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PROJECTS UNIT

ON

REPORT

GEOPHYSICAL SURVEYS

ON PROPERTIES OF

IMPERIAL OIL LIMITED

HINKS TOWNSHIP, CLEAVER TOWNSHIP AND ROBERTSON TOWNSHIP

LARDER LAKE MINING DIVISION

ONTARIO

Timmins, Ontario

January 17, 1976.

E. W. BAZINET, P. ENG.



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REPORT

ON

GEOPHYSICAL SURVEYS

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LARDER LAKE MINING DIVISION

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INTRODUCTION

During December 1975, ground geophysical work, consisting of both electromagnetic and magnetometer surveys, was carried out for Imperial Oil Limited, over portions of three claim groups to investigate conductors indicated by a Questor Mark VI Input Airborne E.M. Survey released April 4, 1975, by the Ministry of Natural Resources.

The following report and accompanying maps describe the results of the surveys and give a geological interpretation of the results.

<u>Hinks Group</u>

The survey outlines a good conductor over a length of approximately 1200 feet. There is no magnetic correlation but the E.M. response is consistent with a sulfide source.

Access in the summer is easy and there is a possibility that the source of the conductor can be determined by surface prospecting. For this reason it is recommended that the conductive area be prospected prior to making a decision regarding diamond drilling.

Cleaver Group

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The survey outlines a relatively weak conductor of small dimensions. Overburden appears to be shallow along the west shore of the Bay near the conductive area and there is a good possibility that outcrop can be located in this area which will reveal the nature of the conductive source.

It is recommended that this area be prospected.

Robertson Group

The survey outlines a small, weak conductor under the south end of a small pot-hole lake on the property.

The E.M. response is consistent with a sulfide source but due to its limited size the importance of the conductor is questionable.

It is suggested that the west shore of the lake be prospected in an attempt to determine the conductive source.

Failing this, it is suggested that geochemical sediment samples be collected from the drainage channel at the south end of the lake in an attempt to determine if base metal values are present under the lake.

PROPERTY AND LOCATION

The properties consist of 3 separate claim groups known as the Hinks Group, the Cleaver Group and the Robertson Group, totalling 15 unpatented claims.

The claims as shown on the accompanying maps are as follows:-

<u>Claim No.</u>	Township or	Township or Area		Group	
LL 420224	Hinks 1	wp.	Hinks	Group	
LL 420225	11	H T	11	н	
LL 420226	11	11	11	Ħ	
LL 420227	11		61	11	
LL 420228	16	U .	11	11	
LL 420229	11		11	н	
LL 420230	33	ti	11	11	
LL 420231	11	п	11	ŧt	
LL 420232	15	tt	11	11	
LL 420367	Cleaver	Twp	Cleaver	Group	
LL 42036 8	83	" "	"	"	
LL 420219	Robertson	Twp	Robertson	Group	
LL 420220	11		41		



LL 420221 LL 420222

The claim groups are situated north and west of the Village of Mattachewan.

Hinks Group

During the winter months the Hinks Group is only accessible by snowmobile, because the Timmins-Matachewan bush road is not maintained.

It would appear that during the summer months the property is accessible from the Timmins-Matachewan bush road by 4 wheel drive (as shown on the map) to within approximately 1500 feet of the west end of the base line.

<u>Cleaver Group</u>

During the winter months the group can be reached by snowmobile trail branching south off the Timmins-Langmuir Township road in Shaw Township. In the summer access is by charter aircraft to Little Night Hawk Lake.

Robertson Group

This group is accessible by 4 wheel drive vehicle during the summer months, over a very rough road leading north through the Matachewan Indian Reserve. The distance is approximately 12 miles from the Reserve. Access during the winter months is by snowmobile over the same road.

SURVEY AND METHOD OF PRESENTATION OF RESULTS

The electromagnetic survey employed the S.E.-600 Electromagnetic instrument operated in the horizontal coil configuration with a transmitter-receiver separation of 300 feet. Readings of the in-phase and out-of-phase components of the resultant field at 1600 C.P.S, were recorded at station intervals of 100 feet and 50 feet where greater detail was required. In general grid lines are spaced at 400 foot intervals but where conductors requiring greater detail were encountered, lines were run at 200 foot intervals.

