GM 42689

REPORT ON TWO ILMENITE PROPERTIES IN THE LAC ALLARD AREA

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REPORT ON TWO ILMENITE PROPERTIES

IN THE LAC ALLARD AREA,

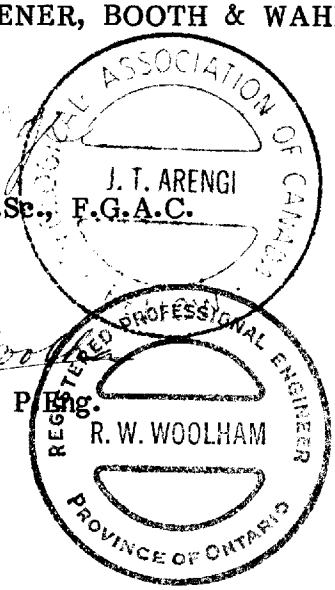
EASTERN QUEBEC FOR

CHAPEL BAY EXPLORATIONS INC.

DERRY, MICHENER, BOOTH & WAHL

J.T. Arengi, M.Sc., F.G.A.C.

R.W. Woolham, P.Eng.



Ref.: 85-43

August 28, 1985
Toronto, Canada

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Ministère de l'Énergie et des Ressources
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Date: 14 AVR. 1986
No G.M.: 42689

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SUMMARY

Chapel Bay Explorations holds two properties with low-grade ilmenite mineralization in the Lac Allard area of eastern Quebec. The Petit Pas claim group comprises 31 claims and is located about 3.5 km north of the producing Lac Tio open pit mine, owned by QIT Fer et Titane Inc. (QIT). The Lac au Vent group comprises 10 claims which surround two claims owned by QIT and is located 9 km north of the mine.

Disseminated ilmenite occurs in a medium-grained gray anorthosite on both properties. Values of up to 1.75% TiO_2 occur on the Petit Pas group and 0.83% TiO_2 on the Lac au Vent group.

Airborne magnetic and VLF-EM surveys, as well as ground magnetic and gravity profiling, were carried out on both properties by Kennco Explorations Ltd. in 1960. Large negative magnetic anomalies and positive gravity response characterize the massive ilmenite mineralization at the Lac Tio mine. One negative airborne magnetic anomaly exists beneath the waters of the lake on the Petit Pas group. A coincident negative magnetic anomaly and positive gravity response at Lac au Vent suggests that massive ilmenite on the QIT claims may plunge west-southwest onto the Chapel Bay claims.

In order to test for mineralization on the two claim groups, a budget of $60,550 has been estimated for linecutting, ground magnetometer and gravity surveys and 1,500 ft. of diamond drilling at the Petit Pas group. A total of $62,310 has been budgeted for the Lac au Vent group for a similar program, as well as some

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geological mapping. The total estimated cost for both programs, including contingencies, is estimated at $143,000.

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INTRODUCTION

Derry, Michener, Booth & Wahl (DMBW) were commissioned to report on two claim groups in the Havre St. Pierre area, North Shore, St. Lawrence River, Province of Quebec. These properties held by Chapel Bay Explorations Inc. of Toronto, Ontario, are prospective for titanium. J. Arengi, senior geologist, of DMBW, visited the claim groups in August 1985. Geophysical information, available from previous exploration work, was evaluated and interpreted by R.W. Woolham, senior geophysicist.

PROPERTY, LOCATION AND ACCESS

NTS: 12L/12
Lat.: 50°35'
Long.: 63°25'

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The Lac Petit Pas property comprises 31 contiguous mining claims and the Lac au Vent 10 contiguous mining claims in Parker Township, 3.5 km and 9 km north, respectively, of the producing open pit Lac Tio Mine owned by QIT Fer et Titane Inc. (QIT) (Figure 1). The Lac au Vent group surrounds 2 claims owned by QIT.

Access is by fixed-wing aircraft to within 1 km of the Lac au Vent claims from the village of Havre St. Pierre, 40 km south, or by helicopter available in Sept Iles 200 km southwest. The more practical access is by helicopter because of the rugged terrain and difficulty in cross-country travel from Lac au Vent.

Infrastructure in the area is moderate to good because of the availability of the government owned rail line, which services the Lac Tio mine. There are no roads into the mine site or into the surrounding area.

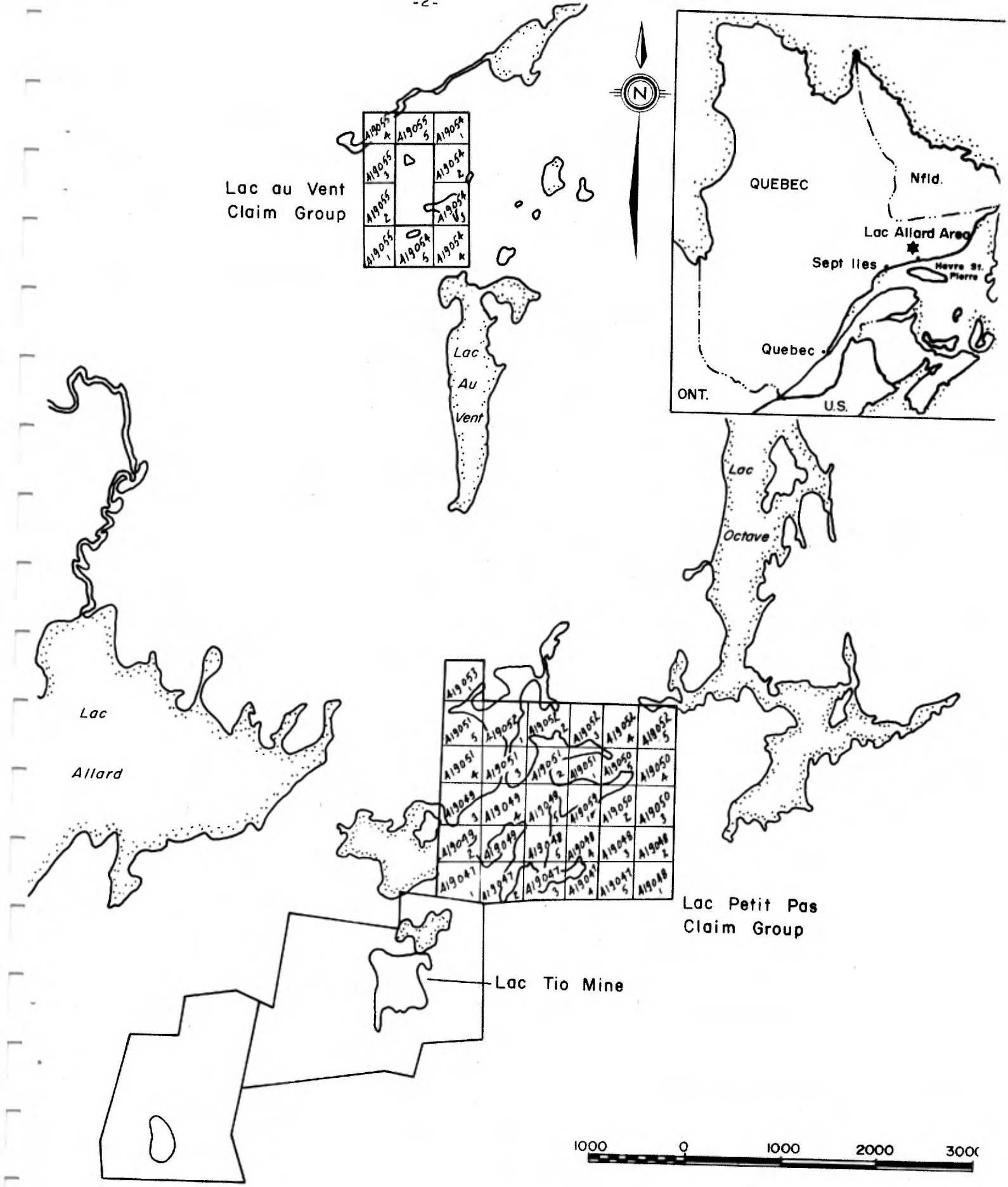


FIGURE 1

LOCATION MAP

The village of Havre St. Pierre, on the north shore of the St. Lawrence River, serves as the shipping point for the ore.

