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**Continued next page □ Yes □ No**

**Number of Volumes:** 1

**Enclosures (indicate number of each):**

- CD-Roms: __________
- Diskettes: ______
- DVDs: __________
- Tapes: ______
- Transparencies: ______
- Paper Maps: ______
- Microfiche: ______
- Other: ______

**Received:** 2010/12/17

**Comments:**

**Signed:** Andrea Miles

**Date:** Dec 20, 2010
First Year Assessment Report on the Geology of the Strange Lake Property

Licenses 16412 M, 16413M, 16414M and 16415M
NTS 24A/08, NAD 83, Zone 20N
Newfoundland and Labrador

Submitted by
Patrick Collins

for

Quest Rare Minerals Ltd.
November, 2010

Work Year 1

Work Conducted: August–September, 2010
Total Claims: 9
Total Expenditures: $2434.00
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1.0 Introduction

The licenses described in this report are located in western Labrador, adjacent to the Newfoundland and Labrador – Quebec provincial border. The Labrador licenses were staked in 2009 because of their proximity to the historically known Strange Lake rare earth element (REE) deposit (IOC, 1981a, b) and are underlain by a U-Th radiometric anomaly.

1.1 Location and Access

The Strange Lake Property, comprising the Labrador licenses described in this report and contiguous Quest owned Quebec licenses (herein called “The Property”) is located in northern Québec Province and western Labrador, Canada approximately 175 kilometres (km) northeast of Schefferville, Québec and 125 km west of the Voisey’s Bay, Newfoundland and Labrador (NL). Figure 1 shows the location of Quest’s Strange Lake property including the location of the Labrador licences reported herein (outlined in red). The property is accessible only by aircraft, from Schefferville, Québec, Nain or Goose Bay, NL. There are several regularly scheduled flights to Schefferville, Goose Bay, and Nain, from the major cities in eastern Canada, where aircraft may be chartered out these towns.

1.2 Physiography

The Property is situated in a glacial scoured terrain of rolling hills with low to medium relief where elevations vary from roughly 420 m above sea level up to 625 m above sea level. The Property is situated on west side of the major watershed that forms the border between Québec and NL. The Labrador licenses in this report lie east of this watershed.

The exposure and lack of vegetation in the area often contributes to strong winds that generally have a westerly direction. Trees are confined to sheltered valleys or enclaves where mean temperatures may be higher.

The Property is dominantly covered by a layer of glacial till (generally less than 3 m thick) with abundant rock outcrops. Glacial esker deposits are also common and range between 5 to 25 m thick. Vegetation throughout the Property consists mainly of short tundra growth of shrubs and caribou moss interspersed with short tamarack trees.
Figure 1: Quest Rare Minerals claims disposition in Quebec and Labrador. Labrador claims are outlined in red.
2.0 Previous Work

2.1 Government Work


From 1967 to 1971, the Strange Lake and George River area was mapped at a scale of 1:250,000 by the Geological Survey of Canada (GSC) (Taylor, 1970). In 1979 to 1980, a regional lake sediment study was conducted, in partnership with the Newfoundland and Labrador Mineral Development Division (Hornbrook et al., 1979). A regional lake sediment survey covering the Québec portion of the area was completed during 1982 (Beaumier, 1982) and a regional lake sediment and water sampling was completed over the Labrador portion of the project area in the early 1990’s (Friske et al., 1993).

2.1.1 Newfoundland and Labrador Department of Natural Resources, 1980 – 2009

During this period, the NLDNR Geological Survey Division and Department of Mines and Energy have conducted numerous studies in the Strange Lake area.

In 1980, in partnership with the GSC, the NL Department of Mines and Energy, Mineral Development Division released a detailed lake sediment, water and radiometric survey; this survey was the first time the strong dispersion pattern of the Strange Lake mineralization was published and it lead directly to the IOC discovery of the Strange Lake Alkalic Complex and associated REE and high field strength elements (HFSE) mineralization (McConnell, 1980).

In 1984, as exploration continued at Strange Lake by IOC, the NL Geological Survey conducted an aggregate resource assessment that investigated a possible transportation route from Strange Lake to the east coast of Labrador (Ricketts, 1984).

In 1988 The Department of Mines, Mineral Development Division conducted additional lake sediment and water geochemistry sampling with a focus on rare metal mineralization in granitoid terranes in the Churchill Province (McConnell, 1988). All geochemical data for the Strange Lake area was re-analysed in 2009 (Batterson and Taylor, 2009).
Extensive geomorphological and surficial geology studies were conducted by NL government geologist Martin Batterson (and D.M. Taylor) (e.g. 1988, 1991, 2001, 2005, 2009). Bedrock geology mapping was conducted by Ryan (2003) on NTS map sheets 14D/03, 04, 05 and 06 and 24A/08 and NL government geologists published research papers on the Strange Lake Alkalic Complex (e.g. Miller, 1986).

2.2 Industry Work

The following sections are compiled from Quest’s previously reported 43-101 report and references therein unless otherwise reported (Daigle et al., 2010).

2.2.1 Iron Ore Company of Canada

From September 1979 to March 1981, Iron Ore Mining Company of Canada (IOC) completed several exploration programs on and to the northeast of the Property. The exploration programs included: reconnaissance geological mapping, a helicopter-borne radiometric survey, a ground radiometric survey and a limited amount of geochemical sampling including eight soil samples six lake and stream sediment samples and one rock sample, a small track etch survey on eight sites and one 35.97 m diamond drill hole. During this initial period of exploration, the Strange Lake Alkalic Complex was discovered and subsequent drilling up to 1984, of a total of 373 diamond drill holes, culminated in the discovery of the Strange Lake REE and HFSE mineralization, which IOC named the A Zone (renamed Main Zone by Quest).

From September 1981 to September 1982, IOC completed geological, geophysical and geochemical work on the NL side of the Strange Lake discovery. The geological mapping was completed at 1:50,000 and 1:10,000 scales with traversing on 200 m spaced intervals where gneisses were observed in a few scattered outcrops to the east and north of the alkali granite complex. Alkalic rock units (locally medium grained, fine grained and altered) were mainly observed; outcrop is sparse with less than 10% outcrop exposure in the vicinity of the Strange Lake Alkalic Complex.

Various geophysical surveys were conducted in the Strange Lake area in an attempt to delineate differences in lithology, alteration and/or mineralization within the bedrock covered by extensive overburden. These included: Ground Magnetometer, Very Low Frequency Electromagnetic (VLF-EM) and Induced Polarization Resistivity Surveys (IP-RES) geophysical surveys. The magnetometer and VLF-EM surveys were useful at defining and updating the geological contacts between the gneisses and the alkali rocks as well as detecting gouge-rich, water saturated fault zone breaks and fracture zones.
highlighted by offsets and truncations. The IP-RES surveys permitted to correlate with zones of greater porosity within the altered peralkaline granite. The geochemical surveys consisted of soil surface outcrop rock and water drill core analysis. Analytical data of ZrO$_2$ and Y$_2$O$_3$ obtained from diamond drilling and bedrock mapping were used in the calculation of the younger alkali granite in the central part of the Strange Lake area, and aided in the identification of the second most anomalous zone of mineralization in the Strange Lake area, named the B Zone by IOC.

A total of 373 diamond drill holes were completed and surveyed with the drill locations reported in the UTM coordinate system. The elevations are reported in metres. The Glacial Boulder Survey was carried out to trace the boulders to their sources. The survey was done by systematically checking every alkali boulder in the area with a portable GIS-4 integrating gamma-ray spectrometer. Two boulder trains were recognized; the northern train consisting of fine grained pegmatitic and medium grained granitic; the southern train is mainly made of pegmatite granite. A total of 133 boulders were sampled and assayed for yttrium, zirconium and niobium oxides.

From July 3rd, 1979 to September 25th, 1980, IOC completed geological and geochemical surveys. The geological survey was carried out at the reconnaissance scale. Only gneisses were encountered. The geophysical survey was carried out by a helicopter-borne radiometric survey at 100 feet terrain clearance and followed by a ground radiometric and magnetometer surveys.

Between January and December 1983, IOC completed geological, geophysical and geochemical surveys on the Québec portion of the Strange Lake property. The geological survey was to re-map the alkali granite (1:10,000 scale) in order to better incorporate the drill hole and outcrop data and to search for new outcrop areas.

The ground spectrometer geophysical survey was carried out in the western part of the property to help trace anomalous till associated with the radioactive mineralized boulders previously located. Lines were surveyed 50 m apart with survey stations every 25 m. Boulders were discovered up-ice to all known bedrock sources and precisely located.

The geochemical survey consisted of outcrop sampling. Rock samples were analysed systematically for minor elements and selectively for major elements. A frost soil survey was carried out over the anomalous areas detected by the spectrometer survey. Only beryllium and yttrium returned significant anomalies. Geochemical surveys consisted of soil sediment and water samples. A photo interpretation
was completed permitting terrain and structural features. East-west lineations, crags and tails were observed to be expressions of faults. North-east and south-west lineations were also observed.

IOC commissioned several metallurgical, conceptual and economic studies throughout the 1980’s to determine the economic viability of the deposit.

In 1982, IOC retained Witteck Development Inc. of Mississauga, Ontario, to conduct hydrometallurgical test work on Strange Lake concentrates for the extraction of zirconium, beryllium, and REE’s. In 1983, IOC contracted K.D. Hester & Associates of Oakville, Ontario, to review the hydrometallurgical test work and update reagent costs. In March 1983, IOC retained Warren Spring Laboratory, in Hertfordshire, England, to report on the beneficiation of Strange Lake ore and the liberation of yttrium oxide (Y₂O₃), niobium oxide (Nb₂O₅), zirconium oxide (ZrO₂), beryllium oxide (BeO) and rare earth oxides (REO’s).

In 1984, Hazen Research (International) Inc. (Hazen) was retained to review the metallurgical test work and propose a preliminary process design and layout to treat 30,000 tonnes per day of Strange Lake ore focussing on the extraction of Y₂O₃ and ZrO₂, and beryllium and pyrochlore (niobium ore). In 1984, IOC completed a preliminary feasibility study on Strange Lake based on an open pit scenario, 250,000 tonnes per year operation with processing located in Schefferville. The products of this study included ZrO₂, Y₂O₃ and Nb₂O₅.

In January and February 1985, IOC completed a cost estimate study and economic evaluation study. The economic evaluation study considered two scenarios: 1) selling 200 tonnes per year Y₂O₃ (99.99% grade); and, 2) selling 300 tonnes per year Y₂O₃ (at two different grades). Each scenario also included LREO’s and HREO’s based on market prices at that time.

In March 1985, Arthur D. Little, Inc. completed a marketing and economic viability study on the Strange Lake deposit on behalf of IOC. Arthur D. Little, Inc. concluded that yttrium demand was unlikely to increase fast enough for a 1989 start up of operations and recommended further economic studies.

2.2.2 AME, 1980

Between June and July 1980, Armco Mineral Exploration Ltd. (AME) conducted a helicopter-supported exploration program within an area covered by the IOC 1979 airborne survey to the south of the Property.
Limited geochemical sampling included: 51 soil samples, two esker sand samples, and nine rock samples (Risto, 1981).

2.2.3 ACADIA, 1990

In 1990, Kilborn Inc. was retained by Acadia Mineral Ventures Ltd. (Acadia) to conduct a preliminary economic analysis on the Strange Lake ore based on historic metallurgical test work.

2.2.4 MITSUI, 1992 – 1995

From 1992 to 1995, Mitsui Mining & Smelting Co., Ltd., or Mitsui Kinzoku in Japanese, (Mitsui), a Japan-based metals supplier, conducted a metallurgical research project on the Strange Lake Main Zone REE deposit. Between 1992 and 1993, Mitsui carried out a geological survey and study and preliminary chemical and physical tests. From 1994 to 1995, mineral processing and chemical processing tests were conducted on the Strange Lake Main Zone ore minerals (then referred to as the ‘A Zone’. The test work focussed on yttrium, zirconium, niobium, cerium and fluorine. The report proposes future test work on REE purification; however, it is unknown whether this work was conducted.

3.0 Geology and Mineralization

3.1 Property Geology

The Property is underlain mainly by the post-tectonic Mistastin Batholith that dominates the area. This composite body includes monzonitic, granitic, granodioritic and rapakivi-type granitic phases. A small peralkaline intrusion called the Strange Lake granite intrudes the north eastern margin of the Mistastin Batholith and heterolithic Archean gneiss. This peralkaline granite, commonly referred to as the Strange Lake Alkaline Complex (SLAC) has been the focus of numerous academic and industry research and exploration (e.g. Miller, 1984; Miller, 1986; Salvi & