



32004SE0228 2.4524 HEARST

010

REPORT ON
MAGNETOMETER AND VLF-EM SURVEY
HEARST AND SKEAD TOWNSHIPS, ONTARIO

RECF

FEB 9 1982

MINING LANDS SECT.

Introduction

Linecutting followed by a Magnetometer and VLF-EM surveys were carried out on a block of twenty-three claims in south-east Hearst Township and north-east Skead Township. The linecutting was started in the fall of 1980 and completed during the summer of 1981.

Location, Access and Ownership

The property is located in the south-east part of Hearst Township and extends to the south into Skead Township along the east side of Grace Lake. There are 23 claims numbered L511693, L522792 to 522793, L523348 to 523352 inclusive; L531378, L532819, L532835 to 532837 inclusive; L545046 to 545051 inclusive, L545054, L545954, L531363, and L531365 recorded in the name of Superior Northwest Inc., Box 1110, Sault Ste. Marie, Ontario.

Access to the property is obtained by travelling south from Larder Lake, Ontario about 6 miles on Highway 624, and then following geophysical lines east. The area may also be reached by an overgrown trail south along the east side of Sharp Creek from the bridge on the road to the old Martin-Bird mine. This road leaves Highway 624 about 4 miles south of Larder Lake.

Previous Exploration

There has been considerable surface prospecting in the past as evidenced by a number of old pits and trenches. Old drill casing was seen during the survey and holes are marked as having been drilled on O.D.M. Map 1947-1. No records of drill logs or what if anything, was found in this previous work could be located.

Geology

The property is underlain by a volcanic-sedimentary sequence of rocks, cut by felsic to mafic intrusives. A large part of the claims are covered by extensive drift. Later Huronian sediments cover the older rocks in the central part of the claims.

Survey Procedure

A grid was laid out with the baseline running at about N 15° W east of Grace Lake. Crosslines were cut perpendicular to the baseline at 400-foot intervals.

W.D.

Survey Procedure (Continued)

The picket lines were chained and picketed every 100 feet. The pickets were marked with fluorescent red paint for easier observation.

Magnetometer readings were taken with a Scintrex MP-2 magnetometer at 100-foot intervals along all lines. 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 readings.

A VLF-EM survey was run with a Phoenix VLF-2 instrument set to the signal from Cutler, Maine (17.8 KHz). Readings were taken at 100-foot intervals along all the lines, using the procedure outlined in Appendix I. The looping method was used for control of variation, the same as described for the magnetic survey.

Discussion of Results

Magnetometer

The magnetometer survey gives an approximate outline of the areas underlain by sediments and volcanics. The volcanics are characterized by a more irregular magnetic profile, and the sediments by a fairly flat profile. Areas underlain by Huronian sediments have the characteristic flat profile of the older sediments but with higher magnetic readings. There are a number of local high magnetic readings. These areas appear to be in or adjacent to lamprophyre or gabbro bodies. The felsic intrusive body on lines 92N to 108N east of the baseline gives a very flat magnetic relief.

VLF-EM

The VLF-EM survey indicates a relatively large number of anomalies mostly trending in an east-west direction. These features are crosscutting the topographic trend which is approximately north-south. They may represent faults or crosscutting topographic features.

Conclusions

The magnetic survey will be useful in defining areas underlain by sediments or volcanics. Magnetic highs would also seem to correlate with lamprophyre or gabbro intrusions.

The VLF survey should be checked with other geophysical methods and geological surveys to determine the cause of the anomalies.

Respectfully submitted



February 3, 1982

R.A. MacGregor, P. Eng.

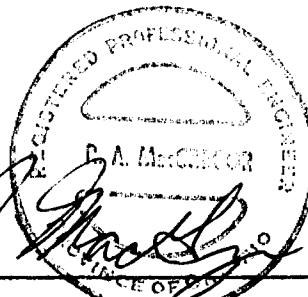
CERTIFICATE

I, Robert A. MacGregor, Certify:

1. I am a Mining Engineer residing at 134 Palace Drive Sault Ste. Marie, Ontario. I have worked as a mining engineer and geologist for the past 17 years.
2. I am a member of the Association of Professional Engineers of the Province of Ontario and a member of the Canadian Institute of Mining and Metallurgy.
3. I attended Queen's University for two years in the Mining Geology course.
4. I am the recorded holder of the mining claims in this report and have personal knowledge of the work performed.

