Report of Geophysical Surveys in the Vicinity of the East Arm of Opeepeesway Lake Sy-630

General

An electromagnetic and magnetic survey was carried out on 50 adjoining claims in Huffman Township, Sudbury Mining Division. This block of 50 claims largely lies east of the East Arm of Opeepeesway Lake, and west of the boundary of Huffman and Potier Townships.

The survey was controlled by a baseline cut across the claim block at an astronomic bearing of S74°00'E, and grid lines which were run at astronomic bearings of N16°00'E and S16°00'W every 400 feet along the baseline. The base and grid picket lines were cut and chained under contract by Albert E. Jerome from January 23 to February 23, 1963.

An electromagnetic survey of the 50 adjoining claims was carried out by Maurice G. Macknight and Ambrose E. Bailey from January 30 to March 6, 1963. From February 26 to March 6, 1963, March 19 to April 2, 1963 and June 21 to June 28, 1963 Maurice G. Macknight and I carried out a magnetic investigation of 50 adjoining claims. Approximately 52 line miles were investigated with a Sharpe M.F.-1 fluxgate magnetometer, and a Sharpe S.E.-200 electromagnetic instrument. The electromagnetic survey was carried out with a Sharpe S.E.-200 instrument using the Broadside or Parallel Line Method. The Sharpe S.E.-200 electromagnetic instrument has a frequency of 1250 c.p.s. and a ±2° null for up to a 500 foot separation. A Sharpe M.F.-1 fluxgate magnetometer with a 20 gamma per scale division sensitivity on the 1000 gamma range was used to conduct the magnetic survey.

Discussion of the Electromagnetic Results

The electromagnetic survey was carried out in an attempt to locate any conductors indicative of a zone of sulphide mineralization which may occur within or near the contacts of the Algoman quartz-feldspar porphyries and Timiskaming sediments, or the contact of the Timiskaming sediments and Keewatin volcanics.

The results of the survey are shown as profiles with a vertical scale of 1"=10°. South coil tilts were plotted on the east side of the grid line; whereas, the north coil tilts were plotted on the west side.

No conductors of strength and quality as indicated by the magnitude of the tilt angle and the null width compared to the corresponding tilt angle were located by the electromagnetic survey. One crossover of minor significance, which was located on L76+00E, 17+00S was disproven during September when it was checked using the horizontal loop method and a Crone electromagnetic dual-frequency unit.

It appears that the lack of conductors is not due to the depth of overburden which is less than 200 feet, the depth of penetration of a S.E.-200 electro-

magnetic instrument at a coil spacing of 400 feet.

The absence of conductors within or near the Algoman quartz-feldspar porphyries, the contact zone of the Timiskaming sediments and Keewatin volcanics, and the fault zones indicates that zones of sulphide mineralization of sufficient magnitude to warrant drilling are non-existent.

Discussion of the Magnetic Results

A magnetic investigation was carried out in an attempt to delineate areas of different rock types, and to locate geological structure favourable for mineral deposition.

A 1000 gammas were added to all corrected readings in order that most of the negative results may be eliminated. The results of the survey are shown in the form of a contour map with 500 gamma intervals. The apparent regional zero is represented by the 1000 gamma contour.

The general pattern of the contour map seems to correspond to the geology of the area. Areas of moderate magnetic relief and magnetic values about 500 gammas higher than the regional zero occur east of Huffman Lake and in the northwestern portion of the map area. These areas coincide with a conglomerate that contains abundant pebbles of iron formation. An area of great variation of magnetic relief lies northeast of Huffman Lake, and is occupied by Keewatin volcanics which have been intruded by narrow diabase sills, and a few narrow diabase dykes which trend a bit east or west of north. A small area of high magnetic relief which trends about east-west and lies immediately north of Camp Lake is associated with a diabase sill. Relatively low magnetic relief with magnetic values slightly less than the regional zero covers the greatest portion of the map area. This area is occupied by greywacke, quartzite and lenticular quartz-feldspar porphyry intrusions. An area of low magnetic relief and magnetic values about 400 gammas less than the regional zero which occurs north and west of Huffman Lake, coincides with massive and pillowed volcanics with some interbedded tuffs and schists. The general trend of the magnetic contour map corresponds with the regional strike of the geological formations of the area.

