NTS 42A/1

010

GEOPHYSICAL REPORT

for

F. T. O'CONNOR

GOODFISH LAKE CLAIMS

LARDER LAKE MINING DIVISION

ONTARIO

April 3, 1986

Sudbury, Ontario

David W. Constable

H.BSc., F.G.A.C.

Dual 2.5493

SUMMARY

F. T. O'Connor of Kirkland Lake completed a linecutting, ground magnetic and EM-VLF survey over Goodfish Lake during January and February 1986 on a group of 5 unpatented mining claims and 5 leased mining claims recorded in the name of F. T. O'Connor. The property lies 3 miles north of Kirkland Lake townsite, immediately west of the Airport Road.

The subject property is underlain by an Archean sequence of mafic flows, metasediments, feldspar porphyries and felsic pyroclastics. The sequence trends 070° and dips steeply. Parallel to this trend are several fault or shear zones which are gold-bearing. Also accompanying these shears is intense carbonatization, sericitization and sulfide mineralization. The gold is generally coarse-grained and in its native state.

The 1986 program defined four EM-VLF conductors. At least two of these conductors, and possibly three, are probable easterly extensions of known conductive zones. Metasediments with pyrite and/or chalcopyrite are also related to most of the conductors. The zones are suggested by this author to be of secondary importance to the known gold-bearing structures situated south of Goodfish Lake and further work should await the exploration results on the known gold zones.

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MAPS IN POCKET:

Magnetometer Map (Scale 1" = 200')

EM-VLF Fraser Filter Map (Scale 1" = 200')

INTRODUCTION

This report was prepared at the request of Mr. F. T. O'Connor of Kirkland Lake, owner of the property; and Mr. Glen Milne, president of Nova Beaucage Mines Limited, who hold an option agreement on the claims. The purpose of the report is to compile, interpret and, if warranted, to recommend a further gold exploration program on the Goodfish Property. Specifically, we were asked to examine the data from line-cutting, ground magnetics and EM-VLF surveys completed over Goodfish Lake in January and February, 1986.

The claims lie 3 miles north of the town of Kirkland Lake in Bernhardt and Teck Townships and are accessed by the airport road and numerous branch roads which access the homes and camps on Goodfish Lake. The area is underlain by an Archean greenstone assemblage including metasediments; such as grey-wackes, argillites and siltstones intercalated with great thicknesses of pillowed mafic volcanic flows. This sequence is intruded by late Archean diorites and quartz-feldspar porphyries. Numerous fault systems cross the property, generally in an east-west direction, and these faults seem to prefer the less competent metasediments. The faulting is accompanied by

carbonatization, silicification, brecciation, sulfide mineralization, development of sericite schists and gold-mineralization. The present surveys were completed to delineate the east-west fault zones and to trace the low magnetic, metasedimentary units.

During the preparation of this report we have drawn on the Ontario Government publications, assessment files and discussions with the Regional Geologist. In addition the author has personally mapped the land portion of the property and worked extensively in the general geologic camp.

PROPERTY DESCRIPTION, LOCATION AND ACCESS

The present survey covers the lake portion of the following contiguous claims:

Claim Number	Recording Date	Work Due Date
L-548713	February 4, 1980	July 31, 1986
L-548716	February 4, 1980	July 31, 1986
L-548717	February 4, 1980	July 31, 1986
L-548718	February 4, 1980	July 31, 1986
L-859610	October 30, 1985	October 30, 1986

Plus the following leased claims:

L-477273

L-477269

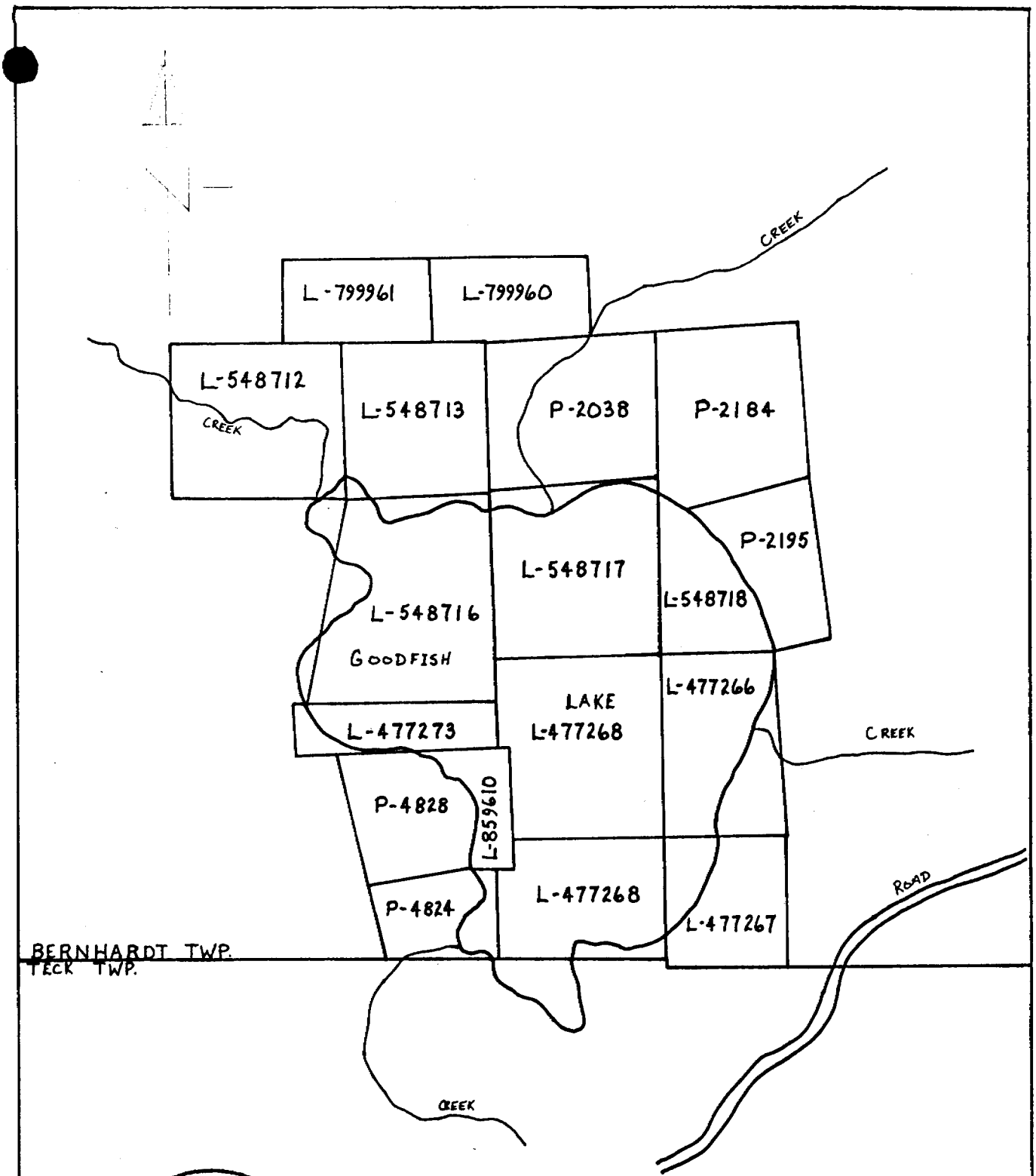
L-477268

L-477267

L-477266

The claims are held in the name of F.T. O'Connor of Kirkland Lake and are under option to Nova Beaucage Mines Limited of Toronto.

The claims are situated in southern Bernhardt Township with a small area into Teck Township. The group



GEOLOGICAL ASSOCIATION OF CANADA
DAVID W. CONSTABLE
FELLOW
April 3/86

F.T. OCONNOR

GOODFISH LAKE PROPERTY

FIGURE 1: LOCATION SKETCH

PAGE: 3A DATE: MAY 17, 1986

SCALE: 1 INCH = 1/4 MILE

covers Goodfish Lake and environs which is located 3.0 miles north of the town of Kirkland Lake and just west of the paved Airport Road. Local access is via gravel roads accessing the south, north and east shores of Goodfish Lake.

PROPERTY PHYSIOGRAPHY AND FACILITIES

The area is a contrast of locally rugged east-west trending outcrop ridges sharply divided by areas of muskeg. Streams are slow and irregular; emptying into and out of Goodfish Lake. Outcrop comprises 10-20% of the area and is confined to the highlands. Relief seldom exceeds 100 feet but cliffs and steep outcrop faces are often encountered. Goodfish Lake has a moderately rugged shoreline and, in places, a sandy bottom. Both year round and seasonal homes have been built on the northeast and eastern shores of the lake.