Feb 3/82

Date

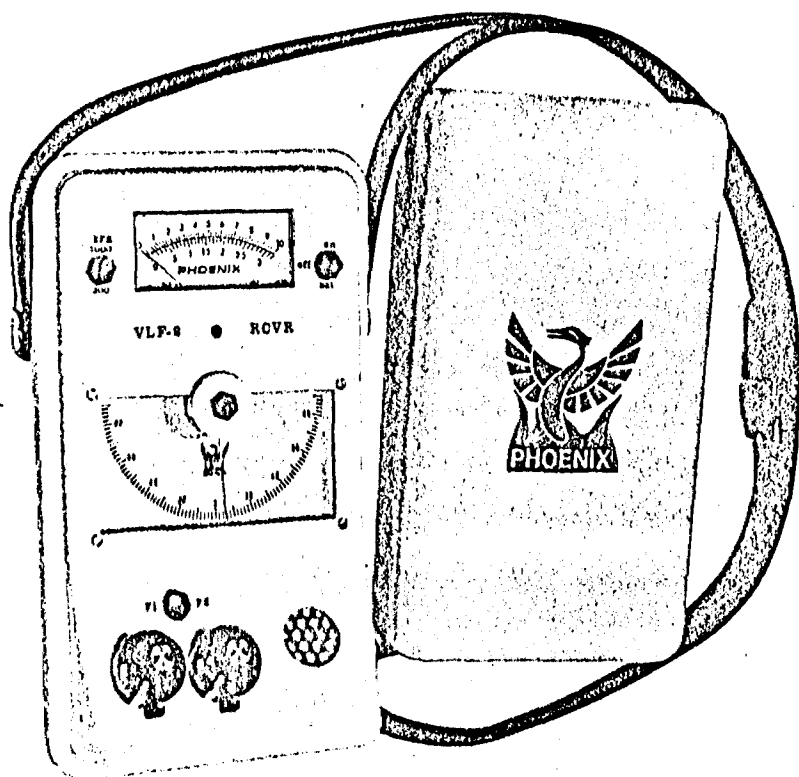


Robert A. MacGregor

VLF-2

Electromagnetic Unit

- Lightweight, low battery drain, rugged, simple to operate
- Two independent channels
- Each channel may select any station between 14.0 and 29.9 kHz
- Single crystal used for all frequencies
- Locking clinometer provides tilt-angle memory
- Superheterodyne detection and digital filtering provide extremely high selectivity and noise rejection



Military and time standard VLF transmitters are distributed over the world. These stations are used for geophysical EM surveying thus eliminating the need for a local transmitter and permitting one-man operation.

To ensure that a station excites the prospective conductor, two stations at approximately right angles are used during a survey (see data on back).

The choice of 160 frequencies in the range 14.0 to 29.9 kHz permits the use of a local EM transmitter when no suitable regular VLF station is available.



PHOENIX GEOPHYSICS LIMITED

Geophysical Consulting and Contracting, Instrument Manufacture, Sale and Lease.

Head Office: 200 Yorkland Blvd. Willowdale, Ont., Canada, M2J 1R6. Tel: (416) 493-6350
1424 - 355 Burrard St. Vancouver, B.C., Canada, V6C 2G8. Tel: (604) 684-2285
2430 N. Huachuca Dr., Tucson, Arizona, U.S.A. 85705. Tel: (602) 884-8542

Specifications

- Parameter Measured** : Orientation and magnitude of the major and minor axes of the ellipse of polarization.
- Frequency Selection, Front Panel** : Dual channel, front panel selectable (F1 or F2) each with independent precision 10-turn dial gain control.
- Frequency Selection, Internal** : F1 and F2 can be selected by internal switches within the range 14.0 to 29.9 kHz in 100 Hz increments.
- Detection And Filtering** : Superheterodyne detection and digital filtering provide a much narrower bandwidth and thus greater rejection of interfering stations and 60 cycle noise than conventional receivers.
- Meter Display** : 2 ranges: 0 to 300 or 0 to 1000. Background is typically set at 100. Meter is also used as dip angle null indicator and battery test.
- Audio** : Crystal speaker. 2500 Hz used as null indicator.
- Clinometer** : $\pm 90^\circ$, $+0.5^\circ$ resolution. Normal locking, push button release.
- Battery** : One standard 9v transistor radio battery. Average life expectancy - 1 to 3 months (battery drain is 3 mA)
- Temperature Range** : -40° to $+60^\circ$ C.
- Dimensions** : 8 x 22 x 14 cm (3 x 9 x 6 inches).
- Weight** : 850 grams (1.9 pounds).

