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Geological evaluation report on the Springer property

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GEOLOGICAL EVALUATION REPORT

ON THE

SPRINGER PROPERTYT

Parker Township

St-Lawrence-Lower North Shore

QUEBEC

By
Fayz Yacoub P. Geo

April, 2019

SUMMARY

A global increase in the demand and the price of titanium/vanadium concentrates particularly in China and emerging South Asian markets has stimulated the exploration for these metals in the Province of Quebec. Over the last decade, the Lower North Shore of Quebec as well as several other parts of Quebec has witnessed a surge in mining exploration owing to its numerous Fe-Ti prospects and deposits associated with anorthosite complexes.

The subject property was strategically oriented and picked to cover areas of Titanium/Vanadium and Iron ore zones previously explored and proved to have a high potential to host world class Ti/V/Fe deposit. The Springer deposit is located in the southeastern part of Quebec and is situated within the Parker Township, N.T.S map-sheet 12L/11. The property is 50 kilometers north of the coastal town of Havre St. Pierre, on the north shore of the St. Lawrence River and is only 4 kilometers north of QIT (Tio mine).

At Allard Lake and Springer Lake where the Springer property is located, the mineralization is in anorthosite to gabbroic anorthosite rocks in the form of bands rich in ilmenite. The presence of large bodies of anorthosite and related rocks in the map area offer potential deposits of iron and titanium/vanadium in the form of magnetite and ilmenite. Some of these larger deposits have already been mined by QIT Inc.

The area of Allard Lake lies immediately north of Havre St. Pierre and well known to have the most important occurrences of magnetite-ilmenite found in the region. The mineral occurrences of Allard Lake were first published by the Quebec Department of Mines. The results of the chemical analysis indicate an average content of 55% FeO and 35% TiO2.

Titanium-iron deposits formed by magmatic segregation associated with mafic masses. Two mineralized zones around Springer Lake are by far the largest deposits in the area. The deposits appear as two adjacent masses, on each side of the lake, within its northern section. These masses appear to be dipping to the north and are surrounded by massive medium to coarse grained anorthosite. On the west side of Springer Lake, high-elevation hemo-ilmenite is outcropping on an escarpment about 60 meters above the lake surface. Parallel ore is found on the West Bank, 90 meters in length. Mineralization was traced from the escarpment to a NW direction for about 360 meters. The tonnage of these deposits is estimated at about 60 Million tonnes of ore at 80% oxide, if continuity between the east and the west sides of the Springer Lake be verified, the Springer Lake deposit would rank as a major deposit, extending approximately 2000 feet in length and having a possible average width of 300-600 feet.

The study of this report has concluded that the Springer property has the potential to host significant Titanium, Vanadium, iron deposits; the report is recommending that the prospect should be diligently explored laterally and at depth.

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APPENDIX A

The Springer deposit – Geological Description

1.0 INTRODUCTION

During March and April of 2019, the writer has prepared this report to postulate the potential of the Springer Lake -Titanium-Vanadium property based on the geological criteria and available data of previous exploration work completed on the property.

The report also describes the regional geology and the past exploration activities on the property and outlines proposed exploration program for the next exploration phase.

All technical information was gathered from previous data and work programs completed on the property, geological, geochemical, geophysical reports by different exploration companies and by reviewing several government assessment reports. Regional geology and claim data gathered from the Ministry of Natural Resources of Quebec.

The Author of this report Mr. Fayz Yacoub is the owner and title holder of part of the property.

2.0 LOCATION & ACCESS (Figure 1 & 2)

The Springer Lake property is located in the southeastern part of Quebec and is situated within the Parker Township, N.T.S map-sheet 12L/11. The property is 50 kilometers north of the coastal town of Havre St. Pierre, on the north shore of the St. Lawrence River, only 5 kilometers north of QIT now Rio Tinto (Lac Tio) that contains at least 125 Mt of Ti/Fe Ore at 34.2 wt%TiO2 and 56.1 wt % Fe2O3.

At the time being, the property can be accessed by helicopter and float planes from the town of Havre-St-Pierre. Rio Tinto has built a railroad from Havre-St Pierre to TiO open pit Titanium mine for transporting the ore. Hydro-Quebec is in the process of developing a new vast hydroelectric complex along the Romaine River. The project will include four hydro stations (Romaine I to IV) which will be joined by a new road. The road will pass less than 12 kilometers east of the Springer Lake. The new road will be located 32 kilometers west of Havre-St-Pierre.

A lodging camp is located at the Romaine II station and can be used for crew accommodation all year around.

The climate around the property area is characterized by winter weather and snow accumulation extending from late October until late March or early April.



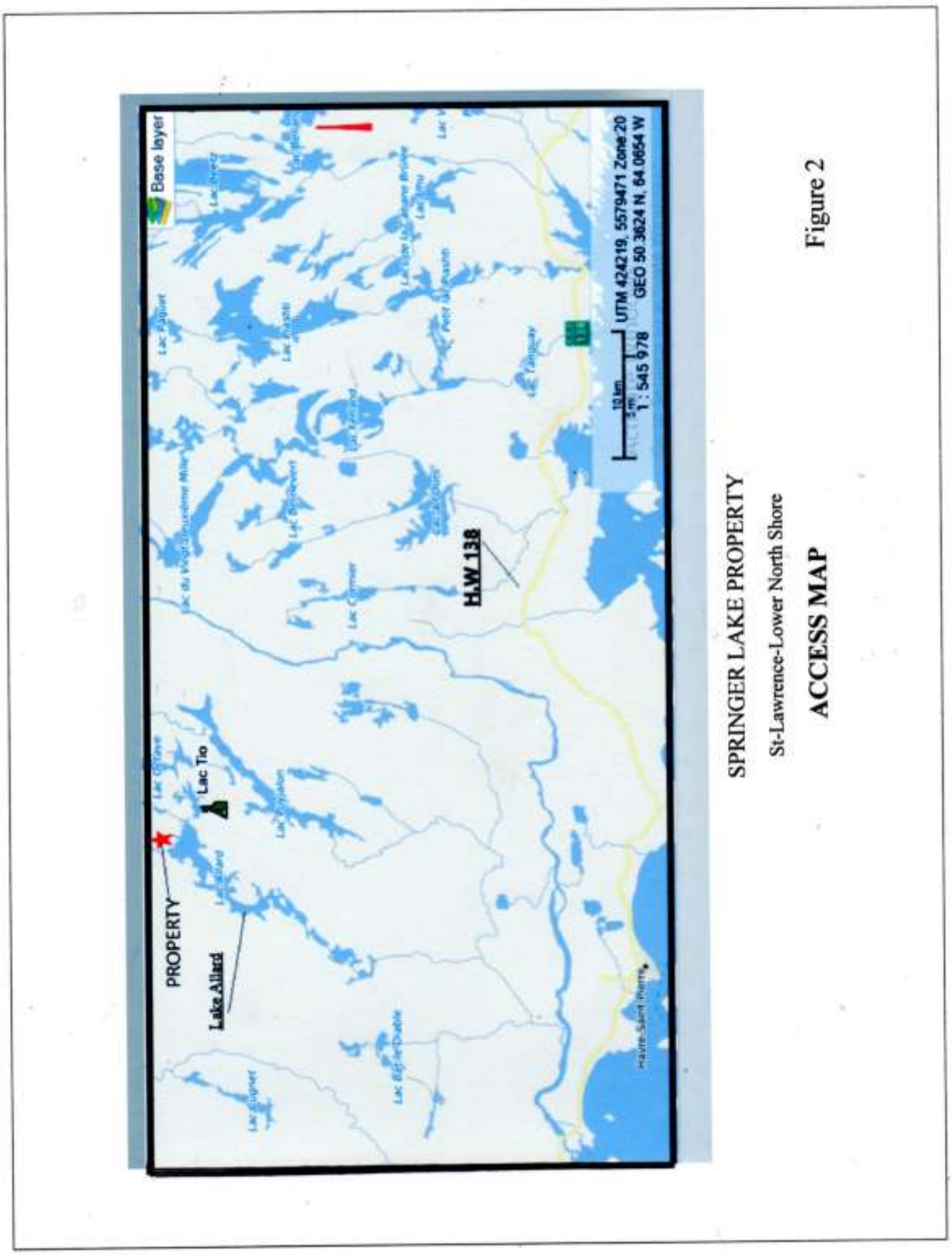
SPRINGER LAKE PROPERTY

St-Lawrence-Lower North Shore

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GENERAL LOCATION MAP

Figure 1



SPRINGER LAKE PROPERTY

St-Lawrence-Lower North Shore

ACCESS MAP

Figure 2

3.0 PROPERTY STATUS (Figure 3 & 4)

The Springer Lake property consists of 3 not contiguous mineral claims (polygons) covering approximately 1.64 square kilometers, 163.98 hectares located in Parker Township within map sheet area 12L/11. The property is centered at GPS 468247 E and 5605015 N.

Title number	Row	Column	Area	Expiry Date
CDC 2430754	12	04	54.66	2019/07/16
CDC 2430755	12	07	54.66	2019/07/16
CDC 2430756	12	08	54.66	2019/07/16

The property is owned by Fayz Yacoub and Ramy Yacoub of surrey British Columbia. According to Quebec government records, the property area is clear from parks, exploration and mining restrictions.