TITANIUM PRODUCTION, USES AND TRENDS

The ore produced at the Lac Tio mine, the only titanium producer in Canada, is shipped from Havre St. Pierre on the north shore of the St. Lawrence River to Sorel, Quebec 900 km upstream, where it is smelted into titanium slag (Sorelslag), which contains 70% to 72% TiO_2 or pig iron products (Sorelmetal). The main markets for this material are the United States and Europe with about 10% to 15% sold to domestic markets.

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Titanium can be produced as both titanium metal and titanium oxide. The main raw material source is ilmenite, as well as leucoxene and rutile.

Owing to its high strength-weight ratio, titanium metal is used as an alloy in the steel industry for fabrication of aircraft and spacecraft structural components. It is also highly resistent to corrosion and is, therefore, used in desalination plants, as well as pulp and paper, chemical and petrochemical industries. Titanium oxides have a high index of refraction as well as chemical inertness and, therefore, are suitable as pigment for paint, paper, plastics, rubber, ink, textiles, and ceramics.

Approximately 90% of all titanium produced is used as pigments and of this total 60% is used in paint.

The economic recession of 1982-83 temporarily reduced the demand for titanium oxide and titanium metal. Consumption of TiO_2 minerals has increased at a slower rate than production over the past 15 years. World supply of TiO_2 minerals in 1984 is estimated at 2.76 million tonnes while world demand is estimated at 2.77 million tonnes.

Currently, titanium oxide accounts for about 97% of titanium minerals produced and titanium metal about 2.3%.

EXPLORATION HISTORY

Interest in the area was first generated by the discovery of ilmenite in 1941 by J.A. Retty of the Quebec Department of Mines. In a report dated 1942, Retty stated:-

> "The work carried out by the writer indicates that the area may have economic possibilities, inasmuch as ilmenite deposits of considerable size and purity were found at many points within the anorthosite".

Subsequent work in the 1940's, in the vicinity of Lac Allard, led to the discovery of several ilmenite occurrences (Figure 2). The most significant of these, the Lac Tio deposit, was subsenquently developed by a joint venture between Kennecott Copper Corporation and New Jersey Zinc. Production commenced in 1950 from an orebody estimated to contain about 112,000,000 tons containing an average 32% titanium oxide and 35% iron. The operation is now owned by Standard Oil Co. (Ohio) through QIT.

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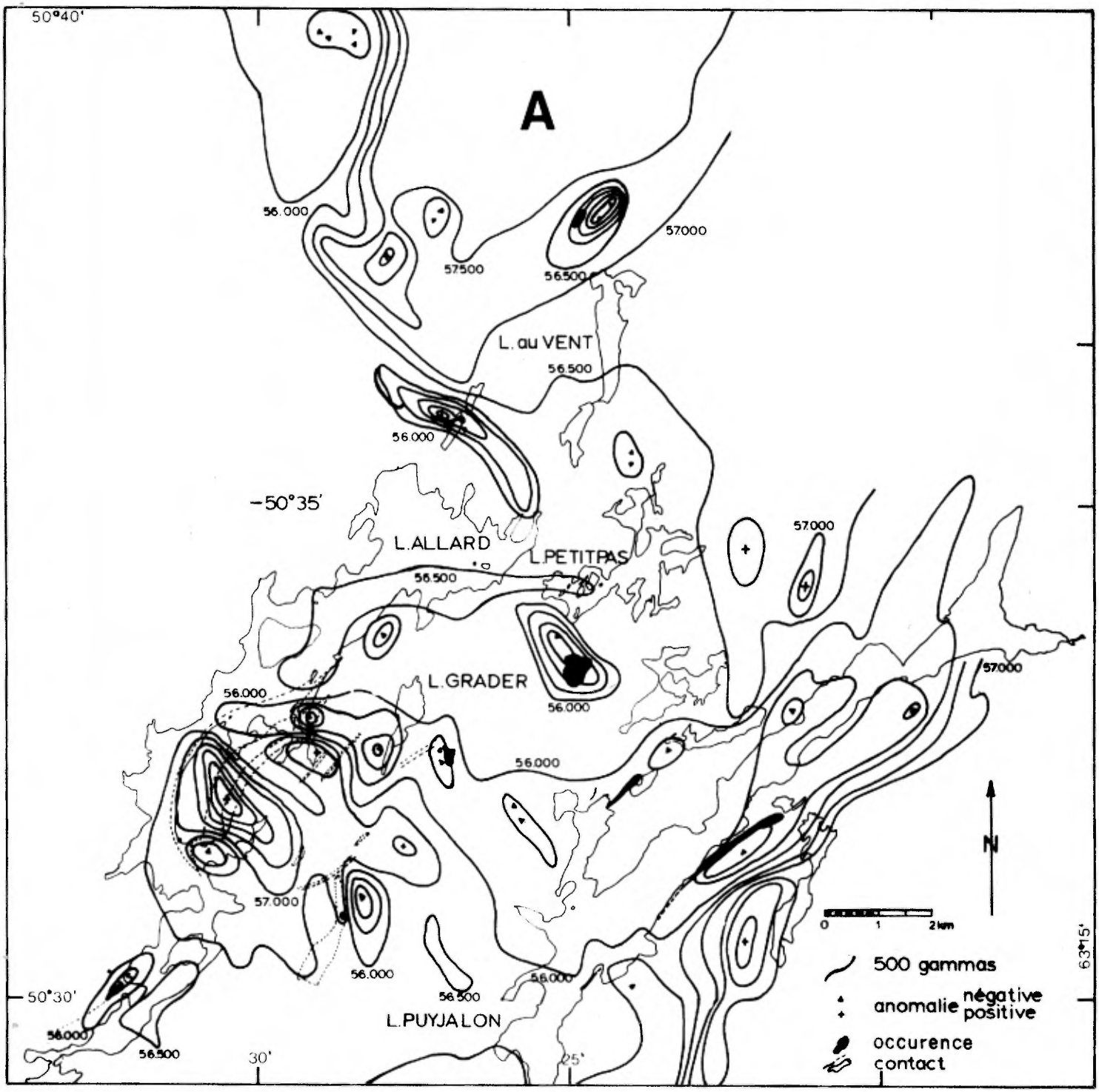


FIGURE 2 Ilmenite occurences in the Lac Allard Area.

