GM 43639

GEOPHYSICAL SURVEYS, PARENT LAKE PROPERTY, DELANDORE SULPHUR DEPOSIT

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Énergie et Ressources naturelles
Québec

GEOPHYSICAL SURVEYS
PARENT LAKE PROPERTY
DELANDORE SULPHUR DEPOSIT
DELESTRE TOWNSHIP
N.W. QUEBEC
NTS 32C/11

Ministère de l'Énergie et des Ressources
Service de la Géoinformation
Date: 19 FEV. 1987
No G.M.: 43639

Jens E. Hansen, P.Eng.
July 21, 1986

I N D E X

1. INTRODUCTION

During the 1940's, Delandore Mines Limited outlined a sulphur deposit totalling 13.5 million tons grading 25% sulphur. The deposit which is located on the south-east shore of the Parent Lake may be re-examined to determine if under today's circumstances the sulphur content may be of economic interest. Recent activity in the area by other operators has identified this as an environment where iron formation hosted gold deposits could occur. Gold values of up to 0.5 oz per ton over 2.5 ft widths were located by some Delandore diamond drill holes.

A program of line cutting and geophysical surveying has been completed over the portion of the property where the Delandore deposit is located. A total of 13.3 kilometres of line were cut, picketed and surveyed. The survey has covered approximately one sixth of the property.

Further work to determine the sulphur and gold potential of the property is recommended.

2. LOCATION

The location of the claim group is shown on FIGURES 1 and 2.

The claims are listed on TABLE 1.

The property is located 35 kilometres north of Senneterre adjacent to the Senneterre-Chibougamau highway (Highway # 113). It straddles part of the Lake Parent and covers the Delandore sulphur and iron deposit on the mainland.