A conductor will produce a curve going from positive readings through zero to negative and back again to positive. Both the in-phase and out-of-phase readings show the same general curve. The ratio between the in-phase and out-of-phase readings over a conductor is an indication of the conductivity of the body. In general the ratio increases as the conductivity of the detected conductor increases and a ratio greater than 1.0 is considered to represent a good conductor typical of the response over a massive sulfide body.

The magnetic readings were taken with a McPhar M700 Fluxgate magnetometer measuring the variations of vertical component of the earth's magnetic field. The magnetic responses, as plotted on the accompanying map, are corrected for diurnal variation and instrument drift, and are contoured at appropriate intervals. A magnetic base station was set up at appropriate

- 5 -

locations on each claim group. For the purpose of diurnal cor-

rection the base station reading was used as a feference reading at least once every hour during the magnetometer survey.

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The electromagnetic and magnetic results are plotted on separate maps on a scale of 200 feet to the inch.

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<u>Hinks Group</u>

The survey outlines a moderately good conductor (Conductor "A"), over a definite length of approximately 1200 feet on lines 20W,24W and 28W. Weakly conductive readings on lines 16W and 4W (Conductor "B"), suggest that the conductor might project between these lines. The in-phase to out-of-phase ratio is slightly greater than one implying conductivity consistent with sulfide mineralization.

Conductor "A", is strongest on line 28W, where it attains an apparent width of 50 feet. The dip appears to be steeply grid north. There is no magnetic correlation.

Conductor "C", is detected on one line, is very weak and does not appear to warrant follow up exploratory work.

Conductor "A", occurs near the base of a steep north facing slope. Outcrop was not observed over this section of the property but is common elsewhere on the property. It is recommended that an attempt be made to determine the source of the conductor by prospecting the area surrounding the conductor axis prior to making a decision on diamond drilling. Cleaver Group

The survey outlines a short relatively weak conductor close to the north boundary of the claim group. In general the in-phase to out-of-phase ratio is less than one suggesting a relatively poorly conductive source but in the writer's opinion, the conductor could be due to sulfide concentrations. On line 16N, the conductor is coincident with a weak magnetic anomaly. Due to rugged topography, the interpretation of the dip of a conductor of relatively weak response such as this one is not very reliable but the writer favours a steep dip grid west.

Outcrop was not observed due to snow cover but it is apparent from the topography that overburden is very shallow along the west shore of the northerly trending bay in the vicinity of the conductor. In the writer's opinion, there is a good possibility that the nature of the conductive source can be determined by surface prospecting despite the fact that the conductor is partly under the Lake.

Robertson Group

The survey outlines a weak conductor under the south end of a small lake. The in-phase to out-of-phase ratio is approximately one, consistent with a sulfide source but the source appears to be very limited in size and for

- 8 -

this reason it is questionable if the conductor warrants testing by diamond drilling.

The topography of the group is extremely rugged and outcrop is fairly abundant. It is suggested that the west shore of the lake in the vinicity of lines 12N and 16N, be prospected in an attempt to determine the conductive source.

The lake is elevated and has an old dry drainage channel at the south end. Geochemical sediment samples taken from this channel might possibly indicate whether or not base metal values are present under the Lake.

Respectfully Submitted

W Bazner E. W. Bazinet, P. Eng Jualifications 63.2086

Timmins, Ontario. January 17, 1976.