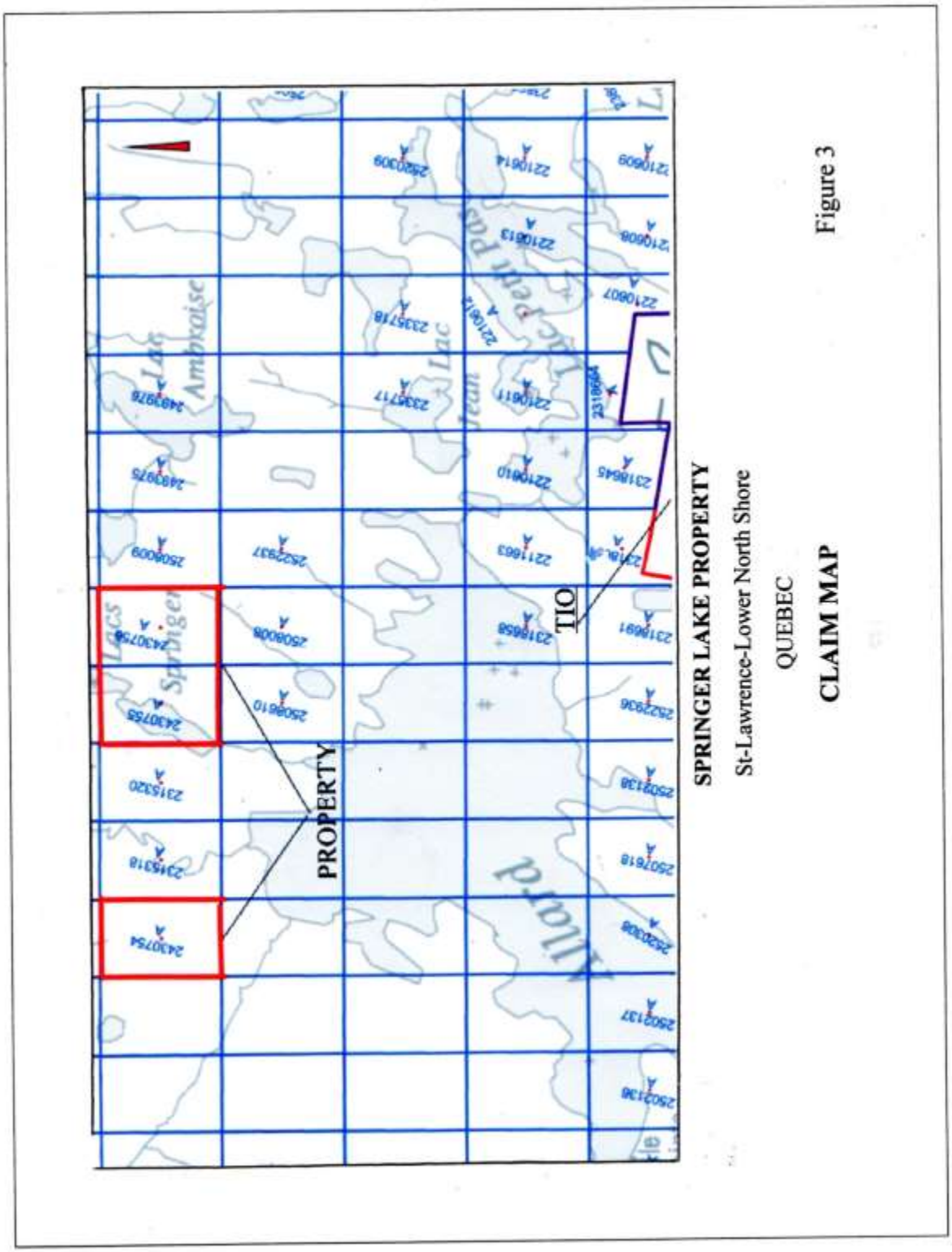

PROPERTY
TIO
SPRINGER LAKE PROPERTY
St-Lawrence-Lower North Shore
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CLAIM MAP

Figure 3

4.0 WHAT IS TITANIUM

Titanium Facts

- *The chemical element Titanium has the symbol Ti and atomic number 22.*
- *Pure titanium is a transition metal with a lustrous silver-white color.*
- *Titanium will always be found bonded with another element and does not naturally occur on its own in a pure form.*
- *British pastor William Gregor discovered titanium in 1791. It was later named by German chemist Martin Heinrich Klaproth who called it titanium after the Titans of Greek mythology. It was not until 1910 that titanium*
- *and is not very good at conducting heat or electricity. was produced to 99.9% purity by New Zealander Matthew A. Hunter, the method became known as the Hunter Process.*
- *Titanium has two very useful properties, it is resistant to corrosion (including in sea water and chlorine) and has the highest strength-to-weight ratio of any metal.*
- *Titanium is as strong as a lot of steels, yet it is 45% lighter. The metal is also 60% denser than aluminum but is over two times as strong.*
- *Titanium has a melting point of 3,034 °F (1,668 °C) and a boiling point of 5,949 °F (3,287 °C).*
  Titanium is non-magnetic
- *Even in large doses titanium remains non-toxic and does not have any natural role inside the human body, usually passing through without being absorbed.*
- *Titanium is present in most igneous rocks and their sediments; it is the 9th most abundant element in the Earth's crust and the 7th most abundant metal.*
- *Many elements such as iron, aluminum, nickel and vanadium are alloyed with titanium to produce strong lightweight alloys. These titanium alloys are used in the manufacturing of naval ships, spacecraft, missiles and aircraft, with around two thirds of all titanium metal produced is used in aircraft engines and frames.*
- *Titanium metal is also used in the production of high-end racing cars and motorcycles where reducing weight but maintaining strength is important.*
- *Titanium's strength-to-weight superiority has seen the metal used as a component in many other products in recent times including, laptops, firearms, tennis rackets, golf clubs, lacrosse sticks, football helmet grills, bicycles frames, camping cookware and utensils.*
- *Around 95% of all titanium is used to produce the compound titanium dioxide, which is a very bright and refractive white pigment that is used in paints, plastics, toothpaste, sunscreens, sports equipment and paper.*
- *The fact that titanium is strong, light, non-toxic and does not react without bodies make it a valuable medical resource. It's used to make surgical implements and implants, such as hip joint replacements that can stay in place for up to 20 years.*
- *Titanium is now popular in designer rings and other jewelry due to its durability, its resistance to seawater and chlorine in swimming pools and as it is non-toxic.*

Titanium Industries

At Titanium Industries, many manufacturers, engineers and designers that use titanium in a wide variety of products and projects. Titanium is extremely tough yet lightweight, boasting the highest strength to weight ratio of any structural metal. It takes far less titanium to produce a structure that matches the same strength of other metals. If individual plates of the same weight were made from titanium, copper and stainless steel, the titanium plate would be double the size of the copper, and 75% larger than the stainless steel. Conversely you could buy half as much titanium to do the same job as copper, slightly more than half as much to do the same job as stainless steel.

The equipment and capability of the metal gives the flexibility to meet a wide variety of the market needs – and so huge range of applications can be accomplishing from simple weight reduction to advanced body implants.

1- Titanium in the Aerospace market

The SR-71 "Blackbird" war plane was the first aircraft to use titanium extensively in its structure and skin. The aerodynamic friction that resulted from the intense speeds of which the aircraft was capable created so much aerodynamic friction that if any other metal was used, it would simply melt out of the sky. In fact, it was so fast, that if anyone fired a surface to air missile at it – the standard evasive procedure was to simply accelerate and outrun it! Holding the record of the fastest aircraft in the world for over 30 years, the Blackbird reached speeds of 3500km an hour, or three times the speed of sound. Today, about two thirds of all titanium metal produced is used in aircraft engines and frames. As an example, the A380 Aero bus uses approximately 70 tons of titanium for the aircraft structure and fittings.

2- Titanium in medical devices.

Titanium is one of the most biocompatible metals – the human body can handle it in large doses with no impact. In fact, it is estimated that we ingest around 0.8mg of titanium a day – most passes through us without being absorbed. Also, its density is very similar to human bone, which will readily adhere to it. These qualities make Titanium perfect for use in surgical implants, such as hip balls, sockets (joint replacements), heart stents and dental implants. Lasting in excess of 20 years with no effects, Titanium is a clear choice in the medical field. Its high strength to weight ratio also makes it the perfect choice for surgical instruments and other medical devices. Wheelchairs made from titanium provide the lightest weight, yet are very strong and children's wheelchairs can be made to grow as the child becomes older.



TITANIUM IN AEROSPACE



TITANIUM USE IN HUMAN PARTS REPLACEMENT

3- Titanium in everyday products

Surprisingly, of all the mined and synthetic titanium minerals, approximately only 5% is used to produce titanium metal. The remaining 95% is used to manufacture pure titanium dioxides – a pigment that enhances brightness and opacity in paints and inks, paper, and plastics, and even in food products and cosmetics. It's also the metal used in the body of Apple's PowerBook line – helping achieve a lightweight frame.

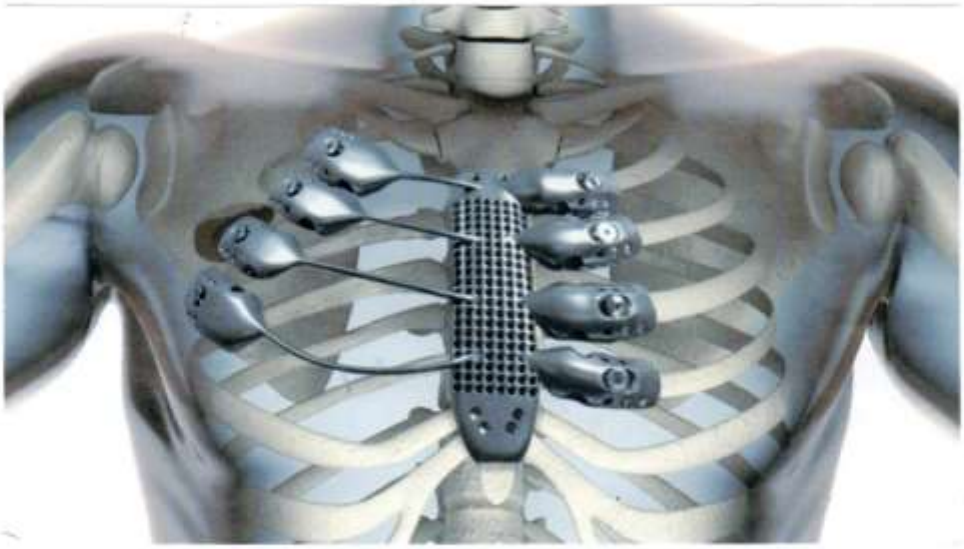
4- Titanium Art/Architecture

Titanium spontaneously forms a hard protective oxide film upon contact with any oxygen. It's this film that gives the metal its trademark shine and shimmer, with variations in the film's thickness affecting the color that the metal projects. It also has remarkable elasticity, making it the metal of choice for artistic and architectural structures. For instance, the 40 m (131 foot) memorial to Yuri Gagarin (the first man to travel in space) in Moscow, is made of titanium for the metal's attractive color and association with rocketry. The Guggenheim Museum, Bilbao is sheathed in titanium panels. It can also be used to help structural repair of historic buildings. Titanium was used as a part of the 2008 structural repair and stabilization for the Leaning tower of Pisa in Italy. The artist who chose Titanium for the Olympic Torch chose the metal for two reasons – its modern image of superior technology and its beautiful colors.