Thirteen outlying claim groups, including the present Lac Petit Pas and Lac au Vent, held by QIT were re-examined in 1960 and 1961 by gravity and magnetometer surveys. Further work was recommended on four of of the properties, including the present Lac au Vent showing. The results of this work are discussed in a later section.

An airborne VLF-EM and magnetic survey was flown over the area by Les Releves Geophysiques Inc. in 1984. The results of this and earlier geophysical surveys are discussed in the section titled Geophysical Interpretation.

The two claim groups were allowed to lapse and were later acquired by Tintina Resources in 1983. These claims were subsequently transferred to Chapel Bay Explorations Inc. in 1985.

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GEOLOGY

The Lac Allard area lies in the southeast corner of a large anorthosite intrusive complex which occurs within the Precambrian Grenville Province of eastern Quebec. The intrusive is 180 km. north-south by 170 km. east-west. North and south of the Lac Allard area the anorthosite is transected by mangerite (pyroxene syenite) a later phase of the complex. Basement rocks into which the anorthosite intruded lie to the east and include monzonite, paragneiss and granite gneiss.

In the area of the two claim groups, the anorthosite is medium to coarse-grained, gray, equigranular and, for the most part, is composed of calcic-plagioclase

with varying amounts of ilmenite, hematite, hornblende and very minor chlorite, the latter two as possible alteration products of pyroxene.

Results of chemical analyses of three relatively pure anorthosite samples, two from the Lac Petit Pas group (LA-5 and LA-6) and one from the Lac au Vent group (V-2), as well as those for the other samples are provided in Appendix I.

MINERALIZATION

Ilmenite mineralization in the anorthosite complex ranges from low-grade disseminations to massive ore. The latter occurs as tabular, nearly flat-lying, sill-like sheets, as well as steep-dipping, narrow dikes. The most important high grade massive ore occurs at the Lac Tio mine and is briefly described below.

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Lac Tio Deposit

The Lac Tio deposit is a composite of 2 orebodies, the Main orebody and the Cliff orebody (Figure 3). Taken together, the two deposits are triangular in plan with the apex facing south. The north-south dimension measures 1,100 m and east-west is 1,000 m.

The main orebody is the larger of the two and occurs in the north part of the deposit. It is transected by a north trending and steeply east dipping fault which, to the south, forms a 100 m. cliff-face along the Cliff orebody. West of the fault the Main orebody is 8 m to 60 m thick and dips west at less than 5^{o};

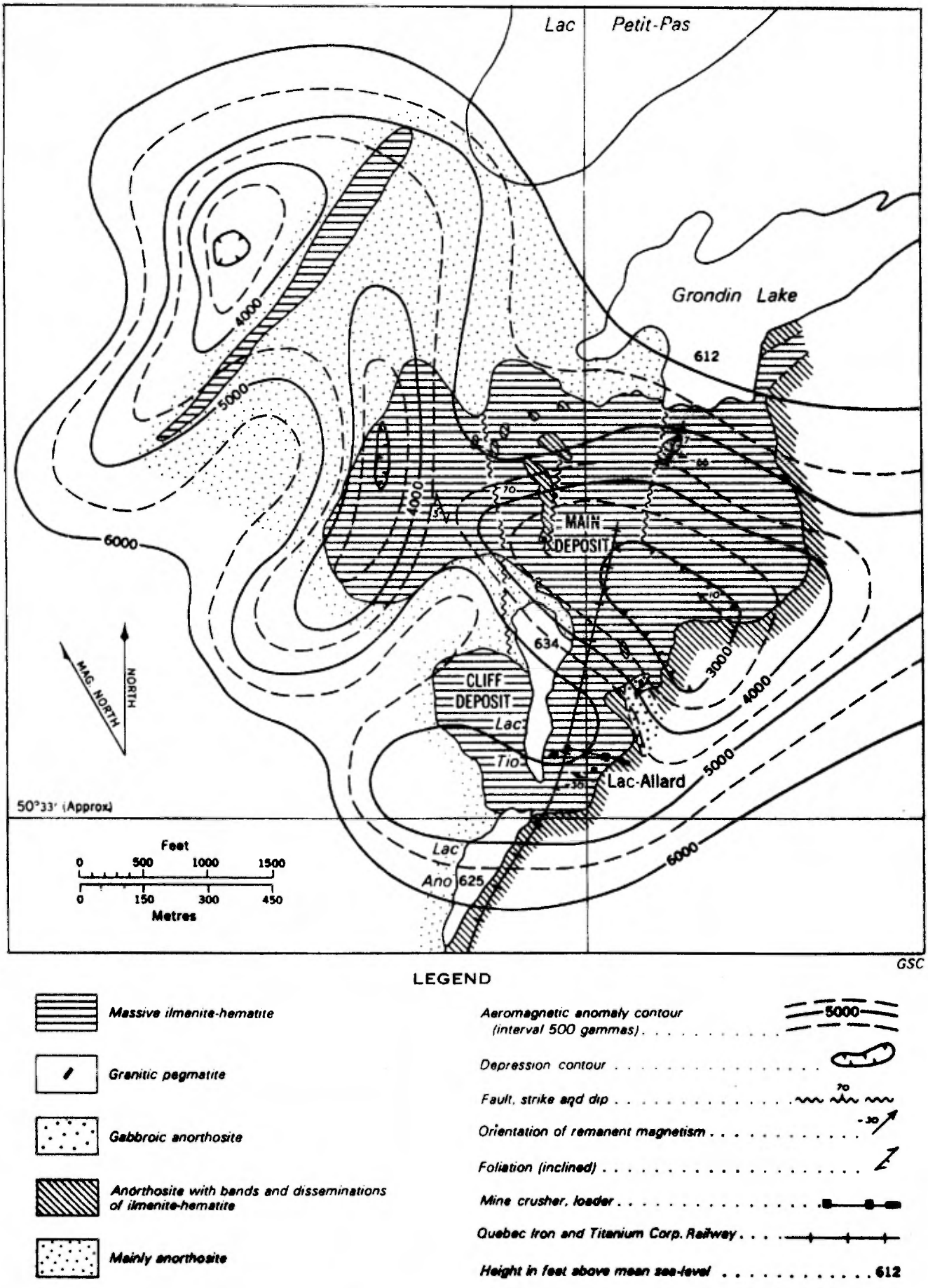


FIGURE 3 Lac Tio ilmenite deposit (from E. O. Dearden, Quebec Iron and Titanium Corporation, 1962).

however, east of the fault it is at least 90 m thick indicating vertical displacement along the fault.

Several xenoliths of anorthosite and ilmenite-rich anorthosite occur within the massive ilmenite ore. Bands of intercalated low grade ilmenite and anorthosite overlie the Main orebody east of the fault.

The Cliff orebody is elliptical in plan measuring 380 m north-south by 225 m east-west and forms a 60 m thick tabular mass of ilmenite-hematite ore which strikes north-south and dips 10^{o} east.