The vertical field magnetic survey failed to delineate two fault zones and a large lenticular quartz-feldspar porphyry intrusions which trends across the central portion of the 50 claim block.

Conclusions and Recommendations

The electromagnetic survey failed to locate any conductors indicative of zones of possible sulphide mineralization.

The vertical field magnetic investigation delineated some of the areas of different rock types and thus located some geological structure favourable for mineral deposition.

During the summer, a ground examination of outcrops in the vicinity of favourable geological structure which was located during the winter by a magnetic survey, failed to produce any encouraging results.

Since the geophysical surveys, and geological mapping, sampling and assaying which were carried out during the summer produced no encouraging results, I recommend that the Company terminate the Dunne Option Agreement and allow the remaining claims in Huffman Township to lapse.

Respectfully submitted,

Earl J. Lalonde,
Denison Mines Limited,
Explorations Division.

December, 1963.

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Report of a Detailed Geological Survey in the vicinity of the East / Lake Lx-630

Introduction

From June 10 to September 14, 1963, Maurice Macknight and I carried out a detailed geological survey on a block of 30 claims lying east of the East Arm of Opeepeesway Lake in Huffman Township, Sudbury Mining Division.

The area was covered by a detailed geological survey and any interesting area was sampled in an attempt to locate possible mineral occurrences and/or geological structure favourable for mineral deposition. Mapping and sampling were controlled by a baseline which was cut across the claim block at a bearing of 074°00'E, and by grid lines which were run from the baseline at 400 foot intervals and bearings of N16°00E and S16°00W.

The area is readily accessible by rail, road and canoe, road and canoe, rail and canoe or by plane. An excellent bush road which is maintained by K.V.P. Co. Ltd., connects Jerome Mine on Opeepeesway Lake to Ramsay on the C.P.R. transcontinental mainline. The centre of the claim block may be reached by a 4.5 mile canoe trip from Jerome Mine, and a 1.5 mile walk along an old trail which connects the East Arm of Opeepeesway Lake to Huffman and Camp Lakes. Jerome Mine is connected to the Thessalon-Timmins highway via Sultan by excellent bush roads maintained by K.V.P. Co. Ltd. An old canoe route connects Opeepeesway Lake to Biscotasing, which is situated southeast of Ramsay on the C.P.R. mainline. Charter plane service to the area is available at Sudbury, Blind River and Chapleau.

Previous Work

In 1904, C. K. Leith became interested in the iron formation in the southern portion of Huffman Township, and in 1907 carried out a magnetic survey and a limited amount of surface work for private interests. From 1923 until 1927, Ellis Thomson and R. C. Emmons mapped the geology of the Woman River and Hideout areas, and in 1929 the results of the investigation were published by the Geological Survey of Canada in a preliminary report with accompanying maps. The most complete work of the area was completed for the Ontario Department of Mines in 1934 by H. C. Laird. A symposium volume entitled "Structural Geology of Canadian Ore Deposits" which was published in 1948 by the Canadian Institute of Mining and Metallurgy, contains a report by W. L. Brown which gives a great deal of information about Jerome Mine in the adjoining township of Osway. A comprehensive report entitled "Geology of Osway Township - 1949" by W. W. Moorhouse was published by the Ontario Department of Mines in 1951.

Although a few prospectors covered the area from about 1925 on, no discoveries were made until 1938 when A. E. "Bert" Jerome found the Jerome Mine showing on the shore of Opeepeesway Lake in Osway Township. The mine opened in 1939 and all operations were suspended in July 1945. During the war years, the area was prospected and many showings or potential showings were trenched, sampled, blasted and/or diamond drilled. Several shallow diamond drill holes were completed on the claim block during this period, and some of the remaining core indicates that the better sections were split for assay. Prospecting activity dropped off due to new and interesting developments in

the Bush Lake and Groundhog River areas.

Since the end of the war, very little work has been done in the area of Opeepeesway Lake, and no discoveries of merit have been made.

Topography

Near mature jackpine, spruce and popular growth on sand and gravel hills of low relief, with some rather extensive patches of spruce, balsam, cedar and alder swamp covers much of the area of the claim block.

Drainage is to the west and is rather disorganized because the area lies near and slightly north of the height of land separating the watersheds of the St. Lawrence River system from those draining into Hudson Bay.