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Type of Survey GEOPHYSICAL	-HORIZONTEL L	DOP AND MA	GNETOMETER
Township or Arca CLERUER 7	OWNSHIP	1015 Education	
Claim holder(s)	OIL LIMITED	MINING CL	AIMS TRAVERSED
Author of Report _ EW - BAZI	NET		10-00COV
Address	NTARIO	(prefix)	(number)
Covering Dates of Survey December (linecu Total Miles of Line cut 1.85 M	$\frac{3CR}{119.75}$		120368 112
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GEOLOGICAL BRANCH			
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GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS		
Number of Stations	ଟ୍ଟେ	Number of Readings88
Station intervalI	ors front.	
Line spacing	400 FEET.	
Profile scale or Contou	$\frac{1" = 20}{(specify for}$	each type of survey)
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Instrument	MICPHAR MI DO	2 FLUXGAIG
Accuracy - Scale const	ant 10GAMMAR	A ANGREEN CHORY MILLION
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GRAVITY		
Instrument	n an	
Scale constant		
Corrections made		
Base station value and	location	
		
Elevation accuracy		
INDUCED POLARIZ	<u>ATION RESISTIVITY</u>	
Instrument		
Time domain		Frequency domain
Frequency		Range
Power		
Electrode array		
Electrode spacing		
Type of electrode		

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Type of Survey GEOPHYSICAL - HORIZONTAL LOOP	AND MAGNETO	meter
Township or Area HINCKS TOWNSHIP	ſ	
Claim holder(s)_IMPERIAL DIL LIMITED	MINING CLAIM	S TRAVERSED
	mary	Em
Author of Report Ew BAZINET	1/3 LL 4202Z	4 1/3 NC
Address TIMMINS ONTARIO	(prefix)	(number)
Covering Dates of Survey DECEMBER 1975	19LL 42022	SIYNU
Total Miles of Line cut 4.3 MILES	1LL 42022	-6 V
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SPECIAL PROVISIONS DAVS	. (1	B
CREDITS REQUESTED Gcophysical per claim	LL (4202-0	-8)
Electromagnetic 40	1/VLL 42022	$29/\gamma$
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Previous Surveys		(
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	TOTAL CLAIMS_	9 (NINE)
Approved bydate		

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File 2.2075

GEOPHYSICAL TECHNICAL DATA

<u>GROUND SURVEYS</u>		A 4	
Number of Stations	196	Number of Readings 196	
Station interval	100' FOOT		
Line spacing	400 FEET		
Profile scale or Contour ir	$tervals = \frac{1'' = 2}{2}$	20%	
	(specify	y for each type of survey	
MAGNETIC			
Instrument	MEPHAR	M-700 FLUXGATE	
Accuracy - Scale constant	10 GAI	MMAS	
Diurnal correction metho	d BASE S	TATION CHECKED EVERY HOUR	>
Base station location_ST	ATIONS ESTA	BLISHED EVERY 800' ALONG	
Ę	SASE LINE		
ELECTROMAGNETIC			
Instrument	5.6.600		
Coil configuration	HORIZONTAL	(COPLANAR)	
Coil separation	300'		
Accuracy	+ 1%	1	
Method:	Fixed transmitter	🗆 Shoot back 🛛 In line 🗆 Parall	el line
Frequency	soo C.p.s.	(marife VI V station)	
Parameters measured	IN-PNASE -	OUT OF PHASE	
GRAVITY			
Instrument			
Scale constant			
Corrections made			
Base station value and loc	cation		
Staff Staff and a staff of the			
Elevation accuracy			
INDUCED POLARIZAT	TION RESISTIVITY		
Instrument			
Time domain		Frequency domain	
Frequency		Range	
Power		~	
Electrode array			
Electrode spacing			
Type of electrode			