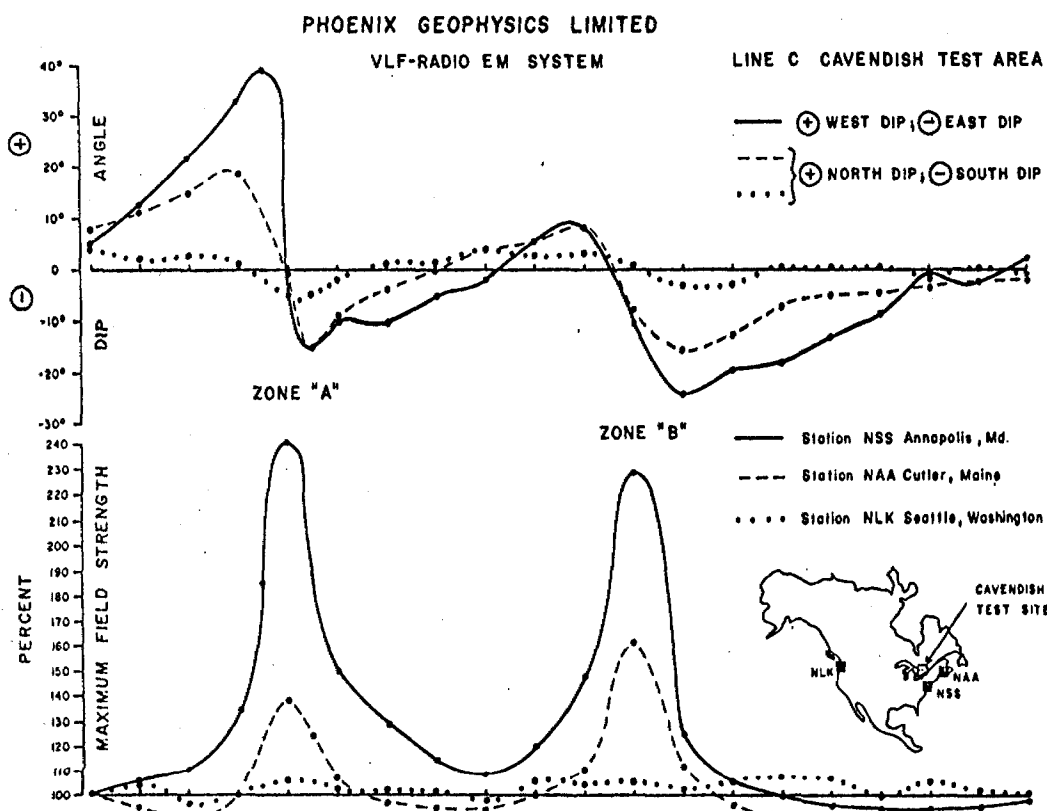
All of the established stations may be selected, or alternatively, a local VLF transmitter may be used which transmits at any frequency in the range 14.0 to 29.9 kHz.

VLF Station	Frequency (kHz)
Bordeaux, France	15.1
Odessa (Black Sea)	15.6
Rugby, U.K.	16.0
Moscow, U.S.S.R.	17.1
Yosamal, Japan	17.4
Hegaland, Norway	17.6
Cutler, Maine	17.8
Seattle, Washington	18.6
Malabar, Java	19.0
Oxford, U.K.	19.6
Paris, France	20.7
Annapolis, Maryland	21.4
Northwest Cape, Australia	22.3
Laulualei, Hawaii	23.4
Buenos Aires, Argentina	23.6
Rome, Italy	27.2

Field Data

The results below illustrate the need for using two orthogonal stations when the strike of the prospective conductor is not well-known. The dip angle and amplitude data measured using station NLK in Seattle, Washington, show only a very weak anomaly associated with the two conductive sulphide zones at Cavendish, Ontario.

The results obtained using Cutler, Maine reveal a more prominent anomaly, but the best response was obtained using Annapolis, Maryland since the station lies almost due south and the transmitted electromagnetic field is thus maximum-coupled with the North-South trending conductors.





Ministry of
Natural
Resources

Report of Work
(Geophysical,
Geochemical)



32D04SE0228 2.4524 HEARST

#49
type or print.
number of mining claims traversed
space on this form, attach a list.
days credits calculated in the
"Credits" section may be entered
"Expend. Days Cr." columns.
- Do not use shaded areas below.

(file L511684)

The Mining Act

900

- Do not use shaded areas below.

Type of Survey(s) Electromagnetic and Magnetometer		Township or Area Hearst and Skead Twp.	
Claim Holder(s) Superior Northwest Inc.		Prospector's Licence No. T-626	
Survey Company Colex Explorations Inc.		Survey Dates (linecutting to office) Day 10 80 3 12 82	Total Miles of line Cut ?
Name and Address of Author (of Geo-Technical report) R.A. MacGregor, 134 Palace Drive, Sault Ste. Marie, Ontario			

Special Provisions Credits Requested

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

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

Note: Special provisions credits do not apply to Airborne Surveys.	Geophysical	Days per Claim
	Electromagnetic	
	Magnetometer	
	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.

Report Completed

Date of Report **Feb. 3, 1982**

Recorded by (Signature) *R. MacGregor*

Mining Claims Traversed (List in numerical sequence)			Mining Claims Traversed (List in numerical sequence)		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
1.	511693	<i>7</i>	<i>this already claimed on file # 4523</i>		
	522792				
	522793				
	523348				
	523349				
	523350				
	523351				
	523352				
	531363				
	531365				
	531370				
	532819				
	532835				
	532836				
	532837				
	545046				
	545047				
	545048				
	545049				
	545050				
	545051				
	545054				
	545954				

RECEIVED

FEB 9 1982

MINING SECTION

RECEIVED
5 1982
7 8 9 10 11 12 1 2 3 4 5 6

Total number of mining claims covered by this report of work. **23**

For Office Use Only

Total Days Cr. Recorded **920**

Date Recorded **FEB - 5 1982**

Date Approved as Recorded

Mining Recorder

Regional/Branch Director

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
R.A. MacGregor, P.O. Box 1110, Sault Ste. Marie, Ontario P6A 5N7

Date Certified **Feb. 3, 1982**

Certified by (Signature) *R. MacGregor*

Mining Lands Comments

To: Geophysics *Mr. Barlow.*

Comments

<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Wish to see again with corrections	Date <i>Oct 6/82</i>	Signature <i>Ryan Blaw</i>
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To: Geology - Expenditures

Comments

<input type="checkbox"/> Approved	<input type="checkbox"/> Wish to see again with corrections	Date	Signature
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To: Geochemistry

Comments

<input type="checkbox"/> Approved	<input type="checkbox"/> Wish to see again with corrections	Date	Signature <i>[Signature]</i>
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To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-1380)



**GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL
TECHNICAL DATA STATEMENT**

**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) Magnetometer & VLF-EM
 Township or Area Hearst & Skead
 Claim Holder(s) Superior Northwest Inc.
 Survey Company Colex Explorations Inc.
 Author of Report R.A. MacGregor
 Address of Author 134 Palace Dr. S.S. Marie, Ont.
 Covering Dates of Survey Oct. 1980-Feb. 3, 1982
 (linecutting to office)
 Total Miles of Line Cut _____

MINING CLAIMS TRAVERSED	
List numerically	
L511693 ✓	
L522792 ✓ (prefix) (number)	
L522793 ✓	
L523348 ✓	
L523349 ✓	
L523350 ✓	
L523351 ✓	
L523352 ✓	
L531363 ✓	
L531365 ✓	
L531378 ✓	
L532819 ✓	
L532835 ✓	
L532836 ✓	
L532837 ✓	
L540546 ✓	
L540547 ✓	
L540548 ✓	
L545049 ✓	
L545050 ✓	
L545051 ✓	
L545054 ✓	
L545054 ✓	
TOTAL CLAIMS <u>23</u>	

If space insufficient, attach list

<u>SPECIAL PROVISIONS</u> <u>CREDITS REQUESTED</u>		DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	Geophysical	20
	-Electromagnetic	20
	-Magnetometer	
	-Radiometric	
	-Other	
ENTER 20 days for each additional survey using same grid.	Geological	
	Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
 Magnetometer _____ Electromagnetic _____ Radiometric _____
 (enter days per claim)
 DATE: Feb. 3, 1982 SIGNATURE: R. MacGregor
 Author of Report or Agent

Res. Geol. _____ Qualifications _____

<u>Previous Surveys</u>			
File No.	Type	Date	Claim Holder

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 940 Number of Readings 940
Station interval 100' Line spacing 400'
Profile scale 1" = 40'
Contour interval

MAGNETIC

Instrument Scintrex MP-2
Accuracy - Scale constant 1 gamma
Diurnal correction method Looping method
Base Station check-in interval (hours) two hours or less
Base Station location and value