Timber and water are abundant on or near the property. Power has been run along the airport highway and into the subdivision on the lake shore. Good roads and road-building aggregates are also present on the subject property. Gold milling capacity is available in Kirkland Lake, Dobie and Virginiatown. The infrastructure necessary for a major mining development is available in nearby Kirkland Lake and surrounding area; including housing, skilled miners and suppliers.

LINECUTTING

Two baselines were established by compass trending 064° (Ast.) across the lake. Baseline No. 1 was located 1400 feet northwest of Baseline No. 0. Lines were turned off at 200-foot intervals and extended by compass at 154° (Ast.). Stations were chained at 100-foot intervals along the lines and were designated north and south from Baseline No. 0.

GROUND MAGNETIC SURVEY

The survey was completed using a model M-700 McPhar proton magnetometer. This instrument measures total magnetic field to ± 1 gamma. Corrections for diurnal variations were made employing the loop closure technique whereby readings were taken before and after completion of a loop and all intermediate readings were adjusted proportionately for the reading variations. Day to day corrections were also made for the start of each day by reading several stations on Baseline No. 0.

To initiate the survey control stations were established along Baseline No. 0. Readings were then completed along the lines at 100-foot and, where needed, at 50-foot detailed spacing. Appropriate corrections for day to day and diurnal variations were then made to the data. The corrected

data was then plotted on a plan at a scale of 1 inch equals 200 feet. The data was then contoured at both 250- and 500-gamma intervals and is presented in the map pocket of this report.

EM-VLF SURVEY

A Geonics EM-16 instrument was utilized for this survey. This is a one-man instrument which measures (in degrees or as a percentage of the primary field) the vertical distortion of a known primary field caused by the proximity of a local secondary conductor and due to the interference of the secondary field with the primary field. The VLF theory is well-known and will not be described in this report. During this survey the Cutler Maine station was read at a frequency of 24.0 KHZ. The IN-Phase readings only were recorded and measured in degrees.

In 1961 D. Fraser proposed a mathematical technique to filter and clarify the VLF data. The technique involves adding two sets of adjacent numbers and taking one set away from the other set. The net result is plotted between stations with the appropriate positive or negative sign. Positive net results are conductive zones.

The results of our survey were treated with Fraser Filter and plotted on a plan at a scale of 1 inch equals 200 feet. The positive results were then contoured at the 20 unit interval.

DISCUSSION OF RESULTS

The magnetic survey indicated a 070° (Ast.) general trend for the rocks and a background of 600-800 gammas. There are several areas of magnetic highs which appear to be roughly concordant to the property strike:

(a) The entire area north of Baseline No. 1

(b) Line 6E to 6W from 1200S to 1000S

Magnetic highs (a) are probably due to a large area of mafic flows with the highest readings indicative of the magnetite distribution and general iron distribution in the flows. Magnetic high (b) is probably due to the same cause, however since detailed geological mapping is incomplete in this area the real cause is still open to speculation.

The magnetic low between Baseline No. 0 and Baseline No. 1 is probably an extension of the metasedimentary sequence of greywackes and argillites and their lower iron content.

The EM-VLF survey shows large areas of low conductivity highlighted by several moderately to highly conductive zones:

(a) Lines 8W to 18W from 1100N to 1400N

(b) Line 0 to 8W from 3100N to 2900N

(c) Line 6W to 14W from 1100S to 1050S

(d) Line 14W to 18W (Open) from 450S to 400S

Conductor (a) is the best conductor and corresponds to a strong EM-VLF conductor which was delineated only partially. It was situated along the north boundary of claim L-477272, west of Goodfish Lake. A trench with pyrite was also mapped in the same area, however the sequence of rocks is primarily metasediments to the north of conductor (a) and mafic flows to the south. This is confirmed by the magnetic values.

Conductor (b) corresponds to the easterly extension of a strong EM-VLF conductor we earlier defined in claim L-548715. This conductor was roughly coincident with a carbonated mixture of metasediments and sericite schists containing significant amounts of pyrite and chalcopyrite trenched in several places. Lower magnetic values in an area of magnetic highs also tends to confirm this interpretation.

