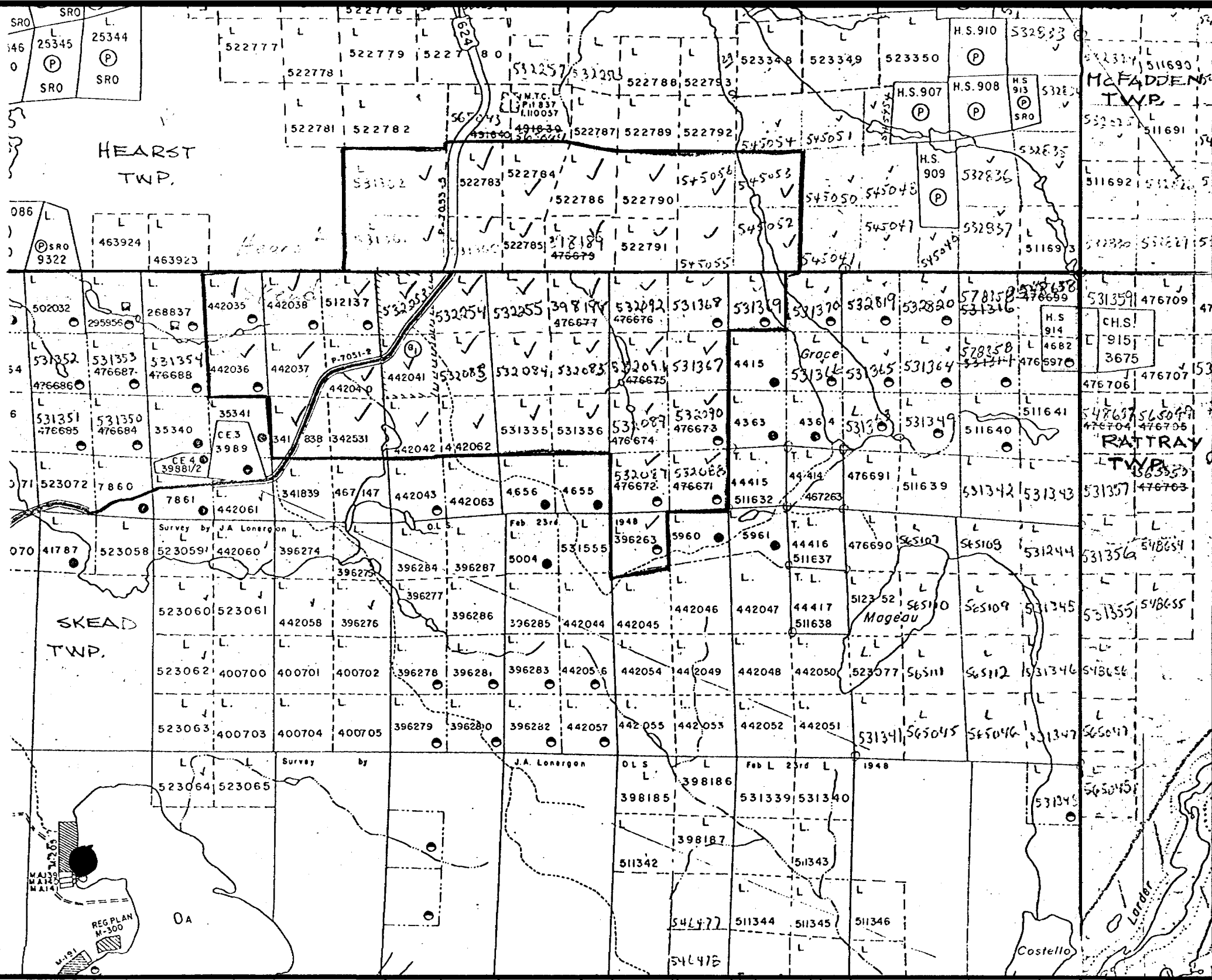
The magnetic survey will help in projecting geology across extensive drift covered areas.

Respectfully submitted



March 26, 1981

R.A. MacGregor, P. Eng.



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L  
25345  
P  
SRO  
L  
25344  
P  
SRO

HEARST  
TWP.

086  
SRO  
9322  
463924  
463923

502032 295956 268837 442035 442038 512137 532254 532255 398194 476677 532092 476676 531368 531369 531370 532819 532820 578150 476689 531359 476709  
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SKEAD  
TWP.

McFADDEN  
TWP.

RATTRAY  
TWP.

REG PLAN  
M-300  
M-301

Costello

Larder



Ministry of Natural Resources

File \_\_\_\_\_

GEOPHYSICAL - G1  
TECHNICAL



32D04SE0254 2.3823 HEARST

900

TO BE ATTACHED AS A  
FACTS SHOWN HERE IN  
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) MAGNETOMETER

Township or Area HEARST AND SKEAD

Claim Holder(s) SUPERIOR NORTHWEST INC.

Survey Company UTAH MINES LTD.

Author of Report R. A. MacGREGOR

Address of Author 134 PALACE DR. S.S. MARIE, ONT.

Covering Dates of Survey MAY 1980 - MARCH 1981  
(linecutting to office)

Total Miles of Line Cut 43

MINING CLAIMS TRAVERSED  
List numerically

- L341838..... / L532084  
(prefix) (number)
- L342531..... / L532085
- L396263..... / L398188
- L442035..... / L398189
- L442036..... / L532087
- L442037..... / L532088
- L442038..... / L532089
- L442040..... / L532090
- L442041..... / L532091
- L442042..... / L532092
- L442062..... / L531360
- L512137..... / L531361
- L522783..... / L531362
- L522784..... / L531367
- L522785..... / L531368
- L522786..... / L531369
- L522790 / L532253
- L522791 / L532254
- L531335 / L532255
- L531336 / L545052
- L532083 / L545053
- L545056 / L545055

If space insufficient, attach list

<u>SPECIAL PROVISIONS CREDITS REQUESTED</u>	Geophysical	DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	-Electromagnetic	
ENTER 20 days for each additional survey using same grid.	-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: March 26-81 SIGNATURE: [Signature]  
Author of Report or Agent

Res. Geol. \_\_\_\_\_ Qualifications S. 100

Previous Surveys

File No.	Type	Date	Claim Holder
			L O

TOTAL CLAIMS 44

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 2,380 Number of Readings 2,380
Station interval 100 and 50 feet Line spacing 400 feet
Profile scale
Contour interval 500 gammas

MAGNETIC

Instrument Barringer GM-122 and Unimag total field
Accuracy - Scale constant 1 gamma
Diurnal correction method looping method
Base Station check-in interval (hours) 2 hours or less
Base Station location and value Various

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