5- Titanium in Sporting Products

The high strength to weight ratio of Titanium makes it ideal for use in a wide range of sporting equipment. Titanium is a core material in the components of the world's lightest bicycle, which weighs only 6 lbs.! Considering an average adult bike weighs 30 lbs. and racing bikes weigh around 15 lbs., this bike is extremely lightweight thanks to its titanium structure. The number 1 consumer of titanium for sporting goods is in manufacture of golf club heads. Most manufacturers such as Taylor Made, Cobra, Ping and Integra have a titanium line.

Titanium is also naturally resistant to corrosion and erosion – making it a great choice for safety equipment. When the 6000 bolts that secured the daring climbing track in Ton Sai first started to erode, they were replaced with stainless steel. However, the stainless steel replacements only lasted 9 months, after which they had a corrosion problem that would break the bolt on a simple body weight charge. Metallurgists discovered that the only metal the climbers could trust with their lives was titanium.



THE WORLD'S FIRST 3D-PRINTED TITANIUM RIB



TITANIUM IN THE AUTO INDUSTRY



TITANIUM IN THE SPORT INDUSTRY

5.0 WHAT IS VANADIUM

Vanadium is a bright white, soft, ductile metal with good structural strength. Vanadium is resistant to attack by alkalis, hydrochloric acid, sulfuric acid, and salt water. When present in compounds, vanadium exists mostly in the oxidation state V. The metal oxidizes in air at around 660 ^{o}c to the pentoxide (V_2O_5).

Uses of Vanadium

The main use of vanadium is in alloys, especially with steel.

85% of all the vanadium produced goes into steel, 10% goes into alloys of titanium and 5% into all other uses. [7]

A small amount of vanadium adds strength, toughness, and heat resistance.

It is usually added in the form of ferrovanadium, a vanadium-iron alloy.

Vanadium steel alloys are used in gears, axles and crankshafts.

Titanium-aluminum-vanadium alloy is used in jet engines and for high-speed aircraft.

Vanadium foil is used in cladding titanium to steel.

Vanadium-gallium tape is used in superconducting magnets.

Vanadium pentoxide is used in ceramics and as a catalyst for the production of sulfuric acid.

The first extensive industrial use of vanadium metal was over a century ago in the vanadium-steel alloy chassis of the Ford Model T car.

A 1908 advertisement for the Model T read, "Vanadium steel, the strongest, toughest and most enduring steel ever manufactured, is used throughout the entire car."

Vanadium Battery

*The **vanadium redox battery** (VRB), also known as **vanadium flow battery** (VFB) or **vanadium redox flow battery** (VRFB), is a type of rechargeable flow battery that employs vanadium ions in different oxidation states to store chemical potential energy. The vanadium redox battery exploits the ability of vanadium to exist in solution in four different oxidation states, and uses this property to make a battery that has just one electroactive element instead of two. For several reasons, including their relatively bulky size, most vanadium batteries are currently used for grid energy storage, such as being attached to power plants or electrical grids.*

The main advantages of the vanadium redox battery are that it can offer almost unlimited energy capacity simply by using larger electrolyte storage tanks, it can be left completely

discharged for long periods with no ill effects, if the electrolytes are accidentally mixed, the battery suffers no permanent damage, a single state of charge between the two electrolytes avoids the capacity degradation due to a single cell in non-flow batteries, the electrolyte is aqueous and inherently safe and non-flammable, and the generation 3 formulation using a mixed acid solution developed by the Pacific Northwest National Laboratory operates over a wider temperature range allowing for passive cooling

The main disadvantages with vanadium redox technology are a relatively poor energy-to-volume ratio in comparison with standard storage batteries (although the Generation 3 formulation has doubled the energy density of the system), and the aqueous electrolyte makes the battery heavy and therefore only useful for stationary applications.

Numerous companies and organizations involved in funding and developing vanadium redox batteries include Vionx (formerly Premium Power), UniEnergy Technologies and Ashlawn Energy in the United States; Renewable Energy Dynamics Technology in Ireland; Gildemeister (formerly Cellstrom GmbH in Austria, energy division now defunct) in Germany; Cellennium in Thailand Rongke Power; Prudent Energy in China Sumitomo in Japan; H2, Inc. in South Korea; redT in Britain., Australian Vanadium in Australia, and the now defunct Imergy (formerly Deeya). Lately, also several smaller size vanadium redox flow batteries were brought to market (for residential applications) mainly from StorEn Technologies (USA), Schmid Group, VoltStorage and Volterion (all three from Germany), VisBlue (Denmark) or Pinflow energy storage (Czechia).

6.0 HISTORY AND PREVIOUS WORK

6.1 AREA HISTORY

In 1895, 1895 marks the first discovery of ilmenite mineralization associated with the anorthosite suite in the regional area.

In 1941, a Quebec department of mines geologist discovered the first mineralized ilmenite outcrop within the anorthosite suite on the shore of lakes Puyjalon, Allard, Petit-Pas and Bat-le-Diable. Chemical assay results for the Lakes Bat-le-Diable and Allard mineralized zones produced average contents of 35 wt. %TiO2 and 55 wt. % FeO.
Also in 1941, the peninsula prospect was discovered.

In 1942, several areas were staked and optioned by Kencco Explorations and by New Jersey Zinc company.

In 1946, Kencco discovered eight ilmenite deposits in the staked areas, one of which is the Lake Tio. The Quebec Iron Corporation (QIT) was then formed to develop the new discovery.

In 1947, QIT Corp. conducted an airborne magnetic survey over a large area in the region, the survey was successful to find strong connection between all the discovered deposits and strong negative magnetic anomaly, since then a wealth of information came out of the region as a result of several work programs to follow up on the main discovery of the Lake Tio.

In 1952, A loading dock was built at Havre-St-Pierre and a 41 kilometers of railroad was completed to connect the Tio open pit mine site to the loading dock. The ore was then shipped from Havre-St-Pierre to Sorel. Quebec where an electric smelting plant was constructed.

In 1961, QIT Corp acquired and evaluated several other Ti/Fe prospects in the region notably the Mills, the Springer and Lake Grader and delineated grade and tonnage.

In 1967, Gulf Titanium Ltd. Completed three holes totaling 175 meters, one hole out of three intersected 50 meters of 17.2wt. % TiO2.

In 1975, During the summers of 1975 and 1976, the Main, Northwest and Grader ilmenite deposits were the subject of the most extensive diamond drilling program ever carried out by Q.I.T. The program totaled 33339.1 feet distributed among 103 holes.

In 1977, The Romaine Titanium prospect was discovered on the northeastern shore of Lake Puyjalon.

In 2002, Les Resources d'Arianne conducted a series of geochemical, mineralogical analyses on Ti/Fe and V mineralized rock samples to investigate the titanium potential of the most interesting 22 properties located within Grenville geological province of Quebec, the Springer Lake was included in this investigation program. Ten samples represent mineralized ilmenite containing between 78% to 98% oxide minerals mostly composed of hemoilmenite with hematite. The

chemical results of these rocks reveal average TiO2-Fe2O3 and V2O5 contents of 33.38 wt.%, 57.09 w t% and 0.35wt% respectively with low average contents of SiO2, Al2O3, MgO and CaO. These results were very similar to those given for the Lake Tio ore.

In May 2011, Canamara Iron and Titanium Corporation conducted helicopter borne magnetic geophysical survey was conducted over the Peninsula property area and beyond. Results of the survey show strong negative magnetic anomaly <-7400nT that coincide with the contours of the ilmenite/ilmenite norite unite south of Lake Aline. This anomaly corresponds to a 1600 x 650 meters' area of numerous thick layers of ilmenite covering the strong low magnetic anomaly.

In July 2013, a 43/101 report was completed on the Lake Allard, the Mills, Lake Ellen and Lake Puyjalon by Mr. Michel Boily PhD., P. Geo, he proposed 9 drill holes to test the Peninsula prospect over the area of the negative magnetic anomaly.

6.2 PROPERTY HISTORY

The original discovery of the ilmenite bodies in the Allard Lake area dates back to the year 1941, the region then became fairly extensively explored for ilmenite.

Between 1944-1946, Geological and geophysical exploration work carried out and led to the discovery and staking of an appreciable number of ilmenite rich bodies, the largest of these is the Lac Tio deposit that has been mined continuously since 1952.

In 1947, an aeromagnetic survey was conducted throughout the region in 1947. Above the Springer Lake deposit a magnetic low of 1500 to 3000 gammas below normal was recorded.

In 1960, geological and geophysical field work program was conducted by Q.I.T, several discoveries were made appear to justify adequate coverage for geophysical indicated bodies of ore materials large enough to support open pit operation.

In 1974, Q.I.T conducted field program of geological, geochemical and mineralogical work on two of the principal deposits (The Mills and the Springer Lake ilmenite). A study of 30 samples taken from the Springer Lake deposit in 1974 indicates that the oxide mass has a content of 94%. Hematite-ilmenite ore contains 26% Fe2O3 and contains slightly higher values of TiO2 and MgO than Lake Tio ore of similar grade (ie, 38.5% TiO2 vs. 37% and 3.4% MgO vs 3.1%).

In 1991, Q.I.T conducted diamond drilling program of one drill hole to test the down dip extension of the main Springer Lake deposit, the hole intersected 60 meters of massive ilmenite.

7.0 REGIONAL GEOLOGY

Figure 4

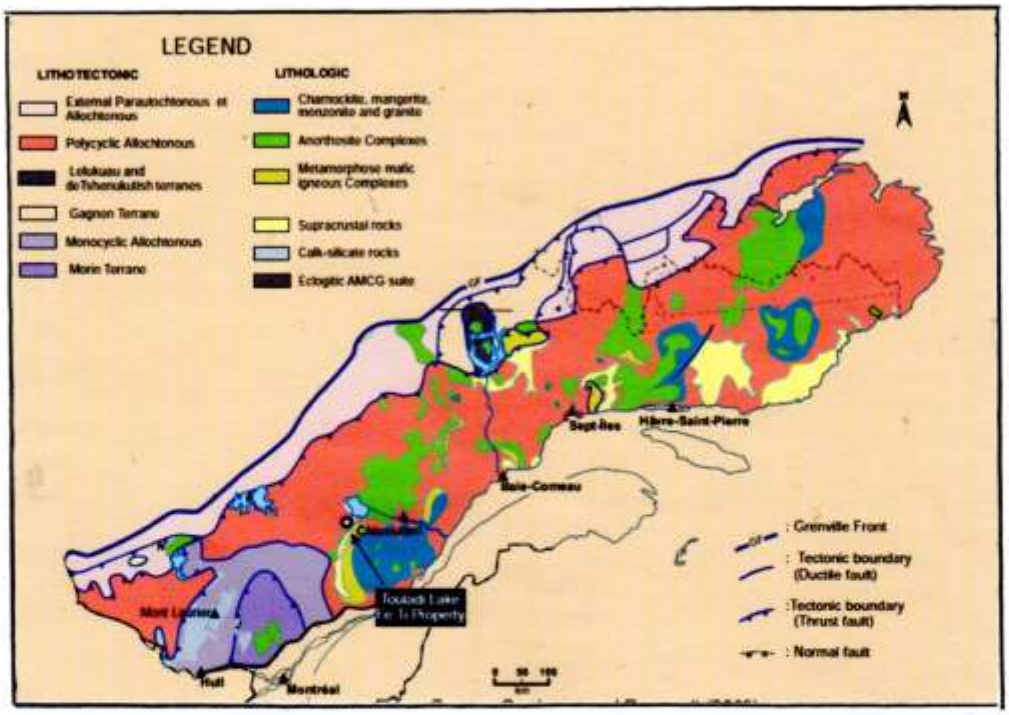
The property is located in the Grenville Province of the Canadian Shield (Figure 4), the Grenville Province is subdivided into two main belts known as the Parautochthonous belt and the structurally overlying Allochthonous polycyclic belt, as well as a series of supracrustal-dominated assemblages termed the Allochthonous Monocyclic belt.

The regional area of Havre-St-Pierre belongs to the Allochthonous Polycyclic belt and is locally overlain by Paleozoic carbonates of the St-Lawrence Platform.

Madore in 1999 and Golbeil in 2003 have included the anorthositic massive and mangerite-charnockite-granite envelope of the Havre-St-Pierre into the Havre St-Pierre Anorthosite Suite contains the spectrum of anorthosite-leuconorite-leucogabbro-mangerite rocks. The Anorthosite Suite contains important ilmenite and magnetite mineralization, notably near lake Tio and lake Allard.

Anorthosite rocks represents the common rock facies ranges in color from white-grey to blue-grey, green or black. It is coarse-to very coarse-grained, locally pegmatitic. The Anorthosite rocks are generally strongly deformed (Sharma and Franconi, 1975).

According to the regional geology map, massive anorthosite layers or lenses of norite contain apatite and ilmenite/magnetite mineralization are located on the Springer Lake property. The Anorthosite is surrounded by a band of mangerite, quartz mangerite, charnockite, granite and monzonite. Jotunite commonly occurs at the contact with the anorthosite with variable exposed thickness.



SPRINGER LAKE PROPERTY

St- Lawrence- Lower North Shore

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GEOLOGY OF THE GRENVILLE PROVINCE OF QUEBEC Figur4

8.0 PROPERTY GEOLOGY

Figure 5

Two different types of lithology were recognized on the Springer Lake property:

Anorthositic suite of Havre-Saint-Pierre and massive Ilmenite to noritic Ilmenite.

Anorthosite

Anorthosite constitutes the dominant rock type of the region various types of anorthosite exists, the most important is the Hololeucocratic anorthosite (> 90%) partially or totally recrystallized with lesser amounts of anorthositic gneiss, leuconorite, norite, gabbro, olivine gabbro and troctolite. The Anorthosite is a massive rock totally or partially recrystallized generally contains blue-grey plagioclase that may form 20-65% of the rock. Ilmenite is widespread and abundant near the Fe-Ti mineralized zones.

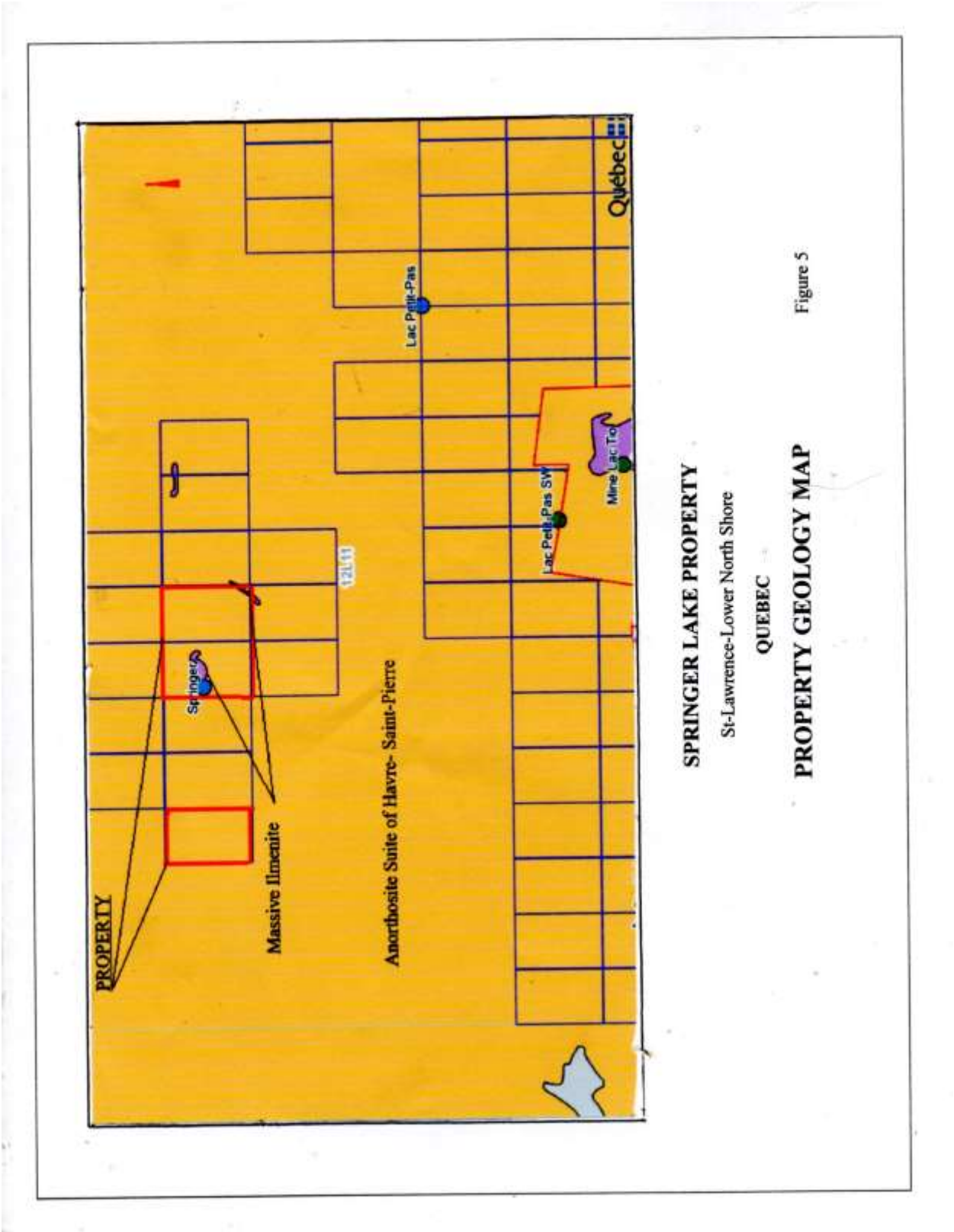
Massive Ilmenitite and Noritic Ilmenitite

The ilmenitite and noritic ilmenitite constitute the high grade titanium ore of the principal Lac Tio and Grader areas. These black rocks consist principally of ilmenite with minor pyroxene, plagioclase and apatite. The norite ilmenitite is a coarse-grained rock with 8-10% plagioclase and fine-grained pyroxene. The ilmenitite has a black luster and is a massive homogenous rock. In large bodies and in small layered deposits. It forms massive or finely laminated bands and can constitute small veins or ribbons or large bands 10-100 meters thick that define the ore at Lac Tio and Grader mines.

The property is underlain by massive, medium to coarse-grained anorthosite. Several large anorthosite outcrops are exposed on the knobs east and west of Springer Lake and the cliff, west of Allard Lake river. The Springer Lake deposits occurs as two neighboring masses on either side of Springer Lake, the close proximity and geological, geochemical and mineralogical similarities of the two zones strongly suggests that the two masses are part of one continuous zone extending underwater across Springer Lake, should this continuity be verified, the Springer Lake deposit would rank as a major deposit, extending approximately 2000 feet in length and having a possible average width of 300-600 feet (G. Pouliot,1975).

The Springer Lake mass is in contact with typical light colored anorthosite along most of its length. West of Springer Lake the oxide mass narrows to a width of approximately 75 feet and is in contact with rusty brown, foliated oxide rich norite.

The western ilmenite deposit occurs west of Allard Lake river, anorthosite occurs at the base and overlain in sharp contact by a 60-foot-thick layer of massive ilmenite. Described as massive layer dipping 30-35^{o}north occupying the basal portion of an oxide rich norite sheet intruded into anorthosite. Emphasizing the close genetic association of ilmenite deposits with oxide-rich norite.