Lac Petit Pas Claim Group

Ilmenite on this claim group occurs as disseminated, subhedral to euhedral, black, lustrous crystals, in concentrations ranging from less than 5% to 60% of the rock. The highest concentrations were found in two subcrops or extremely large boulders along the west-central portions of the peninsula in claim 419051-2. A mineralized sample from the area (LA-2) was submitted for analysis and returned the following:-

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SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O
47.53	16.51	10.95	10.29	7.89	2.74	1.00

TiO_2	MnO	P_2O_5	Cr*	V*	Zn*
1.75	.12	.62	290	200	80

* in ppm.

Anorthosite containing less than a visual estimate of 10% ilmenite was common throughout the area traversed and included samples LA-1, LA-3 to LA-7.

Mineralized anorthosite is reported to be distributed along a southwest trend on the peninsula. More work is required to determine the full extent of the mineralized material along the area of the peninsula.

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Lac au Vent Claim Group

Mineralization on this claim group also occurs as disseminated, subhedral to euhedral crystals in the gray anorthosite host rock in concentrations of 10% or less. Two samples of this type of material (V-2 and V-3) returned the following results:-

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O
V-2	55.16	26.80	1.87	7.89	.32	6.06	.81
V-3	56.35	26.19	1.73	8.36	.32	5.99	.77

	TiO_2	MnO	P_2O_5	Cr*	V*	Zn*
V-2	.83	.01	.03	90	30	5**
V-3	.61	.01	.04	100	20	5**

* - In ppm.
** - Less than.

Of particular interest to the claim group is the presence of massive ilmenite in the QIT owned claim 32523-3. This material forms a 1 m to 1.5 m high rounded ledge of outcrop and comprises black, medium to coarse-grained massive ilmenite. The mineralized area, which may extend onto the Lac au Vent claim group, is characterized by stunted spruce and balsam trees. A sample of massive mineralization (V-4) returned the following results:-

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SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O
.71	.68	58.17	.03	2.66	.01**	.15

TiO_2	MnO	P_2O_5	Cr*	V*	Zn*
40.17	.14	.03	360	1830	100

* - In ppm.
** - Less than...

GEOPHYSICAL INTERPRETATION

Discussion

Anorthosite, which is an ubiquotous rock type to the whole area, tends to be very erratically magnetic. The magnetic field from such rocks is irregular and generally lacking in any trend directions. Since the magnetic base level also can change rapidly in any area, interpretation of magnetic data in such an environment is difficult.

It has been found that where ilmenite is present in the Lac Allard area it is evidenced by a negative magnetic response. Presumably, emplacement of highly magnetic ilmenite took place when the magnetic poles were reversed in polarity and sufficient remenant magnetism remained to produce negative magnetic responses. Unfortunately, all negative anomalies are not ilmenite as responses from magnetic bodies usually have a negative component, the amplitude of which depends on the body's orientation to the magnetic pole. Thus, a means of further geophysical discrimination is needed in the search for and identification of potential ilmenite mineralization.

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The density of ilmenite ranges between 4.3 and 5.0 Kg/m^3, while that of anorthosite is about 2.8 Kg/m^3. Thus, a density contrast of 1.5 to 2.2 Kg/m^3 is possible between anorthosite and massive ilmenite. Routine gravity profiling of magnetic lows that are thought to be associated with ilmenite mineralization are generally part of exploration procedures.

Surveys

An airborne magnetic and VLF electromagnetic survey flown in 1984 covers the properties. This survey was flown by Les Releves Geophysiques Inc. using a Rexhem-1 helicopter geophysical system. Mean terrain clearance is approximately 100 m providing good anomaly resolution. Prior to this work, Kennco Explorations (Canada) Ltd. investigated the properties in 1960. The work consisted of limited magnetic and gravity profiling in addition to geological mapping.

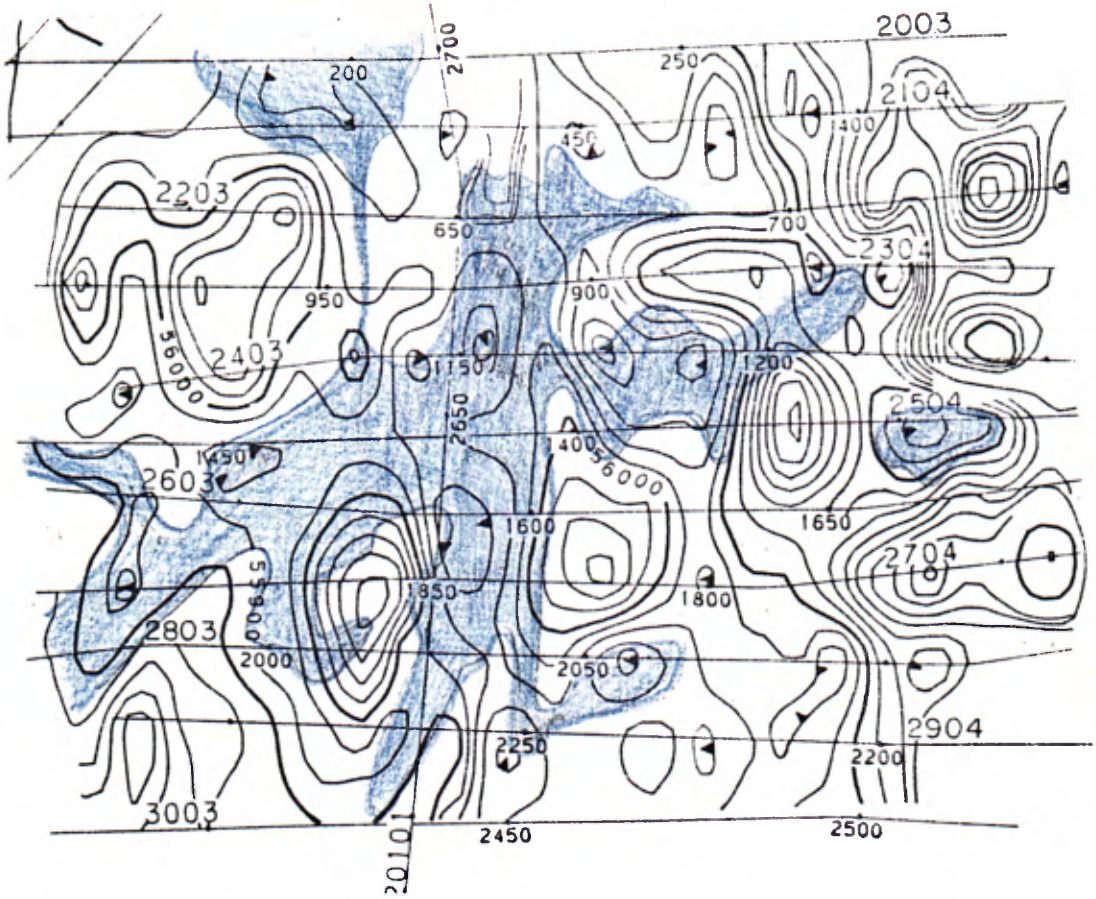
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RESULTS