Considerable outcrop was located inspite of a rather extensive cover of glacial drift and swamp; but rock examination was hindered by a heavy growth of moss, windfalls and/or second-growth bush.

Description of Formations

The consolidated rocks of the map area belong to the Precambrian group and range in age from the Keewatin to the Keweenawan period. The Precambrian rocks are overlain by a cover of varying thickness of glacial sand and gravel and still younger swamp deposits.

Keewatin

Rocks of this grouping consist of massive and pillowed intermediate to basic volcanics, tuff and agglomerate, amphibolitic and dioritic greenstone, and related schists. The Keewatin rocks occupy the northern third of the claim block.

The massive and pillowed volcanics vary little in texture, are usually a greyish-green to a dark green, weather to a buff or grey, and vary in composition from a dacite to a basalt. Typical dacites and basalts are seldom found. The massive lavas are slightly to locally well schisted, and shearing has produced ellipsoidal pillows that are useless for top determinations. Locally the volcanics may exhibit amygdaloidal cavities, scoriaceous surfaces or fragmental flows.

The narrow bands of tuff and some agglomerate are interbedded with the massive and pillowed volcanic flows. The tuff is poorly to locally well and finely banded, varies from a greyish-green to a dark green and weathers to a grey. The agglomerate is composed of lighter coloured 1/10" to 3/4" fragments in a greyish-green to dark green matrix. The smaller fragments in the agglomerate and the few tiny yellow-green fragments in the tuff have been drawn out into lenticular shapes by shearing.

Amphibolitic greenstone which outcrops near the north boundary of the claim block is interbedded with the tuffs. Amphibolitic greenstone is a schisted, dark green rock which weathers to greyish-green. The hornblende appears to have developed along, and has been oriented along the planes of schistosity.

Dioritic greenstone which outcrops on and near the shore of a small lake on the north boundary of the claim block, appears to be associated with the pillowed lavas and represents the coarser phase of the flows. Although usually a massive, greyish-green to green rock which weathers to a light grey or grey, the dioritic greenstone may be locally slightly schisted.

Although most of the Keewatin rocks have been schisted, certain zones have been highly sheared. The schists were originally tuffs, massive or pillowed lavas, and are interbedded with the Keewatin volcanics and pyroclastics.

Timiskaming (Kidout Series)

The Timiskaming sediments are represented by conglomerate and greywacke, and minor amounts of arkose and quartzite. These rocks have undergone alteration of varying intensity in the vicinity of a large quartz-feldspar porphyry intrusion that cuts across the claim block.

Conglomerate which is the prominent member of the Timiskaming, occurs at no particular horizon within the sedimentary series. This rock type contains sparse to abundant amounts of pebbles, cobbles and boulders of a wide variety of rock types, with granite, quartz and locally iron formation as the predominate member. The conglomerate does not show bedding, but narrow interbedded lenses of greywacke are usually present and strikes and dips may be obtained from them. The conglomerate has undergone shearing of varying intensity, and many of the pebbles and cobbles of the softer rock types have been elongated or drawn into spindle shapes. The matrix of the conglomerate varies from a fine to a medium grained, green to a dark green greywacke which weathers to a grey or brownish-grey; to a very fine grained, dark green argillaceous greywacke which weathers to a grey.

The greywacke is a very fine to medium grained, greenish-grey to dark grey rock which weathers to a buff, grey or brownish-grey and may locally grade to a quartzite or arkose. This rock type has undergone shearing of varying intensity, and may locally exhibit cross-bedding in some of the less sheared outcrops. The greywacke contains a few sheared and elongated pebbles of quartz and granite and some narrow interbedded conglomerate bands. The quartzite which outcrops near the south boundary of the claim block and in the vicinity of the Little Bush River is a very fine grained, light grey to greenish-grey feldspathic rock which weathers to a light grey, grey or buff. Arkose, a feldspathic phase of the greywacke is a rock composed of a few to numerous tiny rounded crystals of plagioclase in a very fine to fine grained, grey matrix which weathers to a light grey and contains an odd pebble of quartz or granite.

Porphyritization includes the process of carbonatization and albitization and has added a pink or red discoloration to the altered sediments. Albitization has introduced varying amounts of feldspathic material to the sediments with the result that it is often difficult to distinguish an altered sediment from an intrusive porphyry.