Conductor (c)'s source is open to speculation, however it may be the easterly extension of a weak to moderate EM-VLF conductor we earlier delineated in claim 6407. The rock sequence yields no hint about a possible source,comprising only mafic flows interrupted by lenses of unaltered sediments. Magnetically the area is low but the eastern end of the conductor abutts against a magnetic high.

Conductor (d) is only partially defined and is open to the west. No earlier survey indicated a conductor in this area however the geology is a lense of metasediments with pyrite in a flow sequence of mafic composition. The magnetic signature in the area is low.

Most of the other weak to moderate conductors over the lake may be ascribed to the conductive lake bottom sediments.

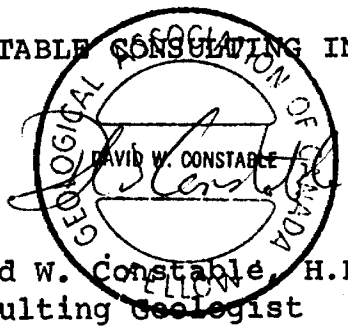
CONCLUSIONS AND RECOMMENDATIONS

The dominant gold-structure in this area are fault zones often carbonated and altered to sericitic rock. The probable origin of the faulted rocks is a felsic pyroclastic. While several such areas are known on the western side of Goodfish Lake they tend to be weak and gold values are not known. This survey has defined four areas of conductance but conductivity is not confined to or even necessary for the gold-bearing structures. Thus these targets become secondary in nature and only of interest if the primary targets, which are the mapped and sampled gold-bearing structures to the south of Goodfish Lake, are found to be economic.

Thus we recommend no further work at present on these conductors pending exploration results on the known gold-bearing structures.

Respectfully submitted

CONSTABLE CONSULTING INC.



April 3, 1986
Sudbury, Ontario

David W. Constable, H.BSc., F.G.A.C.
Consulting Geologist

Ontario Natural Resources

Assessment Work Statement
(Geophysical, Geological, Geochemical and Expenditures)

#204 2.9147

20

The Mini

42A01NE0021 2.9147 BERNHARDT

900

Type of Survey(s)
● Linecutting, Magnetic and EM-V.

Claim Holder(s)	Prospector's Licence No.
F. T. O'Connor	K-15849

Address
Toburn Drive, Kirkland Lake, Ontario

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
F. T. O'Connor	10 01 86 (Day Mo. Yr.) | 28 02 86 (Day Mo. Yr.)	13.35

Name and Address of Author (of Geo-Technical report)
David Constable, 10 Kingston Court, Sudbury, Ont. P3A 1C9

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	40
	- Magnetometer	20
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

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

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L		
	548716	
	548717	
	548718	5.12
	859610	60
	RECEIVED	
		300
	MINING LAND	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

LARDER LAKE MINING DIVISION
RECEIVED
MAY 23 1986

See reverse work statement

Total number of mining claims covered by this report of work. 4

Expenditures (excludes power stripping)

Type of Work Performed
Geophysical Interpretation

Performed on Claim(s)
L-548713, 548716, 548717, 548718, 859610, (Sec 77-19)

Calculation of Expenditure Days Credits

Total Expenditures			=	Total Days Credits
$ 976.80	÷	15	=	65.12

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.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
305.12	MAY 23 1986	
	Date Approved as Recorded	Branch Director

Date	Recorded Holder or Agent (Signature)
April 8/86	x D Constable

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
David Constable, 10 Kingston Court, Sudbury, Ontario P3A 1C9

Date Certified	Certified by (Signature)
April 8/86	x D Constable

1362 (81/9)

October 17, 1986

Your File: 204/86
Our File: 2.9147

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

Dear Madam:

RE: Notice of Intent dated September 19, 1986
Geophysical (Electromagnetic & Magnetometer)
Surveys on Mining Claims L 548716, et al,
in Bernhardt Township

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, Supervisor
Mining Lands Section

Whitney Block, 6th Floor
Queen's Park
Toronto, Ontario
M7A 1W3

Telephone: (416) 965-4888

SH/mc
cc: F.T. O'Connor
P.O. Box 834
Kirkland Lake, Ontario
P2N 3K4

Resident Geologist
Kirkland Lake, Ontario

Encl.