Lac Petit Pas Claim Group

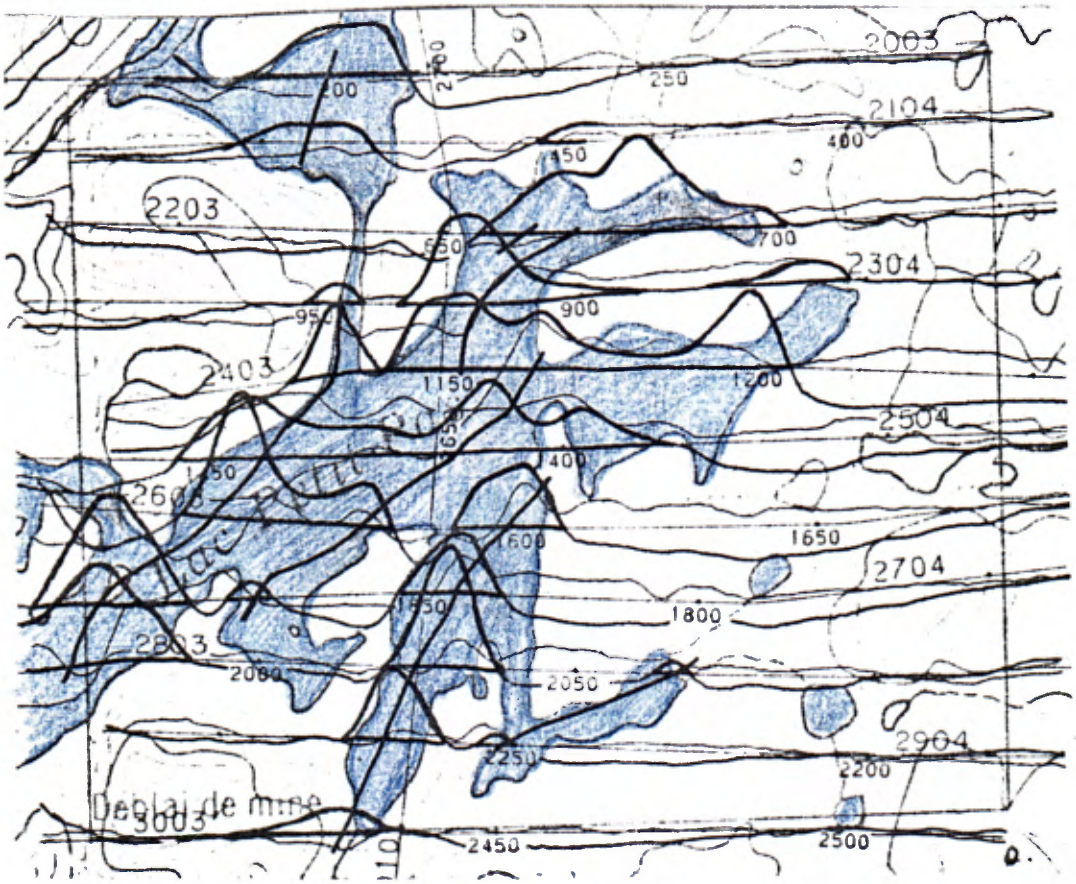
The results of the airborne survey are shown in Figure 4. The terrain is quite rugged and inspection of the magnetic results shows that most of the prospective magnetic low areas are underlain by the waters of Lac Petit Pas. The VLF survey has similar relational characteristics with conductive trends occurring only within the lake areas as shown in Figure 4.



(a) Magnetics



Lake outline



(b) VLF - EM

Total Field

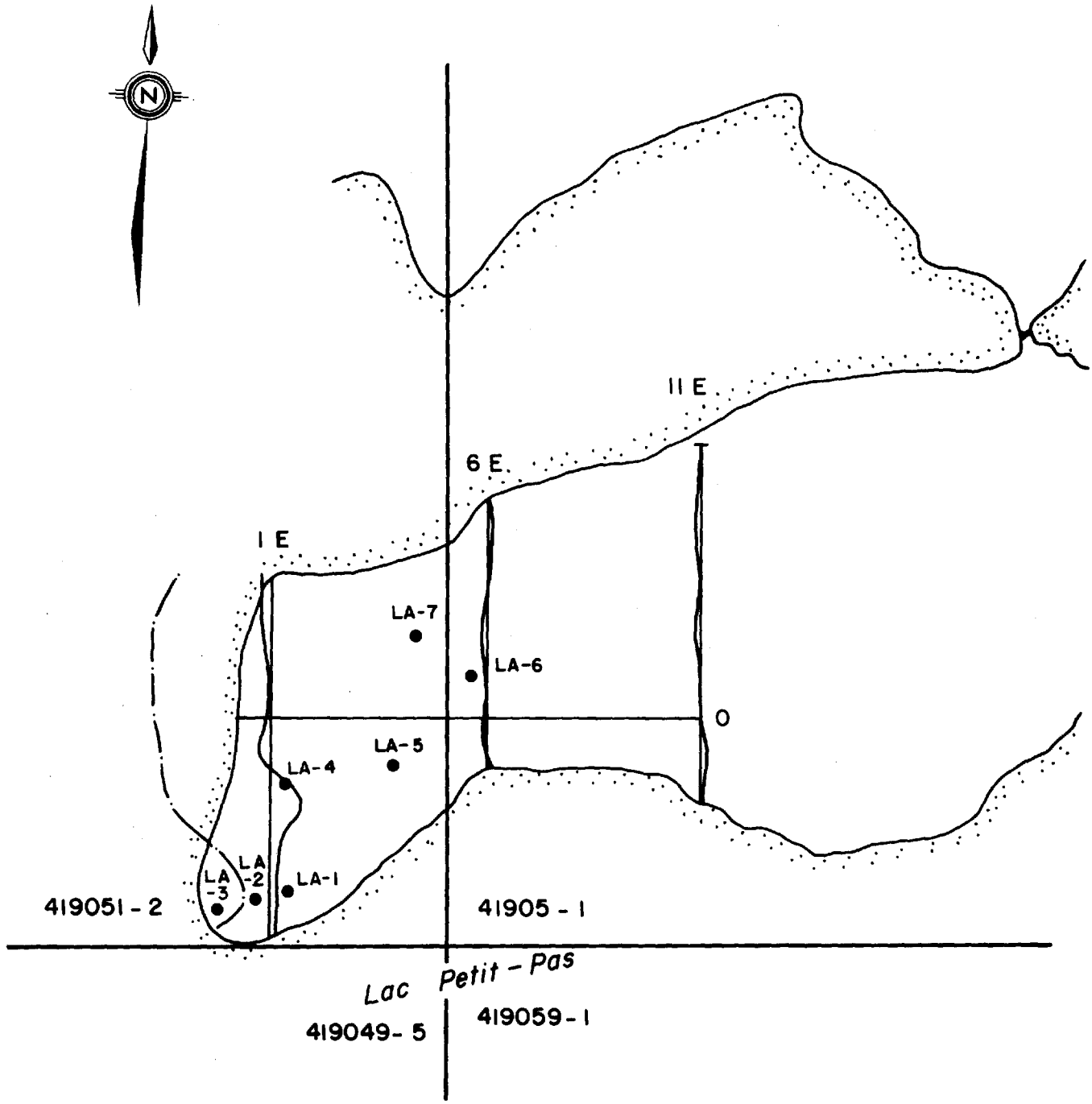
Conductor Axis

FIGURE 4

AIRBORNE SURVEYS

Lac Petit - Pas

1 : 20 000



Magnetic Profile

Gravity Profile

● Sample Location

0 1.5 3 milligals

0 15 30 nT (000's)

FIGURE 5

GROUND SURVEYS

Lac Petit-Pas

1" : 500'

(From Kennco, 1960)

The ground surveys by Kennco are limited in nature consisting of one gravity profile and three magnetic profiles over a showing area on a peninsula of Lac Petit Pas (Figure 5). Only very weak magnetic and gravity responses related to ilmenite type signatures were obtained over the area.