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Type of Survey GEOPNYSICAL	- HARIZONTAL LOOP A	ND MAGNETOMETER
Claim holder(s) <u>IMPERIAL</u>	OIL LIMITED	MINING CLAIMS TRAVERSED Mary List numerically Eng
Author of Report E.W. BA AddressIMM(NS Covering Dates of Survey Total Miles of Line cut	Z_1NET ONTARIO EMBER 1975 (linecutting to office) S, 3	$\begin{array}{c} LL & 4202.19 \\ (\text{prefix}) & (\text{number}) \\ LL & A20220 \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $
SPECIAL PROVISIONS CREDITS REQUESTED ENTER 40 days (includes line cutting) for first survey. ENTER 20 days for each additional survey using same grid. AIRBORNE CREDITS (Special provi MagnetometerElectromag (enter of DATE: MARCH 31/76SIGNA	DAYS per claim Electromagnetic Magnetometer Magnetometer Radiometric Cother Other Geological Geochemical ision credits do not apply to airborne surveys) netic Radiometric Other Other Other 	
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OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS
Number of Stations156Number of Readings156
Station interval. 100 FOOT
Line spacing400 FEET
Profile scale or Contour intervals $1'' = 2.0$ %
(specify for each type of survey)
MAGNETIC
InstrumentMEPHAR M-700 FLUXGATE
Accuracy - Scale constant O GAMMAS
Diurnal correction method BASE STATION CHECKED ENERY NOUR
Base station location STATIONS ESTABLISHED EVERY BOO' ALONG
BASE LINE
ELECTROMAGNETIC
InstrumentS.E.600
Coil configuration HORIZONTRY (COPLANAR)
Coil separation 300 /
Accuracy
Method: Fixed transmitter Shoot back In line Parallel line
Frequency 1600 C.p.s.
Parameters measured IN - PARSE IOUT OF PNASE
GRAVITY
Instrument
Scale constant
Corrections made
Base station value and location
Elevation accuracy
INDUCED POLARIZATION RESISTIVITY
Instrument
Time domain Frequency domain
FrequencyRange
Power
Electrode array
Electrode spacing
Type of electrode











HORIZONTAL LOOP ELECTROMAGNETIC SURVEY FOR IMPERIAL OIL LIMITED HINKS TOWNSHIP LARDER LAKE MINING DIVISION ONTARIO

E. W. BAZINET P. ENG. December, 1975.

BY

SCALE 1 inch = 200 feet

LEGEND

- IN PHASE SCALE 1 inch = 20% OUT OF PHASE SCALE 1 inch = 20% COIL SEPARATION 300' CONDUCTOR AXIS





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HORIZONTAL LOOP ELECTROMAGNETIC SURVEY FOR IMPERIAL OIL LIMITED CLEAVER TOWNSHIP LARDER LAKE MINING DIVISION ONTARIO

E. W. BAZINET P. ENG.

December, 1975.

SCALE 1 inch = 200 feet

LEGEND

IN PHASE SCALE 1 inch = 20% OUT OF PHASE SCALE 1 inch = 20% COIL SEPARATION 300' CONDUCTOR AXIS

O.P. I.P.







FOR

IMPERIAL OIL LIMITED

CLEAVER TOWNSHIP

LARDER LAKE MINING DIVISION

ONTARIO

MAP SCALE 1" = 200'

BY

W RAZINET P. ENG

December, 1975.

LEGEND

MEASUREMENT STATIONS ALONG PICKET LINES 270 RELATIVE VALUES OF THE VERTICAL COMPONENT FORCE OF THE EARTH'S MAGNETIC FIELD (In Gammas) MAGNETIC CONTOURS

BASE STATION

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MAGNETOMETER SURVEY

FOR

IMPERIAL OIL LIMITED ROBERTSON TOWNSHIP LARDER LAKE MINING DIVISION

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MAP SCALE 1" = 200"

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E. W. BAZINET P. ENG. December, 1975.

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MEASUREMENT STATIONS ALONG PICKET LINES 270 RELATIVE VALUES OF THE VERTICAL COMPONENT FORCE OF THE EARTH'S MAGNETIC FIELD (In Gammas) MAGNETIC CONTOURS

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HORIZONTAL LOOP ELECTROMAGNETIC SURVEY FOR IMPERIAL OIL LIMITED ROBERTSON TOWNSHIP LARDER LAKE MINING DIVISION ONTARIO

BY

E. W. BAZINET P. ENG December, 1975. SCALE 1 inch = 200 feet

LEGEND

IN PHASE SCALE 1 inch = 20% -OUT OF PHASE SCALE 1 inch = 20% COIL SEPARATION 300'