David Constable
10 Kingston Court
Sudbury, Ontario
P3A 1C9

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

Ministry of Northern Development and Mines

Ontario

Technical Assessment Work Credits

File: 2.9147

Date: September 19, 1986

Mining Recorder's Report of Work No.: 204/86

Recorded Holder: F.T. O'CONNOR

Township or Area: BERNHARDT TOWNSHIP

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	L 548716 to 18 inclusive
Electromagnetic 40 days	859610
Magnetometer 20 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.	

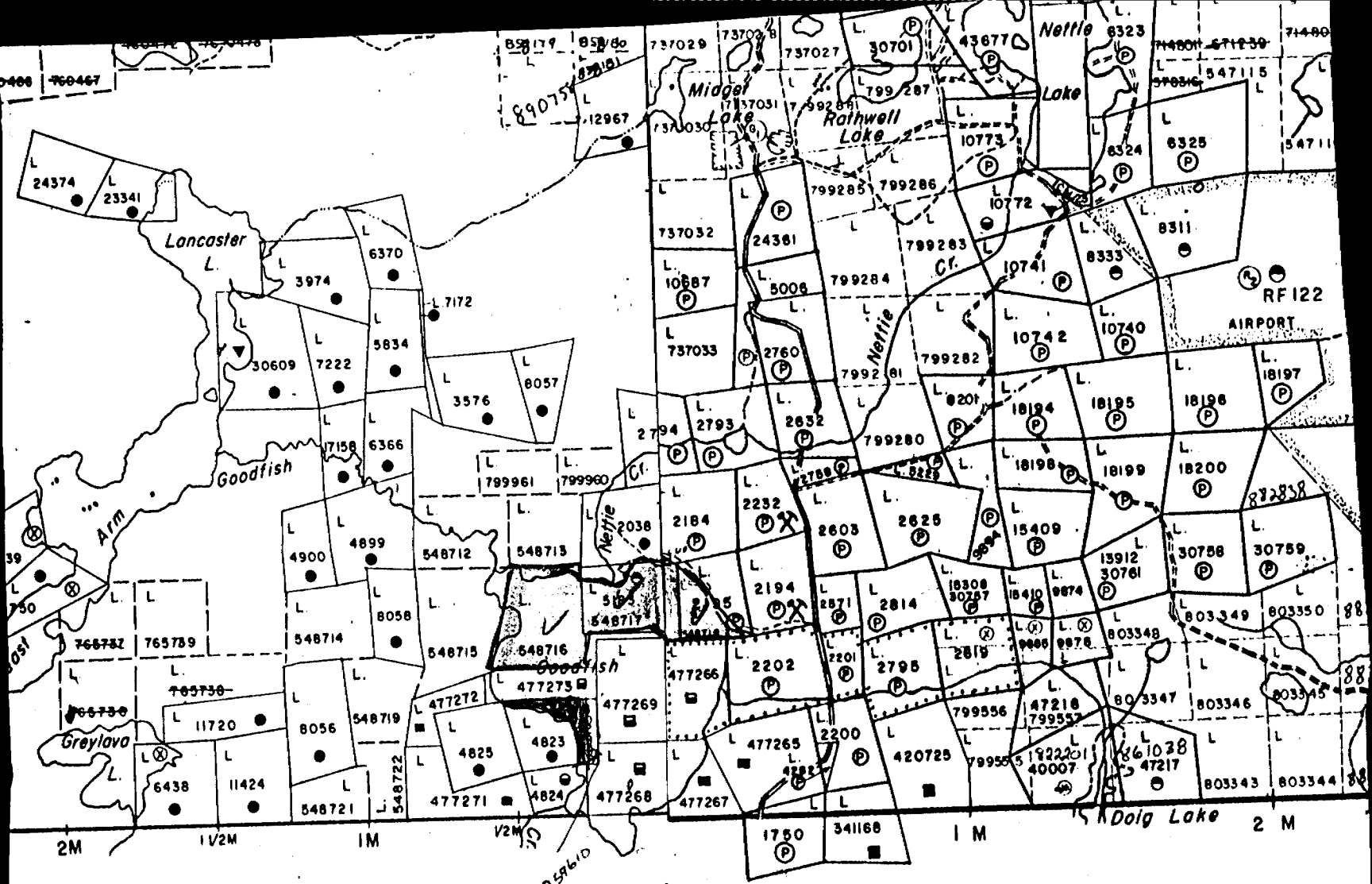
Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

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

- NO CREDIT UNDER SECTION 77(19) FOR COSTS INCURRED IN THE INTERPRETATION AND PREPARATION OF THE REPORT.

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.


Lancaster L.
Goodfish Arm
Goodfish Cr.
Nettie Cr.
Midge Lake
Rathwell Lake
Nettie Lake
Greylava
Doig Lake
AIRPORT
RF122
2M
1 1/2M
1M
1/2M
1M
2 M

MAGNETOMETER SURVEY

GOOD FISH LAKE

BERNHARDT Twp.
TECK Twp.

MORRISETTE Twp.
LEBEL Twp

L-548712
L-548715
L-548716
L-548717
L-548718
L-477223
L-477269
L-859610
L-477273
L-477271
L-477270
L-477265
L-477267
L-477266

5183 (P)
2184 (P)
2232 (P)
2195 (P)
2194 (P)
2202 (P)
4823 (P)
4825 (P)
4824 (P)
45204 (P) S.R.O
6407 (P)
1688 (P)
1751 (P)
1619 (P)
1750 (P)

L-18E
L-14E
L-10E
L-6E
L-2E
L-2W
L-6W
L-10W
L-14W
L-18W
BL-0
BL-1

INSTRUMENT = M-700 McPHAR

DAVID W. CONSTABLE
GEOLOGICAL ASSOCIATION OF CANADA
YELLOWKNIFE

LEGEND

GOODFISH LAKE PROJECT

- under 500
- 500 to 700
- 700 to 1000
- 1000 to 1250
- 1250 to 1500
- 1500 to 1750
- 1750 to 2000
- 2000 to 2250
- 2250 to 2500
- 2500 to 2750
- 2750 to 3000
- 3000 to 3250
- 3250 to 3500
- 3500 and over

SCALE 1" = 200'

T. O'CONNOR

200

2.9147

L-548712

548713

5183 (P)

2184 (P)

2232 (P)

L-548715

L-548716

L-548717

L-548718

2195 (P)

2194 (P)

BL-1

L-18E

GOOD FISH LAKE

L-14E

BL-0

L-10E

L-6E

L-2E

L-477273

L-477269

L-477266

2202 (P)

L-859610

4823 (P)

4825 (P)

L-477265

L-477273

L-18W

L-6W

L-2W

L-10W

L-14W

4824 (P)

L-477271

L-477267

BERNHARDT Twp.

TECK Twp.

MORRISETTE Twp.

LEBEL Twp

45204 (P) S.R.D

L-477270

6407 (P)

1688 (P)

1751 (P)

1619 (P)

1750 (P)

All Readings are in % of Primary Field & are In Phase only.

Station: Cutler, Maine 24.0KHz

SCALE 1"=200'

1986

GOODFISH LAKE PROJECT

VLF-EM SURVEY

29147

210

42481NE0021 2.9147 BERNHARDT

GOOD FISH LAKE

BERNHARDT Twp.
TECK Twp.

MORRISETTE Twp.
LEBEL Twp

L-548712
L-548713
L-548715
L-548716
L-548717
L-548718
L-18E
L-14E
L-10E
L-6E
L-2E
L-2W
L-6W
L-10W
L-14W
L-18W
BL-1
BL-0
L-859610
L-477265
L-477266
L-477267
L-477268
L-477269
L-477270
L-477271
L-477272
L-477273

5183 (P)
2184 (P)
2232 (P)
2195 (P)
2194 (P)
2202 (P)
4823 (P)
4825 (P)
4824 (P)
45204 (P) S.R.O
6407 (P)
1688 (P)
1751 (P)
1619 (P)
1750 (P)

Tx: CUTLER MAINE (24.0 KHz)
Instrument: GEONICS EM-16

Direction of Tx.

GOODFISH LAKE PROJECT

VLF-EM SURVEY
(FRASER FILTER PRESENTATION)

SCALE 1" = 200'

DAVID W. CONSTABLE
PROFESSIONAL ENGINEER
YELLOWKNIFE

2.9147