The results of the airborne geophysics are inconclusive in that the usual geophysical signatures associated with ilmenite mineralization are weak, which may be a function of topography and overburden. The largest negative amplitude airborne anomaly occurs in proximity to the showing area under the waters of Lac Petit Pas. Ilmenite mineralization may exist under the lake in this location. Further detailed and carefully controlled magnetic and gravity surveys would be necessary to investigate this possibility.

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Lac au Vent Claim Group

The results of the airborne survey are shown in Figure 6. There is no apparent association of the magnetic and VLF surveys with topography. Just north of a small pond, a very sharp negative amplitude magnetic anomaly is present which appears to have some southwestward extent.

The VLF results show a mainly quadrature anomaly trending west-southwestward through the magnetic low zone. This feature may relate to a structural break associated with the underlying ilmenite mineralization.

The ground results reported by Kennco are shown in Figure 7. Note that a pronounced three milligal high anomaly occurs on the survey grid and has direct

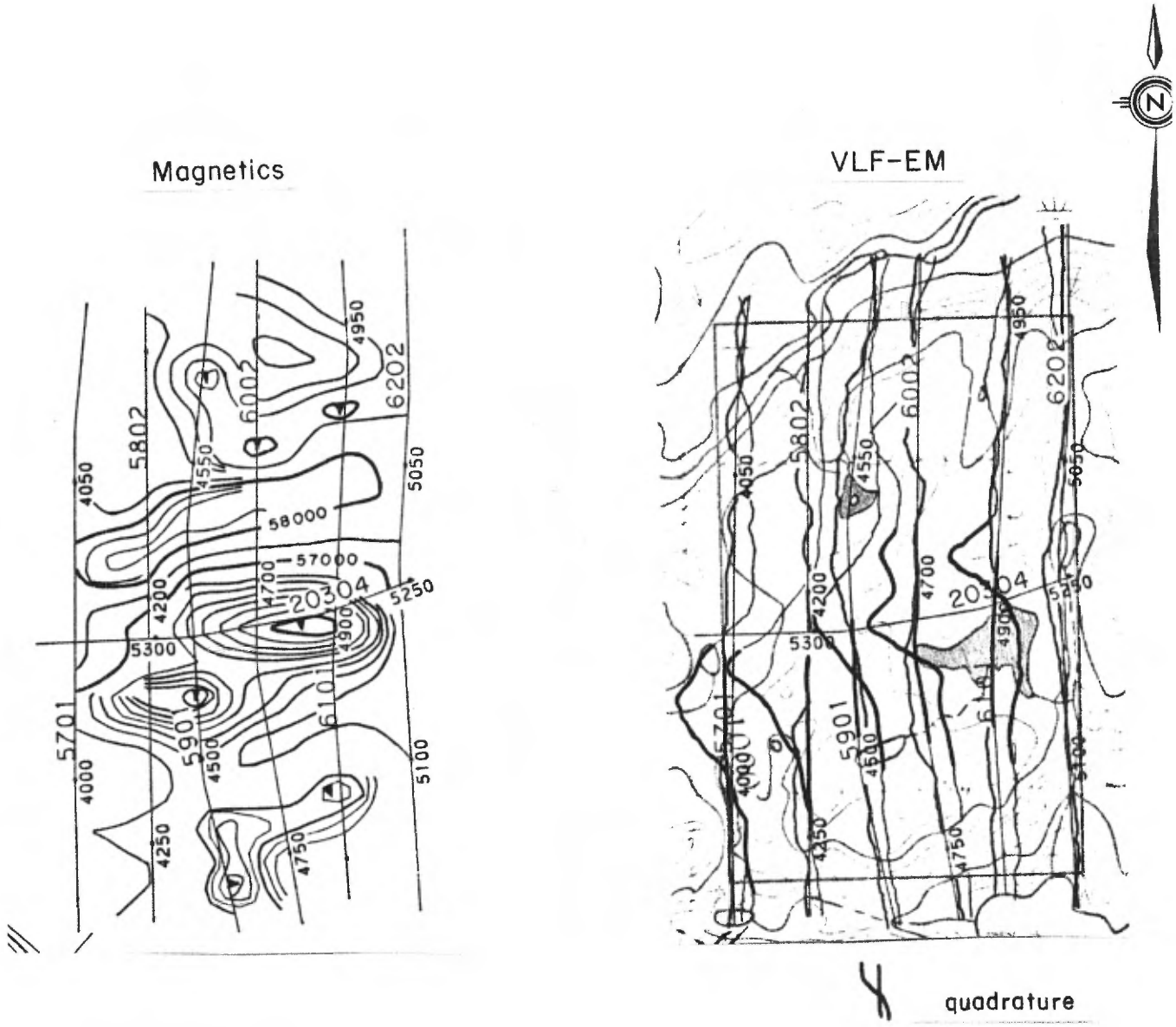


FIGURE 6

AIRBORNE SURVEYS

Lac au Vent

1 : 20000

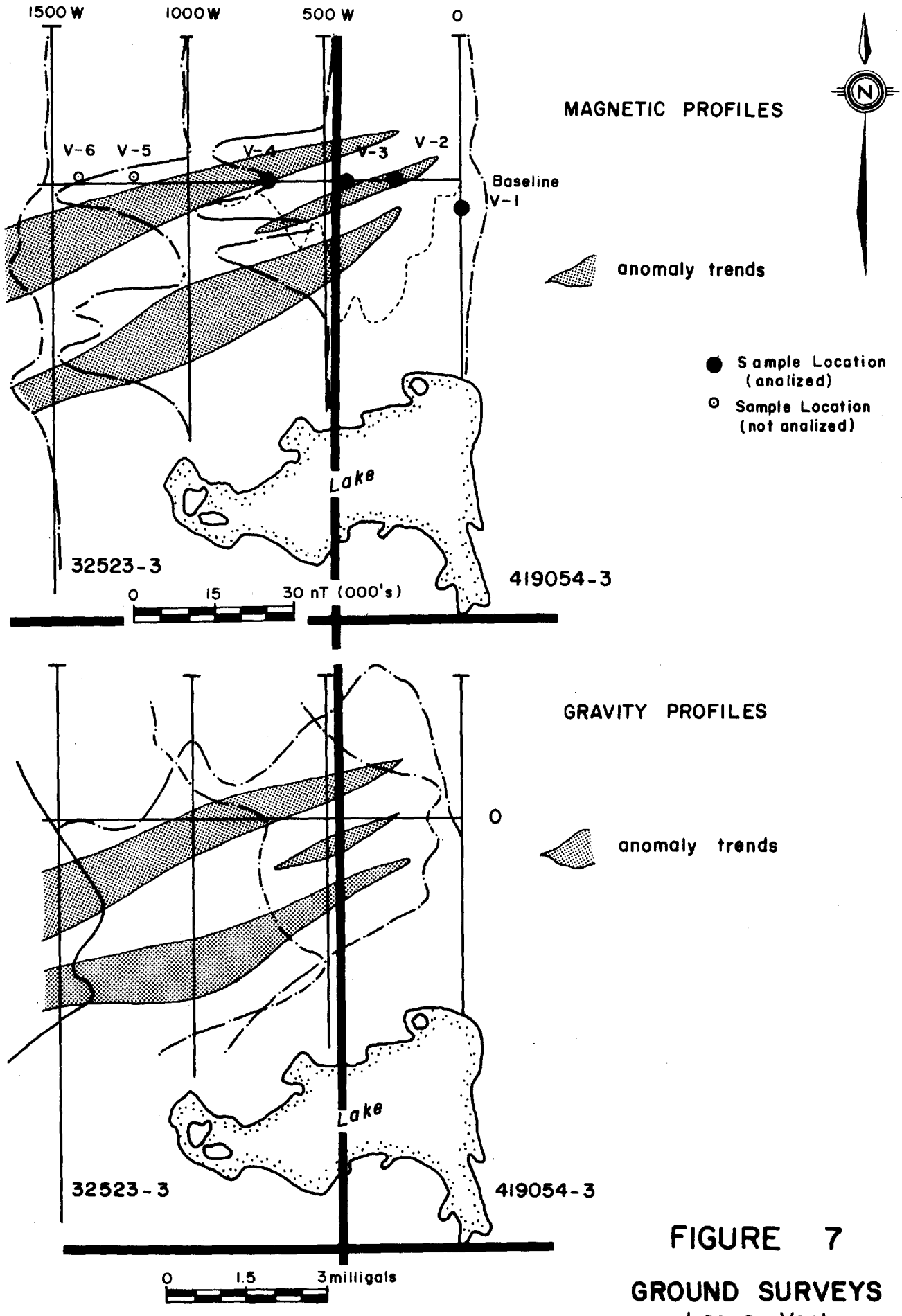


FIGURE 7

GROUND SURVEYS

Lac au Vent

(From Kennco, 1960)

correlation with a magnetic negative 20,000 nanotesla zone An occurrence of massive ilmenite is present in the vicinity of line 500W and the baseline (old grid) in QIT claim 32523-3 as described elsewhere in this report. The gravity and magnetic data have two peaks or nodes, especially evident in the magnetic results, which tend to form two parallel horizons trending west-southwestward parallel to the airborne VLF conductor axis described earlier.

The high amplitude negative magnetic anomaly and positve gravity response is typical of the geophysical signature seen over ilmenite deposits. Massive ilmenite is present at the east end of the anomaly zone providing very positive evidence that the geophysical anomaly reflects the presence of underlying massive ilmenite. It is suggested that two horizons are present having widths of 60 m to 100 m and strike lengths of approximately 350 m. There is a suggestion that the anomaly source, presumably a massive ilmenite body, may be plunging westward and that the geophysical anomaly attenuation to the west is more indicative of the continuing plunge of the body rather than its termination.

Assuming a massive ilmenite body with an average density of 4.0 Kg/m^3, width of 75 m, strike length of 300 m and depth extent of 300 m, a tonnage potential can be calculated to be 27 million tonnes. As two such bodies are indicated by the geophysical results, the potential tonnage is estimated to be in the order of 50 million tonnes. Calculations show that such a body or bodies would produce the gravity anomaly amplitudes measured.

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CONCLUSIONS AND RECOMMENDATIONS

Lac Petit Pas