SPRINGER LAKE PROPERTY

St-Lawrence-Lower North Shore

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PROPERTY GEOLOGY MAP

Figure 5

The Physical characteristics of Ilmenite

Rock are made up of coarse well crystallized ilmenite averaging approximately 8 mm in diameter similar to the ilmenite of the Mills deposit located approximately 15 kilometers southwest of the Springer Lake, the oxide is generally the coarsest constituent in the rock. The gangue minerals have much smaller grain size and lie in the interstices between the ilmenite crystals (GM 35771).

Rocks are not detectably magnetic when tested with hand magnet, indicating that magnetite is virtually absent from the oxide mass.

The specific gravity of the ilmenite ranges from 4.25 to 4.79 with a mean of 4.67. Table 1 shows the specific gravity of 30 ilmenite ore samples tested during 1973.

Table 1

Sample No	Specific Gravity	Sample No	Specific Gravity
S-1-1	4.77	S-2-9	4.74
S-1-2	4.76	S-2-10	4.79
S-1-3	4.66	S-2-11	4.72
S-1-4	4.68	S-2-12	4.65
S-1-5	4.54	S-2-13	4.70
S-1-6	4.39	S-2-14	4.61
S-1-7	4.75	S-2-15	4.61
S-1-8	4.70	S-2-16	4.55
S-2-1	4.61	S-3-1	4.66
S-2-2	4.78	S-3-2	4.69
S-2-3	4.74	S-3-3	4.63
S-2-4	4.68	S-3-4	4.63
S-2-6B	4.68	S-3-5	4.69
S-2-7	4.68	S-3-6	4.77
S-2-8	4.73	S-3-7	4.65

Samples previously studied (1973) are essentially coarse aggregates of hemoilmenite with small amounts (3-15%) of accessory gangue minerals, in addition to ilmenite, the principal minerals identified from thin sections are plagioclase, and saphirine as well as traces of apatite, pyrite, corundum and possibly zircon. Rutile is present and fairly common in the oxide masses adjoining Springer Lake, whereas it is very scarce in the western ilmenite zone.

The ilmenite itself is actually hemo-ilmenite, microscopically, the mineral appears identical to the Tio hemo-ilmenite.

The Chemical characteristics of Hemo-Ilmenite

During the 1973 Springer Lake deposit testing (GM 35771), the hemo-ilmenites were concentrated using magnetic methods and chemically analyzed, the results indicated that the Springer Lake hemo-ilmenite contains distinctly more magnesia than the hemo-ilmenite from Tio deposit (3.06% vs. 2.21%). Except for MgO the two ilmenites don't differ significantly in their major constituents (TiO_2, Fe_2O_3, FeO). Discrepancy in Al_2O_3 contents between the Springer and Tio ilmenite probably reflect imperfect mineral separation procedure in the case of the former rather than true chemical difference (G. Pouliot- 1975). Also, significant differences are found when comparing the Springer ilmenite with that of the Mills deposit, the former is less Magnesian (2.52% vs. 3.06%) and has slightly lower V_2O_5 and Cr_2O_3 contents than the Springer ilmenite The average hemo-ilmenite from the Springer deposit contains 29.3% hematite intergrown with ilmenite.

The 1973 results of chemical analyses of 30 ilmenite samples collected from the Springer Lake deposit are shown in table 2 below, also the average values and respective standard deviation of ilmenite ore samples are shown in table 3. The average grade (94%) thus obtained corroborates well with the information deduced from specific gravity data.

Chemical variations between the individual zones 1, 2 and 3 appear insignificant except perhaps for their TiO_2 contents; zones 2 and 3 appear to contain slightly higher TiO_2 (38.7%) than zone 1(37.7%) that is due to the fact that rutile is a common accessory mineral in zones 2 and 3 whereas it is nearly absent in zone 1.

Table 2

Chemistry of Hemo-Ilmenite Concentrates from the Springer Deposit

	S-3-3	S-2-2	S-2-9	S-2-13	S-1-1	Mean (1) Springer	Average TiO (2)
TiO_2	37.25	37.7	37.03	39.6	39.38	37.8 (1.0)	37.9 (.65)
FeO	28.6	27.4	28.8	30.2	30.6	29.12(1.2)	29.1 (.77)
MgO	3.43	2.57	3.20	3.22	2.90	3.06 (.3)	2.21 (.23)

MnO	0.16	0.16	0.16	0.21	0.16	0.17 (.02)	0.17 (.01)
CaO	0.01	0.23	0.01	0.01	0.01	0.03 (.01)	0.01 (.01)
Fe2O3	30.2	32.9	30.2	27.63	25.8	29.34 (3.)	29.2(1.39)
V2O5	0.41	0.43	0.40	0.39	0.41	0.41 (.01)	0.41 (.03)
Al2)3	0.56	1.20	0.47	1.34	o.53	0.82 (.57)	0.24 (.04)
Cr2O3	0.19	0.20	0.19	0.19	0.16	0.19 (.01)	0.11 (.04)
SiO2	0.10	0.56	0.08	0.25	0.12	0.22	0.23 (.13)
TOTAL	100.91	103.25	101.54	103.04	100.05		

Average formula

Wt. % ilmenite 70.66 (Fe.838 Mg.157 Mn.004) TiO2

Wt. %hematite 29.34 (Fe.94 v.013 Al.04 Cr.001)2O3

Deficiency in TiO2 (0.80%)

(1) Mean and standard deviation

(2) Average and standard deviation (based on 48 concentrates-Bergeron, 73).

Table 3

Chemistry of Ilmenite ore from the Springer Deposit

	Overall Zone 1, 2 & 3 Average (1)	**Overall Zone 1, 2 & 3 Std. Dev**	**Zone - 1 Average (2)**	**Zone -2 Average (3)**	**Zone -3 Average (4)**
Fe Total	41	1.2	41.2 (1.8)	40.85 (.67)	40.7(.83)

TiO2	38.5	.6	37.7 (.58)	38.6 (.31)	38.8 (.57)
Fe2O3	26.0	1.6	25.6 (2.6)	25.6 (1.33)	26.0 (.80)
Al2O3	26.0	.5	2.77 (.70)	2.51 (.52)	2.60 (.31)
CaO	0.23	.14	.21 (.10)	.21 (.09)	.20 (.10)
MgO	.36	..39	3.36 (.53)	3.42 (.22)	3.32 (.47)
MnO	.16	.01	.16 (.01)	.16 (.01)	.16 (.02)
SiO2	1.3	0.5	1.24 (.71)	1.25 (.44)	1.30 (.35)
Cr2O3	.19	.05	.21 (.05)	.19 (.04)	.18 (.05)
V2O5	.39	.02	.39 (.02)	.40 (.02)	.39 (.01)
Na2O	0.1	0.1	0.17 (.1)	0.04 (0.04)	0.12 (.10)
B	0.02	0.02	0.02 (.01)	.046 (.01)	0.02 (.01)

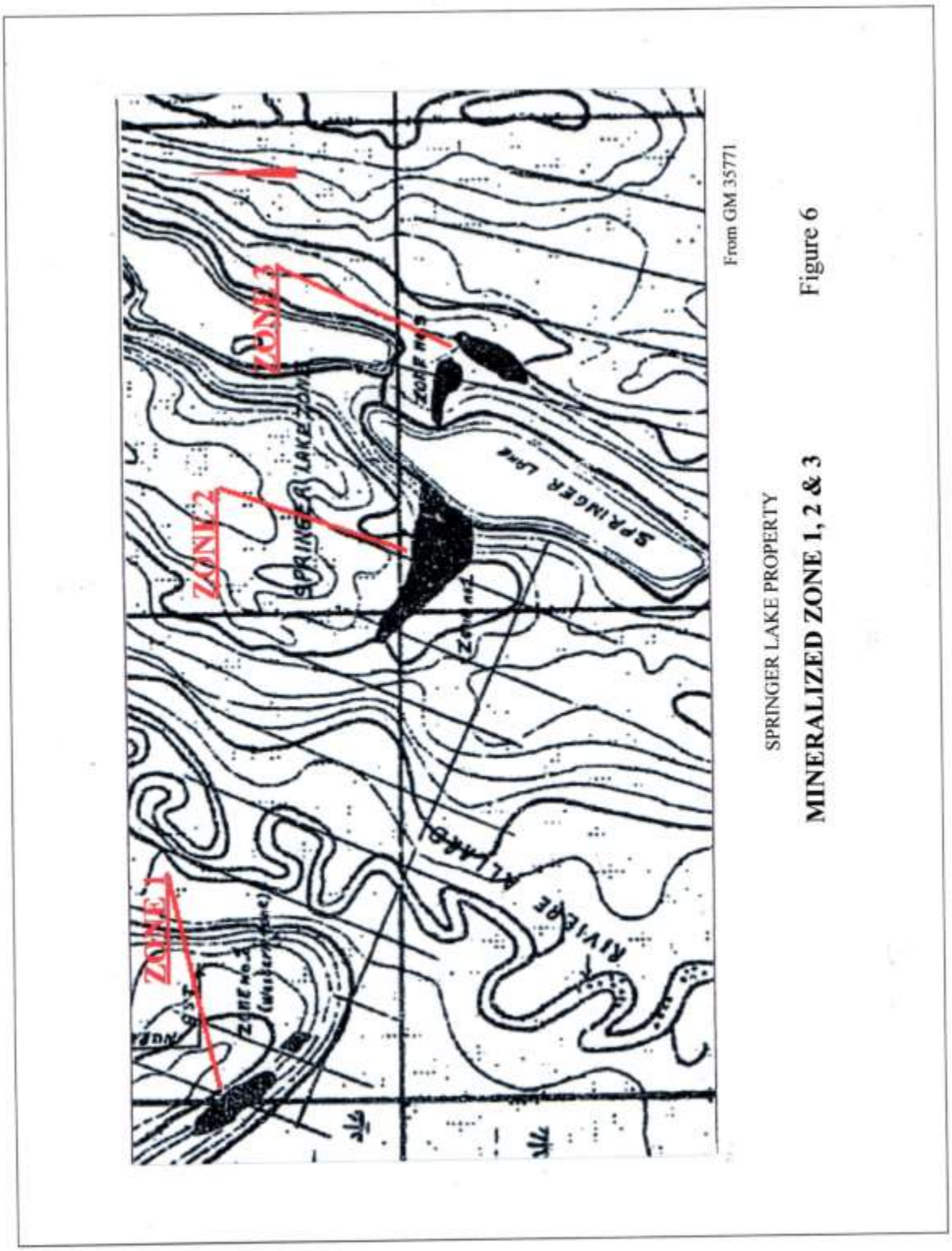
TiO2+Fe+Fe2O3 94.0 93.2 93.8 93.8

(1) Mean from 30 samples

(2) Mean and standard deviation from 8 samples

(3) Mean and standard deviation from 15 samples

(4) Mean and standard deviation from 7 samples



SPRINGER LAKE PROPERTY

MINERALIZED ZONE 1, 2 & 3

Figure 6

9.0 MINERALIZATION

Figure 7

The presence of large bodies of anorthosite and related rocks in the regional area offer potential deposits of iron / titanium and Vanadium in the form of magnetite and hemo-ilmenite. Some of these larger deposits have already been mined by QIT Inc (Rio Tinto). in the area of Lake Allard.