Algoman

The quartz-feldspar porphyry within the area of the Keewatin volcanics occurs as dykes, but within the Timiskaming the porphyry appears as irregular lenticular bodies which intrude approximately parallel to and along the bedding planes of the sediments. The quartz-feldspar porphyry is composed of sparse to numerous phenocrysts of varying size of plagioclase and quartz in a light to dark grey groundmass, although altered phases of the groundmass show pink or red discoloration of varying intensity. Thin section study of specimens may determine if the large lenticular quartz-feldspar porphyry body which trends across the central portion of the claim block and appears to differ from the other porphyries of the map area, is similar in composition to a syenite porphyry with which Jerome Mine in Osway Township is associated.

Keweenawan

Diabase dykes which cut all the older rocks, trend in a variety of directions but the most common strike is a bit east or west of north. Diabase sills of varying widths and lengths intrude parallel to the regional strike of the enclosing Keewatin and Timiskaming rocks. The diabase is a fine to medium grained rock composed of grey lath-like plagioclase and greenish-black pyroxene, and usually weathers to a mottled brown.

Structure

In the absence of fault brecciation, gouge and shearing in the outcrops; offsetting of contacts was utilized to interpret the approximate movement and position of two faults. Both faults strike about north-northwest, and the displacement of the contacts has been about 1000 and 600 feet to the south on the east side. It is possible that more faults of a minor nature exist than was indicated on the map. Since the Keewatin volcanics, Timiskaming sediments and Algoman quartz-feldspar porphyries have all been displaced, the age of faulting is post-Algoman.

Brecciated and altered greywacke, areas of strong shearing and carbonatization and locally contorted schists along the Keewatin-Timiskaming contact indicate that the contact zone may be considered as a bedding plane fault. Although the contact zone of the sediments and volcanics must have been the site of considerable movement; the concordant relations of the Keewatin volcanics and Timiskaming sediments have not been noticeably disturbed.

The general schistose nature of the Keewatin and Timiskaming rocks has already been noted in several places in the report. Shearing of the volcanics and sediments has developed parallel to and is particularly strong in the vicinity of the Keewatin-Timiskaming contact. Heavy shearing is associated with porphyritization of the sediments along a large lenticular quartz-feldspar porphyry which cuts across the claim block.

Although the Keewatin and Timiskaming rocks have undergone intensive folding, little tangible field evidence was located with which to determine the attitude of the beds.

Mineralization

The odd speck of pyrite occurs throughout the rocks of the area, and locally small patches of pyrite or finely disseminated pyrite may occur along the schistosity planes of the Keewatin and Timiskaming rocks. Finely disseminated pyrite accompanied the process of porphyrization of the sediments in the vicinity of the large lenticular quartz-feldspar porphyry intrusion.

Blobs and stringers of barren white quartz are scattered through the Keewatin and Timiskaming rocks. A few barren white quartz veins up to 3 feet wide and 150 feet long have intruded the greywacke and quartzite along and parallel to the bedding planes.

Some of the narrow quartz veins and stringers which occur within a large lenticular quartz-porphyry body which trends about east-west through the claim block carry ankerite and pyrite. A smoky, blue, clear or white quartz stock work which carries pyrite, carbonate and locally some chalcopyrite has developed within a large lenticular quartz-feldspar porphyry south and east of Huffman Lake.

Molybdenite occurs in patches lying along the planes of schistosity of an altered conglomerate inclusion within a quartz-feldspar porphyry and south of Huffman Lake.

Samples of mineralization were collected, but indicated little more than a trace upon assay by Bell-White Analytical Laboratories Limited:

Sample No.	Oz. Gold	Oz. Silver	% Copper	% MoS2
32373	Trace	Trace		
32374	Trace	Trace		
32377	0.005	0.03		
32378	Trace	0.04		
32379	Trace	0.04		
32380	Trace	0.04		
32381	0.005	0.04		
32382	Trace	0.03		
32383	Trace	0.03		
32384	Trace	0.03		
32385	Trace	0.05		
32386	Trace	0.03		
32387	0.005	0.07		
32388	0.01	0.09		
32389	0.005	0.05		
32390	0.005	0.04		
32391	0.005	0.15		
32392	0.01	0.09	0.09	
32393	0.02	0.04	0.05	0.011
32394	0.01	0.06	0.53	
32395	0.005	0.03		
32396	Trace	0.04	Trace	
32397	Trace	0.04	0.02	
32398	Trace	0.04		
32399	Trace	0.05		
32400	Trace	0.03		

Sample No.	Oz. Gold	Oz. Silver	% Copper	% MoS2
2201	Trace	0.06		
2202	Trace	0.03		
2203	Trace	0.03		
2204	Trace	0.02		
2205	Trace	0.04		
2206	0.02	0.04		

Conclusions and Recommendations

Evidence of mineralization located within the large lenticular quartz-feldspar porphyry which trends across the claim block, and within or near the porphyrized sediments along this intrusion gave no encouragement upon assay.

Two geological structures favourable for ore deposition were located by geological mapping and interpretation. Samples cut from altered rocks along a fault and the Kecwatin-Timiskaming contact, bedding-plane fault failed to produce any encouraging assays.

Geophysical surveys failed to locate any interesting magnetic anomalies or conductors along the quartz-feldspar porphyries, fault zones or the Kecwatin-Timiskaming contact.

Since the geophysical surveys, geological mapping, sampling and assaying produced no encouraging results, I recommend that the Company terminate the Dunne Option Agreement and allow the remaining claims in Huffman Township to lapse.

Respectfully submitted,

Earl J. Lalonde,
Denison Mines Limited,
Explorations Division.

December, 1963.

jh

REGISTERED PROFESSIONAL ENGINEER
MINING
EARL J LALONDE
PROVINCE OF ONTARIO

DENISON MINES LIMITED

EXPLORATIONS DIVISION

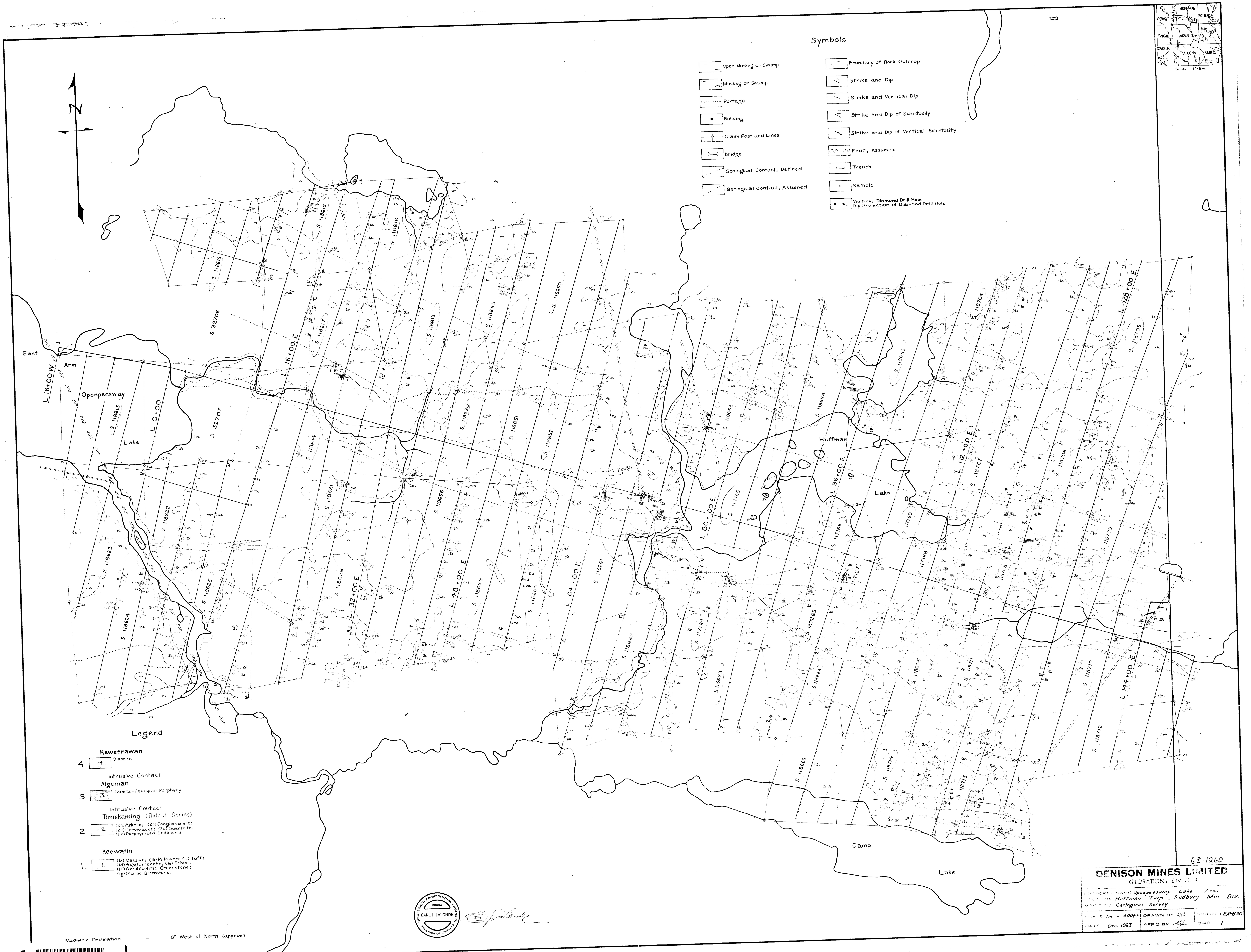
PROPERTY NAME Opeepeesway Lake Area

LOCATION Huffman Twp., Sudbury Min. Div.

MAP TITLE Magnetometer Survey

SCALE 1in = 400ft.	DRAWN BY	PROJECT EX-630
DATE Dec. 1963	APP'D BY	DWG. 1


N
HOFFMAN
POTIER
OSWAY
FINGAL
ARBUTUS
YEO
CAREW
L 16+00 E
East Arm
L 0+00
Opeepeesway
Lake
L 16+00 E