The negative amplitude magnetic anomaly delineated on the property, under the waters of Lac Petit Pas is suggestive of an ilmenite body. Magnetic and gravity surveys in the winter months would be necessary to determine if there was potential for ilmenite in this area. If the geophysical results are positive, then a follow-up diamond drilling program of, say, 1,500 ft. would be warranted. The estimated cost for this program is $60,550 (Appendix II).

Lac au Vent

The geophysical results suggest that a massive body, presumably ilmenite, having a potential tonnage of several tens of millions of tonnes is present in proximity to the claim group. It is suggested that the body may plunge to the west into the Chapel Bay claims. Detailed gravity and magnetic surveys over cut lines would be necessary to determine if additional ilmenite bodies are present on the property. In addition, detailed mapping and rock chip sampling should be carried out. Any resulting targets should then be tested by diamond drilling of, say, 1,500 ft. The estimated cost for this program is $62,310 (Appendix II).

With aircraft support and a contingency factor of 10%, the total cost for exploration on the two claim groups would be $143,000.

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REFERENCES

Deardon, E.O.

1961: An Evaluation of Quebec Iron and Titanium Corporation's Non-contiguous claim Groups, Kennco Explorations, (Canada) Ltd., M.E.R., Quebec Document GM#35767.

Flemming, H.W.

1961: A Preliminary Geophysical Assessment of Portions of Quebec Iron and Titanium Corporation Properties, M.E.R. Quebec Document GM#35773.

Bougher, M.A.

1982: Titanium and Titanium Dioxide; Reprint From Presentation. Mineral Policy Sector, EM and R, Canada.

Hocq, M.

1982 Region du Lac Allard; M.E.R. Quebec, DPV-894.

Retty, J.A.

1942: Report on Lower Romaine River Area; Quebec Department of Mines.

Rose, E.R.

1969: Geology of Titanium and Titaniferous Deposits of Canada; G.S.C. Econ. Geol. , Rpt. No. 25.

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CERTIFICATE OF QUALIFICATIONS

I, Joseph T. Arengi, residing at 113 Montrose Avenue, Toronto, Ontario, do hereby certify that:-

(1) I am a consulting geologist for the firm of Derry, Michener, Booth & Wahl, consulting geologists and engineers.

(2) I graduated with a B.Sc. degree in geology from the State University of New York in 1972 and an M.Sc. degree in geology from the University of Toronto in 1977.

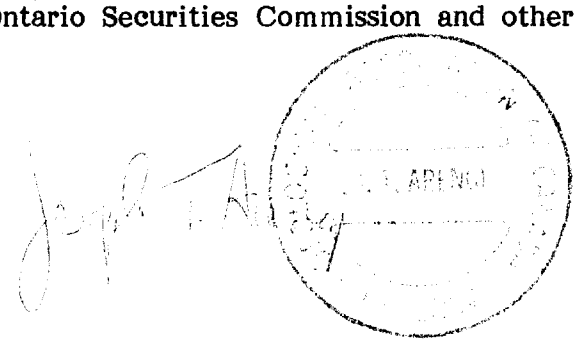
(3) I have practised my profession for more than 10 years.

(4) I am a Fellow of the Geological Association of Canada and a member of the Society of Economic Geologists.

(5) I have no interest in, nor do I expect to receive any interest, directly or indirectly, in Chapel Bay Explorations Inc..

(6) This report, and the conclusions and recommendations made, are based on examination of all available data. I did visit the properties.

(7) I hereby consent to the use of this report in a Statement of Material Facts of the Company and for the preparation of a prospectus for submission to the Ontario Securities Commission and other regulatory authorities.



Joseph T. Arengi, M.Sc., F.G.A.C.

August 28, 1985
Toronto, Canada

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CERTIFICATE OF QUALIFICATIONS

I, Roderick W. Woolham of the town of Pickering, Province of Ontario, do hereby certify:-

(1) That I am a geophysicist and reside at 1463 Fieldlight Blvd., Pickering, Ontario, L1V 2S3.