The area of Lake Allard lies immediately north of Havre St. Pierre and well known to have the most important occurrences of magnetite- hemo-ilmenite found in the region The mineral occurrences were first published by the Quebec Department of Mines. The results of the chemical analysis indicate an average content of 55% FeO and 35% TiO2.qwasedd

The Springer Lake deposit is a Ti/Fe/V deposit with estimated possible tonnage reserve of 55 Mt at 26% Fe2O3, 38.5% TiO2 and 3.4% MgO. (Reserve document reference: GM-31384-43). The deposit was discovered in 1943, located at G.P.S 468247 East – 5605015 North, the center of the deposit located at 750 meters North and 650 meters East of the northern end of Allard Lake. The mineralization forming clusters of massive oxides, arranged in a medium to coarse grain anorthosite. Two mineralized zones around Springer Lake are by far the largest deposits in the area. The deposits appear as two adjacent masses, on each side of the lake, within its northern section. These masses appear to be dipping to the north and are surrounded by massive medium to coarse grain anorthosite. On the west side of Springer Lake, high-elevation hemo-ilmenite is outcropping on an escarpment about 60 meters above the lake surface. Parallel ore is found on the West Bank, 90 meters in length. Mineralization was traced from the escarpment to a NW direction for about 360 m (GM-35767). At a point where the mass of oxides shrinks to about 22 meters, one can observe a rich norite of oxides making contact with the main mineralization. Thin layers of massive ilmenite dipping 60 degrees' northward were observed in norite. This observation seems to confirm the possibility of genetic association between ilmenite deposits and oxide rich norite (GM-31384). On the east side of Springer Lake, two large, massive hematite-ilmenite blooms appear on the steep face of a NS-oriented elevation bordering the lake. The mineralization is visible over a length of 150 meters and a width of 60 meters. The mineralogical similarity of samples from the two zones (East and West) and the proximity of these suggest that these mineralized masses are parts of a continuous zone extending over Springer Lake. If this is the case, the deposit would be major and would be 600 meters long and 90 to 180 m wide. Excluding this latter possibility, the tonnage of these deposits is estimated at about 60 Mt of ore at 80% oxide (GM 31384). A deposit, other than those on Springer Lake, is visible west of Allard Lake River. There is an 18-meter layer of ilmenite dipping 30-35 degrees to the north. The ilmenite layer followed by 45 meters of oxide-rich norite containing thin layers of massive ilmenite. (G M-31384) All these deposits have a certain appeal by the fact that they can be used to increase the ore content of Lake Tio.



SPRINGER LAKE PROPERTY

St-Lawrence-Lower North Shore

DRILL LOCATION MAP

Figure 7

10.0 DEPOSIT GEOPHYSICS:

Previous geophysical work on and around the Springer Lake property includes airborne magnetic survey to test the property potential for hosting ilmenite magnetite type of mineralization within the Havre St-Pierre Anorthosite Suite. Negative magnetic and gravity anomalies were encountered over the area of the Springer Lake (East and West). A large, well-defined aeromagnetic depression anomaly from 1500 to 3000 gammas below plateau level occurs over the area of the Springer Lake, these anomalies correspond to the mineralized bodies appear to be flat-laying lenses dipping to the northeast at about 25 degrees. The magnetic pattern over the area of the property generally characterized by negative anomalies of fairly large size. The final estimate of possible tonnage must be determined by applying the proper ground geophysical method, mainly gravity survey to determine the lower limit of intensity for significant titanium/vanadium/ iron mineralization.

A ground gravity survey already conducted by Q.I.T over the area of the springer lake suggest large bodies of massive ilmenite dipping to the northeast under an anorthosite capping. Q.I.T estimated a total aggregate tonnage potential for these bodies could exceed 75,000,000 tonnes of minable material (E.O. Dearden- GM 35767).

11.0 DEPOSIT GEOCHEMISTRY:

A study of 30 samples taken from the Springer Lake deposits indicates that the mass of oxides has a content of 94%. Hematite-ilmenite ore contains 26% Fe_2O_3 and contains slightly higher values of TiO_2 and MgO than Lake Tio ore of similar grade (ie, 38.5% TiO_2 vs. 37% and 3.4% MgO vs 3.1%). The largest amount of TiO_2 is mainly due to the presence of 1% rutile with hematite-ilmenite (GM-31384). Ilmenite and hematite are usually in disseminated form within anorthosite. They are part of the original composition of the magma that formed the anorthosite in the region. The establishment of such massive mineralization requires many intrusive phases. It is likely that in some places a residual liquid of iron and titanium oxides was gradually enriched, which liquid separated from the anorthositic material because of its greater specific gravity. Filter pressures would subsequently have created a higher concentration of oxides which were injected late into the anorthosite already in place.

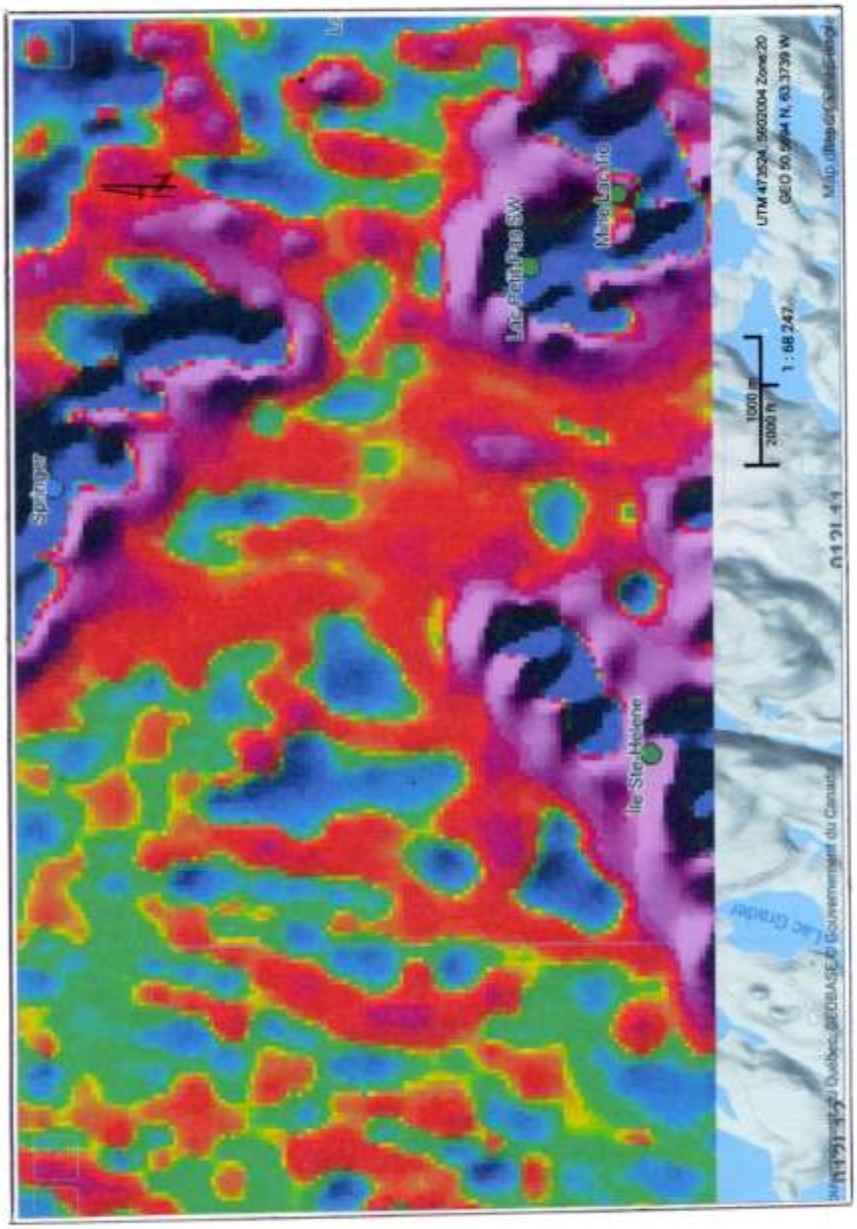
12.0 DEPOSIT TYPE

Although most of the various Ti/Fe deposits around Lake Allard have yet to be studied in details and probably differ in their chemistry and mineralogy, these deposits are essentially made up of coarse hemo-ilmenite and appear quite similar in their gross mineralogical features.

Certain ilmenite deposits, like Tio mine, the Grader deposit and the Mills group deposits are located entirely within anorthosite and show transgressive relationships with the later. However, of special significance is the close association of some ilmenite bodies with the oxide-rich norite. Similar association have been observed in parts of the Springer Lake deposits. The close spatial relationships of ilmenite and oxide-rich norite just described undoubtedly points to a close genetic association between these materials. The oxide-rich norite must be considered as an

important path finder in searching for ilmenite concentrations. regions underlain by oxide-rich norite should be regarded as highly favorable grounds for hosting ilmenite concentration.