ELECTROMAGNETIC

Instrument Pheonix VLF-2
Coil configuration N/A
Coil separation N/A
Accuracy +/- 1/2 degree
Method: [X] Fixed transmitter [] Shoot back [] In line [] Parallel line
Frequency Cutler, Maine (17.8 KHz)
Parameters measured Dip angle of the resultant field

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

1982 02 18

2.4524

Mining Recorder
Ministry of Natural Resources
4 Government Road East
P.O. Box 984
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

We have received reports and maps for a Geophysical (Electromagnetic and Magnetometer) survey submitted under Special Provisions (credit for Performance and Coverage) on mining claims L522792 et al in the Townships of Hearst and Skead.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

J. Skura/anc

cc: Superior Northwest Inc.
Toronto, Ontario

cc: R.A. MacGregor
Sault Ste. Marie, Ontario

2.4524

1983 01 18

2.4524

Mining Recorder
Ministry of Natural Resources
4 Government Road East
P.O. Box 984
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

RE: Geophysical (Electromagnetic & Magnetometer) Survey
on Mining Claims L 522792 et al in the Townships of
Hearst and Skead.

The Geophysical (Electromagnetic & Magnetometer) Survey assessment work credits as listed with my Notice of Intent dated November 26, 1982 have been approved as of the above date.

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

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

A. Barr:sc

cc: Superior Northwest Incorporated
Toronto, Ontario

cc: R.A. MacGregor
Sault Ste. Marie, Ontario

cc: Resident Geologist
Kirkland Lake, Ontario



Ministry of
Natural
Resources

Ontario

DEC 15, 1982

1982 11 26

Your file:

Our file:

2.4524

Mining Recorder
Ministry of Natural Resources
4 Government Road East
P.O. Box 984
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

Yours very truly,

E.F. Anderson
Director
Lands Administration Branch
Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

For further information, if required,
please contact Mr. F.W. Matthews at
416/965-1380.

A. Barr:sc

cc: Superior Northwest Inc
Toronto, Ontario

cc: R.A. MacGregor
Sault Ste. Marie Ontario



Ministry of
Natural
Resources

Notice of Intent
for Technical Reports

1982 11 26

2.4524

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Lands Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.



Ontario

Ministry of Natural Resources

Technical Assessment Work Credits

File
2.4524

Recorded Holder SUPERIOR NORTHWEST INC
Township or Area HEARST & SKEAD

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer <u>18</u> days Radiometric _____ days Induced polarization _____ days Section 86 (18) _____ days Geological _____ days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	L 522792-93 523348 to 50 incl. 531363 531365 531370 532819 532835-36 545047-51 incl. 545054 545954

Special credits under section 86 (15a) 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

L 511693
 523351-52
 532837
 545046

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; Geological — 40; Geochemical — 40; Section 86(18)-60:

Recorded Holder SUPERIOR NORTHWEST INC
Township or Area HEARST & SKEAD

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic <u>17</u> days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Section 86 (18) _____ days Geological _____ days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	L 511693 522792-93 523348 to 50 incl. 531370 532819 532835 to 37 incl. 545046 to 51 incl. 545054 545954

Special credits under section 86 (15a) 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

L 523351-52
531363
531365

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; Geological — 40; Geochemical — 40; Section 86(18)-60:

Superior Northwood, Inc.

Harold & Stead

24524

	EM Mag.			EM Mag.	
L 511693 .	$\frac{3}{4}$	0	545050 .	✓	✓
522792 .	✓	✓	51 .	✓	✓
522793 .	$\frac{1}{2}$	$\frac{1}{2}$	54 .	✓	✓
523348 .	✓	✓	545954 .	✓	✓
49 .	✓	✓	$\frac{13}{14}$	$\frac{9}{14}$	
50 .	✓	✓	$\frac{3}{4}$	$=\frac{2}{4}$	
51 .	0	0			
52 .	0	0			
531363 .	0	✓			
65 .	0	$\frac{1}{4}$			
① .	$\frac{1}{2}$	$\frac{1}{4}$			
532819 .	$\frac{3}{4}$	✓			
35 .	$\frac{3}{4}$	$\frac{3}{4}$			
36 .	✓	$\frac{1}{4}$	EM		Mag
37 .	✓	0	$19 \times 20 = 380 = 22.25$		$18 \times 20 = 360 = 20.25$
545046 .	✓	0	$= 17 \text{ days}$		18 days
47 .	✓	$\frac{1}{4}$			
48 .	✓	✓			
49 .	✓	✓			