(2) That I graduated from the University of Toronto in 1961 with a degree of Bachelor of Applied Science, Engineering Physics, Geophysics Option.

(3) That I am a member in good standing of the following organizations: The Association of Professional Engineers of the Province of Ontario (Mining Branch); Society of Exploration Geophysicists; South Africa Geophysical Association.

(4) That I have been practising my profession for a period of more than 20 years.

(5) That I am an Associate with Derry, Michener, Booth & Wahl, Consulting Geologists and Engineers.

(6) That I have no direct or indirect interest or expect to receive any in the properties or securities of Chapel Bay Explorations Inc. or any affiliate.

(7) The conclusions and interpretations in this report are based on evaluation of published reports and maps. I have not visited the properties described herein.

(8) I consent to the use of this report in a Statement of Material Facts of the Company and for the preparation of a prospectus for submission to the Ontario Securities Commission and other regulatory authorities.

R. W. Woolham
B.A.Sc., P.Eng

REGISTERED PROFESSIONAL ENGINEER
R. W. WOOLHAM
PROVINCE OF ONTARIO

August 28, 1985
Toronto, Canada

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APPENDIX I

ANALYTICAL RESULTS

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TELEX 06-960215

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM: Derry Michener Booth & Wahl
Ste. 410 - Confederation Square
20 Richmond St. E.
Toronto, Ont. M5C 2R9
Attn: Mr. J.T. Arengi

REPORT No. T-2295

Inv#29705

SAMPLE(S) OF: ROCK

	Beryllium (Be)ppm	Cobalt (Co)ppm	Chromium (Cr)ppm	Vanadium (V) ppm	Zinc (Zn)ppm
LA-1	<1	5	100	4	<5
LA-2	1	40	290	200	80
LA-3	<1	5	140	14	<5
LA-4	<1	1	110	10	<5
LA-5	<1	1	90	6	<5
LA-6	<1	3	110	2	<5
LA-7	<1	15	120	20	10
V-4	3	8	360	1830	100
V-3	<1	8	100	20	<5
V-2	<1	5	90	30	<5
V-1	<1	5	100	10	<5

To follow: Ag, Cd, Cu, Mo, Ni & Pb

Samples, Pulps and Rejects discarded after two months

DATE Aug.23/85 SIGNED

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TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
1301 FEWSTER DRIVE, MISSISSAUGA, ONT. L4W 1A2
TELEPHONE (416) 625-1544
TELEX 06-960215

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM

Derry Michener Booth & Wahl
Ste. 410 Confederation Square
20 Richmond St. E.
Toronto Ontario M5C 2R9
ATTn Mr. J. T. Arengi

REPORT No. T2295-1

SAMPLE(S) OF ROCK

Inv#
P.O. /

	Copper (Cu)	Nickel (Ni)	Lead (Pb)	Cadmium (Cd)	Silver (Ag)	Molybdenum (Mo)
LA-1	3	5	3	<1	<0.1	<2
LA-2	68	84	3	<1	<0.1	2
LA-3	2	16	1	1	0.1	<2
LA-4	5	5	1	<1	0.1	<2
LA-5	2	14	1	<1	0.1	<2
LA-6	2	3	2	<1	<0.1	<2
LA-7	1	10	1	<1	0.1	<2
V-4	98	44	<1	1	0.1	<2
V-3	6	10	2	1	0.2	<2
V-2	7	8	4	<1	0.2	<2
V-1	4	4	2	<1	0.2	<2

Note: values in ppm

Samples, Pulps and Rejects discarded after two months

DATE Aug. 27/85 SIGNED

CTA

For any enquiries on this report, please contact Customer Service Department – Edith Anzil

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CERTIFICATE OF ANALYSIS

DERRY MICHENER BOOTH & WAHL
STE. 410 CONFEDERATION SQUARE
20 RICHMOND ST. E.
TORONTO ONT. M5C 2R9
YOUR REFERENCE : ATTN: MR. J. T. ARENGI

T.S.L. REPORT No. : T - 2295
T.S.L. File No. :
T.S.L. Invoice No. :

SAMPLE #	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	TiO2	MnO	P2O5	BaO	SrO	ZrO2	LOI	TOTAL
LA-1	56.40	26.55	1.02	8.86	.22	6.01	.48	.22	.01	.01	.03	.13	< .01	0.41	100.35
LA-2	47.53	16.51	10.95	10.29	7.89	2.74	1.00	1.75	.13	.62	.12	.13	< .01	0.00	99.66
LA-3	55.91	24.93	1.85	8.31	1.67	5.67	.97	.23	.02	.01	.03	.11	< .01	0.20	99.91
LA-4	56.06	26.42	1.02	8.52	.22	6.03	.95	.32	< .01	.02	.03	.13	< .01	0.60	100.33
LA-5	55.94	27.08	.95	8.76	.20	5.91	.89	.23	.01	.02	.03	.14	< .01	0.20	100.36
LA-6	55.75	27.08	.78	8.97	.16	5.89	.81	.16	< .01	< .01	.03	.13	< .01	0.20	99.98
LA-7	56.61	23.98	2.75	7.46	2.34	5.70	.87	.18	.03	.02	.03	.11	< .01	0.20	100.28
V-4	.71	.68	58.17	.03	2.66	< .01	.15	40.17	.14	.03	< .01	< .01	.03	-2.84	99.93
V-3	56.35	26.19	1.73	8.36	.32	5.99	.77	.61	.01	.04	.03	.12	< .01	0.00	100.52
V-2	55.16	26.80	1.87	7.89	.32	6.06	.81	.83	.01	.03	.03	.13	< .01	0.60	100.54
V-1	55.78	26.73	1.50	8.11	.41	5.93	1.16	.37	.02	.08	.05	.13	< .01	0.40	100.57

DATE : 23-AUG-85

SIGNED : _____
Paul E. Bursener P. Eng.

APPENDIX II

Cost Estimate for Field Program in the Lac Allard Area, Quebec For Chapel Bay Explorations Inc.

A) Petit Pas

1)	Line Cutting - peninsula area + water, say, 4 claims 8 Km. @ $150/Km.	$ 1,200.00
2)	Geophysical survey - mag survey 8 Km. @ $200	1,600.00
	gravity 75 sta. @ $70	5,250.00
3)	Diamond drilling, 1,500 ft. @ $35/ft	52,500.00
		$ 60,550.00

B) Lac au Vent

1)	Line Cutting - 3 westernmost claims 6 Km. @ $185/Km	$ 1,110.00
2)	Geological mapping - 1 geologist 5 days @ $250/day	1,250.00
3)	Assay costs say 20-30 samples whole rock @ $30 + shipping	1,000.00
4)	Geophysical surveys - mag survey 6 Km. @ $200	1,200.00
	gravity survey 75 sta. @ $70	5,250.00
5)	Diamond drilling 1,500 ft. @ $35/ft.	52,500.00
		$ 62,310.00

Helicopter/Aircraft Support for Linecutting, geological and geophysical surveys	$ 7,000.00
Total (A & B)	129,860.00
Contingency at 10%	13,140.00
GRAND TOTAL	**$143,000.00**

B. & C. LTD.