L 32+00 E
L 48+00 E
L 64+00 E
L 80+00 E
Huffman
Lake
L 96+00 E
L 112+00 E
L 128+00 E
L 144+00 E
Camp
Lake
Coil Tilts South-Plotted East
Coil Tilts North-Plotted West
Vertical Scale 1"=10°
63.1260
DENISON MINES
Opeepeesway Lake Area
Huffman Twp, Sudbury Min Div
Electromagnetic Survey . SE 200
1in = 400ft
EX-630
Dec. 1963
1
EARL J. LALONDE
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
MINING
210


Symbols
Open Muskeg or Swamp
Muskeg or Swamp
Portage
Building
Claim Post and Lines
Bridge
Geological Contact, Defined
Geological Contact, Assumed
Boundary of Rock Outcrop
Strike and Dip
Strike and Vertical Dip
Strike and Dip of Schistosity
Strike and Dip of Vertical Schistosity
Fault, Assumed
Trench
Sample
Vertical Diamond Drill Hole
Dip Projection of Diamond Drill Hole
N
East
Arm
Opeepeesway
Lake
Huffman
Lake
Camp
Lake
L 16+00W
L 0+00
L 16+00 E
L 32+00 E
L 48+00 E
L 64+00 E
L 80+00 E
L 96+00 E
L 112+00 E
L 128+00 E
L 144+00 E
S 32706
S 32707
Legend
Keweenawan
4 4. Diabase
Intrusive Contact
Algoman
3 3. Quartz-Feldspar Porphyry
Intrusive Contact
Timiskaming (Ridout Series)
2 2. (2a) Arkose; (2b) Conglomerate; (2c) Greywacke; (2d) Quartzite; (2e) Porphyrized Sediments.
Keewatin
1. 1. (1a) Massive; (1b) Pillowed; (1c) Tuff; (1d) Agglomerate; (1e) Schist; (1f) Amphibolitic Greenstone; (1g) Dioritic Greenstone.
Magnetic Declination — 8° West of North (approx.)
EARL J. LALONDE
63 1260
DENISON MINES LIMITED
EXPLORATIONS DIVISION
Opeepeesway Lake Area
Huffman Twp., Sudbury Min. Div.
Geological Survey
1 in. = 400 ft
DATE Dec. 1963
DRAWN BY
APP'D BY
PROJECT EX-630
DWG. 1
HUFFMAN
FINGAL
ARBUTUS
CAREW
ALCONA
SMUTS
Scale 1" = 8 mi