The Springer Lake deposits belong to this type of massive ilmenite mineralization that has close spatial relationship to oxide-rich norite.



SPRINGER LAKE PROPERTY

St-Lawrence-Lower North Shore

MAGNETIC SIGNATURE MAP

Figure 8

13.0 PROPERTY POTENTIAL

The author believes that the subject property has potential for hosting a world class Titanium- Vanadium and Iron Ore deposit for the following reasons:

The property is located in a geological environment that is well known to host Titanium-Vanadium-Iron Ore deposits. Several deposits and prospects have been found and mined since 1941.

The property is the host of the Springer Lake deposit that occur as two neighboring mineralized zones on either side of Springer Lake, the close proximity and geological, geochemical and mineralogical similarities of the two zones strongly suggests that the two masses are part of one continuous zone extending across Springer Lake, should this continuity be verified, the Springer Lake deposit would rank as a major deposit, extending approximately 2000 feet in length and having a possible average width of 300-600 feet.

The Springer Lake deposit is located in anorthosite rocks in the form of ilmenite rich bands. The presence of large bodies of anorthosite and related rocks in the map area offer potential deposits of iron and titanium in the form of hemo ilmenite. Some of these larger deposits have already been mined by QIT Inc such as Tio mine.

Previous mineral exploration on the property has outlined favorable geological and geophysical environments for Titanium-Vanadium-Iron Ore deposits and several target areas have already been established with ilmenite mineralized anorthosite rocks.

.

The airborne magnetic survey completed on the property has encountered areas of magnetic susceptibility significantly lower than would be expected. The reason for the lower magnetism is that magnetic properties of iron-titanium minerals vary greatly with their composition and, texture. One of the important magnetic properties of these minerals is their ability to produce magnetic anomalies. Another key attribute is their varying capacity to retain a hard component of remnant magnetism; and a third related property is their inherent mechanism of reversing their magnetic fields. These target areas of the negative magnetic anomalies could reflect a hidden mineralized Titanium-Vanadium-Iron Ore bodies that could add significant tonnage if favorable surface and subsurface chemical results are obtained through future investigation.

The ground gravity survey conducted by Q.I.T over the area of the springer lake is coincide with the airborne magnetic anomaly suggesting the existence of large bodies of massive ilmenite dipping to the northeast under the anorthosite capping. Total estimated tonnage potential for these bodies could exceed 75,000,000 tons of minable material.

The proximity of the property to power supply, deep water port is a great value when it comes to production.

It is concluded that the geological and the geophysical character of the property is of sufficient merit to justify intensive exploration programs.

14.0 RECOMMENDATIONS

An initial phase of continued exploration and development is recommended for the property as follows:

- Compilation and evaluation of the previous database. The property data consists of geological, geochemical, and geophysical surveys. The database represents the exploration work conducted on the property area between 1941 and 2002. At a time, Vanadium/Titanium was not the main focus.

- A detailed geological study should be undertaken to determine more precisely the extent and the grade of Titanium-Vanadium-Iron mineralization within all previously discovered titanium target areas on the property.

- A program of geophysical gravity survey over all target area to determine best drill locations.

- Exploration pits should be designed for a bulk sampling program.

- Drill testing campaign over the area of the negative magnetic anomaly must be completed in order to confirm previous results and outlining the full extent of the Titanium-Vanadium-Iron mineralization of the property followed by detailed drilling and reserve estimates should be recast using geological information such as drill intersections and grade, drill spacing, the depth of mineralization, method of sampling and consistency of mineralization

.

- Metallurgical test work to establish the best process to separate and concentrate the ilmenite from the iron ore.

- When all of this is done, a preliminary assessment of feasibility can be made with emphasis on the economics of the project. The project is expected to take about two to three years to complete at an estimated cost of $10,000,000 (Canadian dollars).

CERTIFICATE OF QUALIFICATIONS

I, FAYZ F. YACOUB, of 6498-128B Street, Surrey, British Columbia, V3W 9P4, do hereby declare that:

1) I am a graduate geologist with a bachelor degree from Assuit University, Egypt, and a diploma in Mining Exploration Geology from the International Institute for Aerial Survey and Earth Sciences (I.T.C.), Holland (1978).

2) I am a fellow in good standing with the Geological Association of Canada (Membership # 5490)

3) I am a professional geologist and a member of the Association of the professional Engineers and Geoscientists of British Columbia (Registration No. 20390).

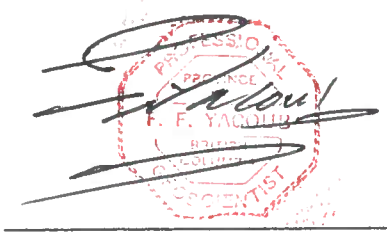
4) I am a professional geologist and a member of 'Ordre des Geologues du Quebec (restricted permit # 1748).

5) I have actively pursued my career as a geologist for the past thirty-seven years;

6) The information, opinion, and recommendations in this report (the Springer Lake property) are based on previous work conducted on the property between 1941 and 2002 by several mining companies and database of several geological, geochemical and geophysical reports gathered on the property and from regional work conducted and published by Ministere des Ressources Naturelles, Quebec.

7) I am the registered owner of 70 % of the subject property.

Respectfully submitted



Fayz Yacoub, P. Geo., F.G.A.C.

Dated April 16th, 2019

REÇU
24 AVR. 2019

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APPENDIX A
THE SPRINGER LAKE PROSPECT
GEOLOGICAL DESCRIPTION

THE SPRINGER LAKE PROSPECT
GEOLOGICAL DESCRIPTION

NTS map-sheet number: 12L11
Name of mineralized zone: Springer
Name of ore body: Springer
Map sheet number: 12L / 11-0002
Stage: Deposit with estimated tonnage
Township / seigneury: Parker
Rank number:
Lot number:
Area: 20
Easting: 468247
Northing: 5605015
Year discovery: 1943
Reference of localization: GM 35767; The deposit is located at 750 m N and 650 m East of the northern end of Allard Lake.
Comment on morphology: COGITE: Cottage in the form of clusters, east direction with a dip to the north.
Comment on discovery: outcrop
Comment on lithology: COGITE: The mineralization forming clusters of massive oxides is arranged in a medium to coarse grain anorthosite. Two mineralized zones around Springer Lake are by far the largest deposits in the area. The deposits appear as two adjacent masses, on each side of the lake, within its northern section. These masses appear to be dipping to the north and are surrounded by massive medium to coarse grain anorthosite. Norite is also present in the sector. Province of Grenville.
Comment on mineralization: COGITY: Mineralization occurs in massive, coarse-grained clumps of ilmenite, hematite and rutile.

Comment on Substance: GM 51494: S1 drilling revealed 88.11% ilmenite over 54.4 meters. GM62779: The selected sample # 24854 revealed 23.6% Ti, 39.7% Fe, 2410 ppm V and 1080 ppm Cr. The selected sample # 24855 revealed 22.5% Ti, 40.2% Fe, 2320 ppm V and 1080 ppm Cr. The selected sample # 24856 revealed 22.1% Ti, 39.5% Fe, 2330 ppm V and 1080 ppm Cr.

Comment on Structural control :
Typology: Iron and Titanium deposits in anorthosites

Comment on typology: COGITE: Titanium and irondeposit formed by magmatic segregation associated with mafic masses. Two mineralized zones around Springer Lake are by far the largest deposits in the area. The deposits appear as two adjacent masses, on each side of the lake, within its northern section. These masses appear to be dipping to the north and are surrounded by massive medium to coarse grained anorthosite. On the west side of Springer Lake, high-elevation hemo-ilmenite is outcropping on an escarpment about 60 m above the lake surface. Parallel ore is found on the West Bank, 90 m in length. Mineralization was traced from the escarpment to a NW direction for about 360 m (GM-35767). At a point where the mass of oxides shrinks to about 22 m, one can observe a rich norite of oxides making contact with the main mineralization. Thin

layers of massive ilmenite dipping 60 degrees' northward were observed in norite. This observation seems to confirm the possibility of genetic association between ilmenite deposits and oxide rich norite (GM-31384). On the east side of Springer Lake, two large, massive hematite-ilmenite blooms appear on the steep face of a NS-oriented elevation bordering the lake. The mineralization is visible over a length of 150 meters and a width of 60 meters. The mineralogical similarity of samples from the two zones (East and West) and the proximity of these suggest that these mineralized masses are parts of a continuous zone extending over Springer Lake. In this case, the deposit would be major and would be 600 m long and 90 to 180 m wide. Excluding this latter possibility, the tonnage of these deposits is estimated at about 60 Mt of ore at 80% oxide (GM 31384). A deposit, other than those on Springer Lake, is visible west of the Lac Allard River. There is an 18-meter layer of ilmenite with a dip of 30-35 degrees to the north. The ilmenite layer followed by 45 m of oxide-rich norite containing thin layers of massive ilmenite. (G M-31384) All these deposits have a certain appeal by the fact that they can be used to increase the ore content of Lake Tio. Geophysics: The anomalies of geophysics (MAG, Gravity) correspond to the outcrops of known oxides. An aeromagnetic survey was conducted throughout the region in 1947. Above the present deposits a magnetic low of 1500 to 3000 gammas below normal was recorded. Geochemistry: A study of 30 samples taken from the present deposits indicates that the mass of oxides has a content of 94%. Hematite-ilmenite ore contains 26% Fe2O3 and contains slightly higher values of TiO2 and MgO than Lake Tio ore of similar grade (ie, 38.5% TiO2 vs. 37% and 3.4% MgO vs 3.1%). The largest amount of TiO2 is due mainly to the presence of 1% rutile with hematite-ilmenite (GM-31384). Ilmenite and hematite are usually in disseminated form within anorositis. They are part of the original composition of the magma that formed the anorthosite in the region. The establishment of such a massif requires many intrusive phases. It is likely that in some places a residual liquid of iron and titanium oxides was gradually enriched, which liquid separated from the anorthositic material because of its greater specific gravity. Filter pressures would subsequently have created a higher concentration of oxides which were injected late into the anorthosite already in place. Another deposit, located 2 km NE of those of Springer, has irregular lenses composed of massive ilmenite exposed on the surface about 30 m. The lenses appear to have an apparent thickness of 9 to 12 m (GM-43734).

Comment on production:
Tonnage reserve: 55000000
Reserve category: **Likely reserves**
Reserve calculation date: 1901-01-01
Reserve document reference: GM-31384, page 43
Comment on reserve: 55 Mt possible at 26% Fe2O3, 38.5% TiO2 and 3.4% MgO.
Date of release: 19810101

Report number: CL 012L, DP 128, DP-2001-02, DPV 707, DPV 894, DV 2002-03, DV 2002-11, DV 83-14, FG 012L-CL, GM 18365, GM 19307, GM 19310, GM 31384, GM 35767, GM 35768, GM 35771, GM 35773, GM 35774, GM 38079, GM 39070, GM 41461, GM 43734, GM 51494, GM 62779, MB 89-19, MB 89-46, MB 91-21, MB 95-02, PRO 92-05, PRO 92-06, PRO 97-06, RG 019, RG 019 (A), RG 163, RG 98-01, RP 171, RP 171 (A), RP 184, RP 184 (A), all

Principal or secondary indicator: Principal
Chemical element: Fe
Principal or secondary indicator: Secondary

Chemical element: Ti
Principal or secondary indicator: Secondary
Chemical element: Mg
Substance grade
Chemical element
Grade
Grade unit
Sample type (mineralization)
length
Fe 397000 ppm Selected sample 0
Ti 236000 ppm Selected sample 0
V 2410 ppm Selected sample 0
Lithological unit
Lithology unit identifier: A
Lithological rock type: I4ZI - Ilmenitite
Lithology unit identifier: B
Lithological rock type: I3G - Anorthosite
Lithology unit identifier: C

THE SPRINGER PROSPECT
GEOLOGICAL DESCRIPTION
(FRENCH)

NTS map-sheet number	:	12L11
Name of mineralized zone	:	Springer
Name of ore body	:	Springer
Cogite number	:	12L/11-0002
Stage	:	Deposit with estimated tonnage
Township/seigneury	:	Parker
Rank number	:	
Lot number	:	
Zone	:	20
Easting	:	468247
Northing	:	5605015
Year discovery	:	1943
Reference of localization	:	GM 35767; Le centre du gisement localise le gîte, situé à 750 m N et 650 m Est de l'extrémité Nord du lac Allard
Comment - morphology	:	COGITE: Gîte en forme d'amas, de direction Est avec un pendage vers le Nord.
Comment - discovery	:	affleurement
Comment - lithology	:	COGITE: La minéralisation formant des amas d'oxydes massifs est disposée dans une anorthosite à grains moyens à grossiers. Deux zones minéralisées localisées autour du Lac Springer forment, de loin, les principaux dépôts du secteur. Les gisements apparaissent comme deux masses

		voisines, de chaque côté du lac, à l'intérieur de sa section Nord. Ces masses semblent avoir un pendage vers le Nord et sont entourées d'anorthosite massive à grain moyen à grossier. De la norite est aussi présente d ans le secteur. Province de Grenville.
Comment - mineralization	:	COGITE: La minéralisation se présente en amas massifs à grains grossiers d'ilménite, d'hématite et de rutile.
Substance - comment	:	GM 51494: Le forage S1 a révélé 88.11% ilménite sur 54.4 mètres. GM 62779: L'échantillon choisi #24854 a révélé 23.6% Ti, 39.7% Fe, 2410 ppm V et 1080 ppm Cr. L'échantillon choisi #24855 a révélé 22.5% Ti, 40.2% Fe, 2320 ppm V et 1080 ppm Cr. L'échan tillon choisi #24856 a révélé 22.1% Ti, 39.5% Fe, 2330 ppm V et 1080 ppm Cr.
Structural control - comment	:	
Alteration - comment	:	
Typology	:	Iron and Titanium deposits in anorthosites
Comment - typology	:	COGITE: Gîte de titane et fer formé par ségrégation magmatique associée à des masses mafiques. Deux zones minéralisées localisées autour du lac Springer forment, de loin, les principaux dépôts du secteur. Les gisements apparaissent comme deux masses voisines, de chaque côté du lac, à l'intérieur de sa section Nord. Ces masses semblent avoir un pendage vers le Nord et sont entourées d'anorthosite massive à grain moyen à grossier. Sur le côté Ouest du lac Springer, de l'hémo-ilménite à haute tene ur affleure sur un escarpement s'élevant d'environ 60 m au-dessus de la surface du lac. On retrouve le minerai parallèle à la rive Ouest, sur 90 m de longueur. La minéralisation a été retracée à partir de l'escarpement et en s'en allant dans une dire ction NO pour 360 m environ (GM-35767). A un endroit où la masse d'oxydes se rétrécit à environ 22 m, on peut observer une norite riche en oxydes faisant contact avec la minéralisation principale. De minces couches d'ilménite massive à pendage de 60d egrés vers le Nord ont été observées dans la norite. Cette observation semble

	confirmer la possibilité de l'association génétique entre les dépôts d'ilménite et la norite riche en oxydes (GM-31384). Sur le côté Est du lac Springer, deux grands affleu rements d'hématite-ilménite massive apparaissent sur la face abrupte d'une élévation orientée NS bordant le lac. La minéralisation est visible sur une longueur de 150 mètres et une largeur de 60 mètres. La similitude minéralogique d'échantillons en provenance des deux zones (Est et Ouest) et la proximité de celles-ci suggèrent que ces masses minéralisées soient des parties d'une zone continue s'étendant sour le lac Springer. Dans ce cas, le dépôt serait majeur et aurait 600 m de long et 90 à 180 m de largeur. Sans tenir compte de cette dernière possibilité, on évalue le tonnage de ces gisements à environ 60 Mt métriques de minerai à teneur de 80% d'oxydes (GM 31384). Un dépôt, autre que ceux du lac Springer, est visible à l'Ouest de l a rivière du Lac Allard. On y retrouve une couche de 18 m d'épaisseur composée d'ilménite avec pendage de 30-35 degrés vers le Nord. La couche d'ilménite est suivie par 45 m de norite riche en oxydes contenant de minces couches d'ilménite massive (G M-31384) Tous ces dépôts ont un certain attrait par le fait qu'ils peuvent servir à augmenter la teneur du minerai du Lac Tio. Géophysique : Les anomalies de géophysique (MAG, Gravité) correspondent aux affleurements d'oxydes connus. Un levé levé aér omagnétique a été effectué à travers la région, en 1947. Au-dessus des présents gisements, on releva une dépression magnétique de 1 500 à 3 000 gammas sous la normale. Géochimie : Une étude de 30 échantillons, prélevés à partir des présents gîtes ind ique que la masse d'oxydes a une teneur de 94 %. Le minerai d'hématite-ilménite contient 26% Fe_2O_3 et contient des valeurs légèrement plus hautes en TiO_2 et MgO que le minerai du lac Tio, de teneur similaire (c'est-à-dire, 38,5% de TiO_2 vs 37% et 3,4 % de MgO vs 3,1 %). La plus grande quantité de TiO_2 est due principalement à la présence de rutile en teneur de 1 % avec l'hématite-ilménite (GM-31384). L'ilménite et l'hématite se trouvent habituellement sous forme disséminée à l'intérieur de l'anor thosite. Elles font partie de la composition originale du magma qui a formé

		l'anorthosite dans la région. La mise en place d'un tel massif nécessite de très nombreuses phases intrusives. Il est probable qu'en certains endroits, il y eut enrichissemen t progressif d'un liquide résiduel en oxydes de fer et titane, lequel liquide s'est séparé du matériel anorthositique à cause de sa plus grande gravité spécifique. Des pressions filtrantes auraient par la suite créé une plus forte concentration des o xydes qui furent injectés tardivement dans l'anorthosite déjà en place. Un autre gîte, localisé à 2 km au NE de ceux de Springer, présente des lentilles irrégulières composées d'ilménite massive exposées en surface sur 30 m environ. Les lentilles sem blent avoir une épaisseur apparente de 9 à 12 m (GM-43734).
Comment - production	:	
Tonnage reserve	:	55000000
Reserve category	:	Probable reserves
Reserve calculation date	:	1901-01-01
Reserve document reference	:	GM-31384, page 43
Comment - reserve	:	55 Mt possibles à teneurs de 26 % Fe2O3, 38,5 % TiO2 et 3,4 % MgO.
Date of release	:	19810101
Report number	:	CL 012L, DP 128, DP-2001-02, DPV 707, DPV 894, DV 2002-03, DV 2002-11, DV 83-14, FG 012L - CL, GM 18365, GM 19307, GM 19310, GM 31384, GM 35767, GM 35768, GM 35771, GM 35773, GM 35774, GM 38079, GM 39070, GM 41461, GM 43734, GM 51494, GM 62779, MB 89-19, MB 89-46, MB 91-21, MB 95-02, PRO 92-05, PRO 92-06, PRO 97-06, RG 019, RG 019(A), RG 163, RG 98-01, RP 171, RP 171(A), RP 184, RP 184(A), all

Primary or secondary substance

Principal or secondary indicator : Principal

Chemical element : Fe

Principal or secondary indicator : Secondary

Chemical element : Ti

Principal or secondary indicator : Secondary

Chemical element : Mg

Substance grade

Chemical element	Grade	Grade unit	Sample type (mineralization)	Length
Fe	397000	ppm	Selected sample	0
Ti	236000	ppm	Selected sample	0
V	2410	ppm	Selected sample	0

Lithological unit

Lithology unit identifier : A

Lithological rock type : I4ZI - Ilmenitite

Lithology unit identifier : B

Lithological rock type : I3G - Anorthosite

Lithology unit identifier : C

Lithological rock type : I3J - Norite