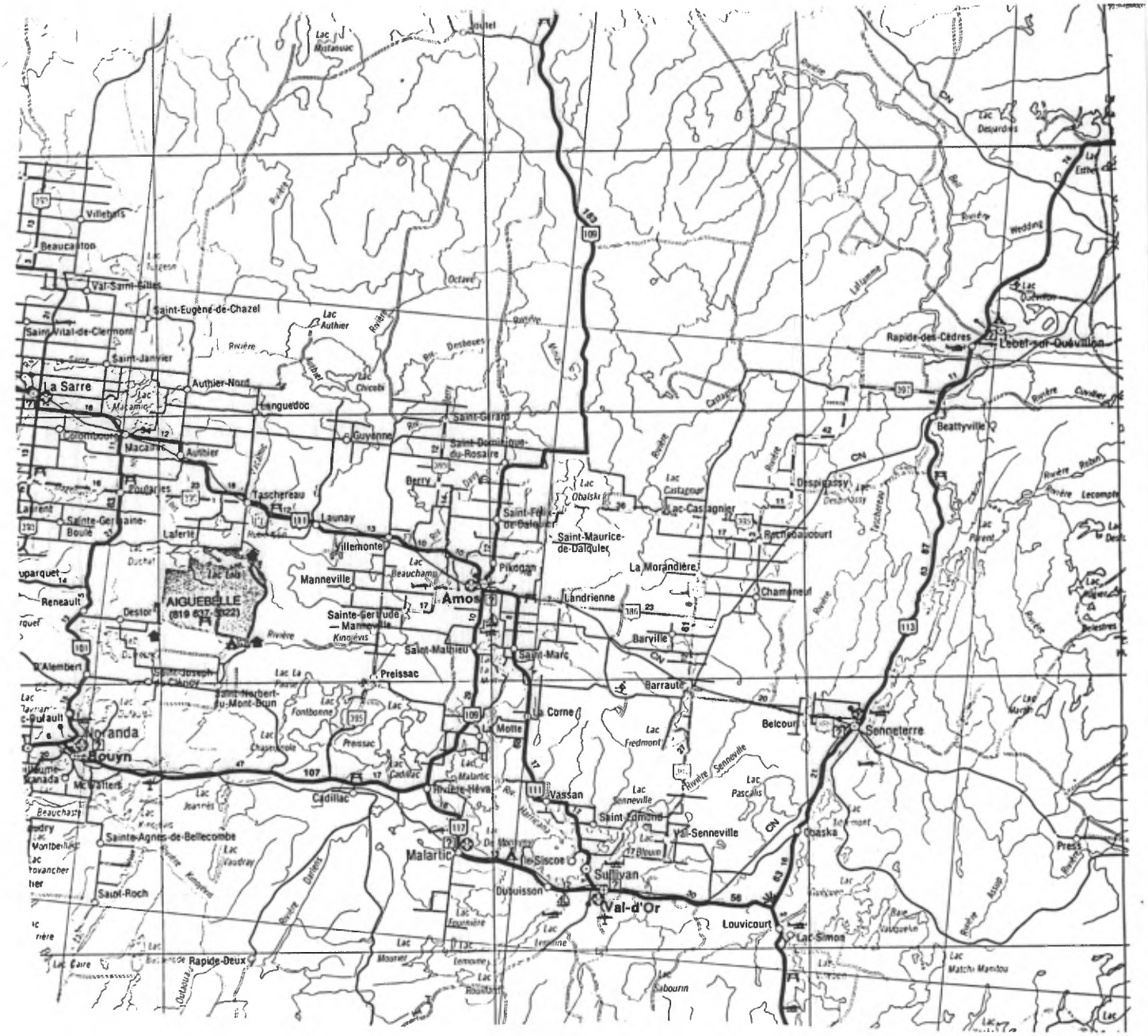
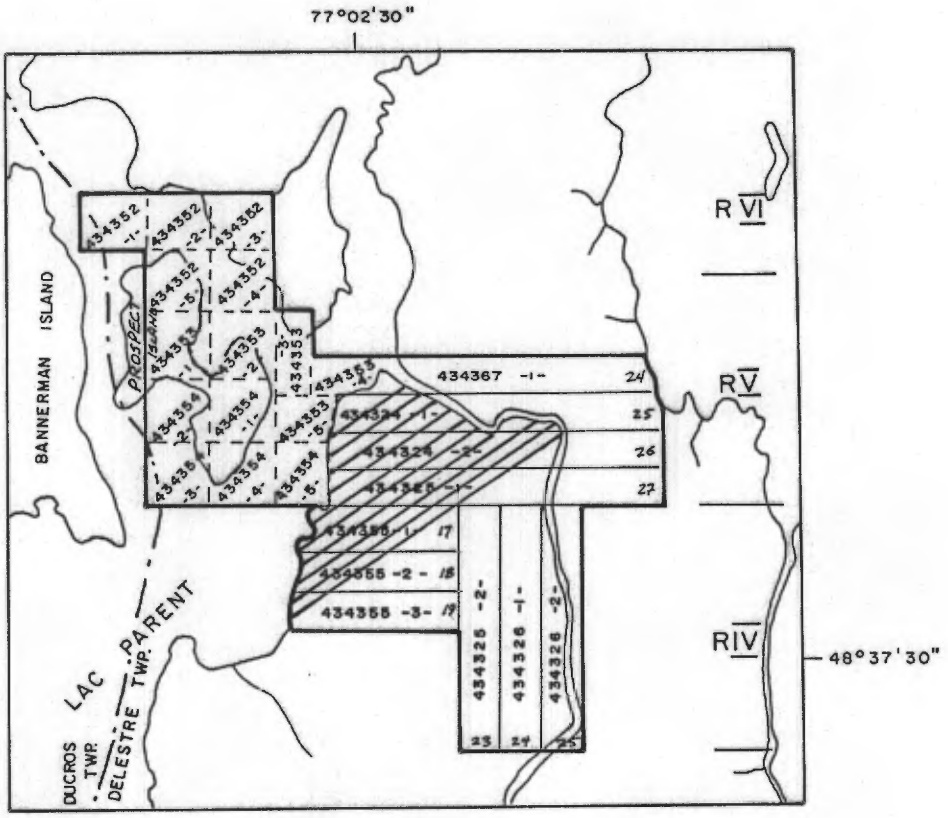


FIGURE 1

LOCATION

PARENT LAKE PROPERTY

DELESTRE TOWNSHIP
QUEBEC



LOCATION MAP SCALE 1:50,000

FIGURE 2

PARENT LAKE PROPERTY

DELESTRE TOWNSHIP
QUEBEC

NTS 32C/11

COMPANY (In trust Jens Hansen) Project: 60-175

OWNER (In trust Jens Hansen)

AREA Delestre Township

NTS.

DATE August 23, 1985

	PERMIT	CLAIM	RANGE	LOT	HECTARES	ANNIVERSARY DATE	WORK SURPLUS FROM PREVIOUS ANNIVERSA
1.	434324	1	V	25	44	June 25, 1986	
2.	434324	2	V	26	46	June 25, 1986	
3.	434325	1	V	27	49	June 25, 1986	
4.	434325	2	IV	23	40	June 26, 1986	
5.	434326	1	IV	24	40	June 26, 1986	
6.	434326	2	IV	25	35	June 26, 1986	
7.	434352	1 to 5			(16) 80	June 24, 1986	
8.	434353	1 to 3			(16) 48	June 24, 1986	
9.	434353	4 and 5			(16) 32	June 25, 1986	
10.	434354	1 to 5			(16) 80	June 25, 1986	
11.	434355	1	IV	17	27	June 26, 1986	
12.	434355	2	IV	18	24	June 26, 1986	
13.	434355	3	IV	19	24	June 26, 1986	
14.	434367	1	V	24	43	June 25, 1986	

TOTAL: 612 hectares

= 1,530 acres

3. HISTORY

The first comprehensive study of the area was by Bannerman (1936). Several years prior to his studies, prospecting had located a number of pyrite-pyrrhotite bodies in Delestre, Bartouille and Ducros townships. Trenching and limited drilling of some of the sulphide bodies indicated the possibilities of economic deposits. The bodies in Delestre and Ducros township showed the most significant mineralization and attracted further attention by Delandore Sulphur and Iron Mines Ltd, Parent Lake Mines Ltd. and Ducros Mining Co. Ltd. These claim groups later became the property of Atlas Sulphur and Iron Company Limited.

From 1937 to 1948, 43 holes totalling 18,089 ft were drilled on what was called the Delandore ore body located within the area covered by the present (1986) survey. The program, outlined 13.5 million tons of pyrite-pyrrhotite averaging 25% sulphur and 37% iron. The ore body was determined to have strike length of 2,500 feet and an average thickness of 100 feet. Continuity at depth was reported established to 1,500 feet. At that time the consultants Wright Dolbear Limited considered that the combined geological and geophysical evidence together with metallurgical tests and market and capital cost investigations indicated that the deposit could be exploited profitably as a source of iron and sulphur. The writer located sections for 12 of the Delandore diamond drill holes, however none of the reports by Wright Dolbear appear to be filed in public records.

The 12 Delandore holes for which the geology is available in the assessment files also show assays for gold on 2.5 feet intervals through the sulphide sections. Most values are from trace to $0.70 (gold at $35.00 per ounce). The best values were from holes 11 and 12 where 2.5 feet inter-

vals assayed $18.55 and $16.10 respectively which is approximately 0.5 oz/ton Au. The locations of the various holes drilled are shown on FIGURE 3.

The most recent work was by Freeport Sulphur Company from 1964 to 1966. Freeport staked a block of 96 claims extending over 6 miles north into Ducros Township, north from the present claims. Their program included geophysics, geology and 21 diamond drill holes.

The drilling was in two stages. A 1965 program totalled 14 holes, three of which were on Prospect Island and the remainder on the northern portion of their property.

At the end of 1965 Freeport concluded that the 3 holes on Prospect Island substantially increased the probable sulphide tonnage.

In 1966, six holes were drilled on Prospect Island and one hole south of the Delandore deposit (approximately Line 9+00S, Station 1+50W on the 1986 grid). None of the Freeport holes were drilled on the Delandore deposit itself.

No further work was reported by Freeport.

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PAGE DE DIMENSION HORS STANDARD

MICROFILMÉE SUR 35 MM ET

POSITIONNÉE À LA SUITE DES

PRÉSENTES PAGES STANDARDS

Numérique

PAGE DE DIMENSION HORS STANDARD

NUMÉRISÉE ET POSITIONNÉE À LA

SUITE DES PRÉSENTES PAGES STANDARDS

4. GEOLOGY

At the location of the Parent Lake property a narrow band of southwesterly trending metavolcanics and metasediments is confined to the southwest and northeast by large granite gneiss complexes, all of Archean age. The older rocks are intruded by recent north northeasterly trending diabase dykes of Proterozoic age although no dykes appear to cross the property presently discussed.

A detailed geological compilation that covers the property was prepared by Freeport Sulphur Company in 1965. Their report which provides a good summary of the geology is located in the public assessment files (GM-17208).

A portion of a geological compilation prepared by Freeport is presented in FIGURE 3.

The following paragraphs have been copied directly from the Freeport report:

"The grade of metamorphism is variable within the area varying from green schist to garnet-amphibolite facies. This variation in grade is particularly noticeable in the banded iron formation, which along strike shows all stages between slightly recrystallized carbonaceous jaspillite and strongly recrystallized graphitic iron formation (saccharoidal quartz and magnetite). The iron appears to have been a relatively mobile constituent during metamorphism. The basic and acid tuffs show pronounced effects of metamorphism and are now represented by chloritic and sericitic schists.

The majority of basic lavas and intrusives of the keewatin have been metamorphosed to the extent that they could be

collectively referred to as amphibolites. In this report the use of the term amphibolite unless modified is restricted to:

(a) massive to poorly foliated plagioclase-amphibole rock representing metamorphosed basic intrusives.

(b) massive to poorly foliated plagioclase-amphibole rock of uncertain origin. In the majority of cases such amphibolites are probably original basic sills, but some original basic lava may be included here.

The basic intrusives appear to be concordant on a small scale, but on the north mainland the overall picture is of slight discordance.

On a broad scale the granitic gneiss and the volcanics show a concordant relationship with an approximate parallelian of foliation in the two major groups. The drilling has shown that, on a smaller scale the gneiss is in contact with a number of fairly closely spaced horizons in the Keewatin. The contact zone on Wigwam Island is marked approximately by a band of graphitic schist. The schist may be a contact effect. Other contact effects are variable from a slightly increased development of schistosity in the Keewatin to an extensive development of porphyroblasts, partial gneissification and lit-par-lit injection. The relationship between the two major rock groups is therefore in part metasomatic and in part intrusive.

The majority of multiple combined magnetic and electromagnetic anomalies observed on the south mainland, Prospect Island, Bannerman Island, and the north mainland can be explained by two and possibly three originally continuous sulphide horizons now displaced by north northwest to northwest trending

tear faults. During metamorphism some remobilization of the sulphides occurred but this did not radically alter their essentially stratigraphic nature.

The textural relationship seen in the intersections of 65-7 and 65-10 indicate that much of the pyrrhotite has formed as a replacement of magnetite. It is probable that some of the variations in the pyrrhotite percentages reflect variations in magnetite content related to mobilization of the iron during an earlier stage of metamorphism. The textures of hand specimens of sulphides from Prospect Island show earlier bedded pyrite disturbed and "intruded" by later pyrrhotite."

5. MINERALIZATION

The 13.5 million tons of 25% sulphur and 37% iron reported by Delandore has been drilled and outlined to a depth of 1,500 feet.

The gold discovery by INCO and Golden Knight in Casa Berardi Township has increased the potential for locating gold deposits associated with sediment hosted iron formations. The magnetite and sulphide formations on the present property could host gold deposits. Short sections within some of the Delandore holes returned some gold values. The Lake Parent formations to the north and south of the present group have recently been staked by several mining companies.

The writer visited the property on June 13, 1986 and took six samples of pyrite pyrrhotite bearing schistose rock from several trenches in the vicinity of Station 0+80W on Line 1+00S. The samples were analyzed for gold. Two samples ran trace gold and four returned nil values.

6. GEOPHYSICS

The Quebec Ministry of Energy and Resources has surveyed the northern portion of the property with INPUT and magnetics. The results have been published in DP-764 and DP 85-16. The portion covering the property is shown in FIGURES 4 and 5.

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7. PRESENT GEOPHYSICAL SURVEY

A total of 12.3 kilometres of grid line oriented at 055° Az were laid out at 100 metre intervals and picketed at 25 metre intervals. The lines were perpendicular to a 1.0 kilometre base line. The survey covered the Delandore mineral deposit.

All lines were surveyed using a Geometrics G-846 UNIMAG II proton precession magnetometer with readings taken at 12.5 metre intervals. The magnetometer data is presented in contour format at a scale of 1:2,500 on SHEET 1 accompanying this report.

The lines were also surveyed using a Geonics EM-16 VLF electromagnetic unit. Readings were taken at 12.5 metre intervals. For the grid lines the VLF transmitter at Annapolis Maryland (NSS) operating at a frequency of 21.4 KHz was used. The operator faced eastward along the lines for the above readings. The base line was surveyed using the VLF transmitter at Cutler Maine operating at a frequency of 24.0 KHZ. The operator faced northward along the base line when taking readings. The VLF data is presented in contour format on SHEET 2, the contoured values have been generated using the Fraser numerical filter technique. The same data is presented in profile format on SHEET 3.

The line cutting was completed by Leo Audet Exploraction Inc. of Val d'Or and the geophysical readings were taken by Laurent Audet.

8. DISCUSSION OF RESULTS

The magnetic contour map shows a very strong, broad anomaly extending parallel to the base line northwestward from Line 7+00S to beyond Line 1+00S near the shore of Parent Lake. The anomaly attains values of up to 78,000 gammas on Line 6+00S. Pyrrhotite may be contributing to the magnetic anomaly, however magnetite iron formation is probably the prime cause. The contours suggest that the body has a southwesterly dip. The magnetic contours are sharply truncated between Lines 7+00S and 8+00S. This may in part be due to faulting, the VLF contours show a small offset in this region but the conductivity continues southwestward beyond the termination of the strong magnetic feature. The contact between volcanics and sediments occurs west of the strong magnetic anomaly.

Electromagnetic results using the Turam method were carried out in 1965 by Freeport and they are available in the assessment files (GM-15863).

Turam is more effective at distinguishing bedrock conductors from surface conductors than VLF. Comparing the present VLF data to the earlier (1965) TURAM data it would appear that the conductors labelled A,B, C, D, E and F on the accompanying map (SHEET 3) are of bedrock origin. The remaining VLF conductors G, H, I and J are of probable overburden origin.

Conductor A is located along the contact between the highly magnetic iron formation and less magnetic rocks. It is probably caused by continuous massive sulphides associated with a major fault zone.

Conductors B and C are bedrock conductors located within the strongly magnetic feature. They represent bands of pyrite and pyrrhotite within a banded iron formation.

Conductor D is associated with a low amplitude magnetic anomaly suggesting that pyrrhotite is present.

Conductor E does not have any magnetic support. It may be caused by pyrite within metasediments. Graphite may be present but the anomalies are weaker than is typically expected from graphitic sources within sediments.

Conductor F is similar to E. The northern portion coincides with a weak magnetic anomaly.

From FIGURE 3 it is evident that Conductors A, B, C, and D represent sulphide rich sections within the Delandore deposit. The magnetite iron formation does not appear to extend southward beyond the earlier drilling but the non magnetic to slightly magnetic sulphide continue. Conductors E and F have not been drilled.

Conductors G, H, I and J are almost certainly caused by overburden and followup is not recommended.

9. CONCLUSIONS AND RECOMMENDATIONS

1. The Delandore sulphur and iron deposit totalling some 13.5 million tons has been defined by Conductors A, B, C and D.

2. Gold intersections have been located by several holes that were drilled by Delandore, the best values being approximately 0.5 oz/Au per ton over 2.5 feet intervals. Iron formation hosted gold deposits have recently become a significant exploration target in the Abitibi region and gold exploration is being carried out by several operators on adjacent claim groups. The gold potential of the property should be considered.

3. The overburden appears to be relatively shallow hence geochemical methods may be helpful in defining potential gold targets.

4. In the 1940's the Delandore deposit was considered potentially economic as a source of sulphur and iron. Investigations should be carried out to determine if under today's circumstances the deposit has any economic potential.

5. Earlier work has indicated that the minerals located on the area surveyed on the mainland continue onto Prospect Island. The island and the ground south of the present grid should be surveyed, particularly in a search for gold.

Respectfully submitted,

JENS E. HANSEN, P.Eng.
July 21, 1986

10. BIBLIOGRAPHY

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GM-8082	Delandore Mines Ltd. Diamond Drill Holes (12 holes), 1937.
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GM-15863	Freeport Sulphur Company Geophysical Surveys 1965.
GM-15942	Freeport Sulphur Company Geophysical Surveys 1965.
GM-17208	Freeport Sulphur Company Report on Lac Parent Property, 1965.
GM-17209	Freeport Sulphur Company Diamond Drill Logs (14 holes) 1965.
GM-19117	Freeport Sulphur Company Diamond Drilling (6 holes) 1966.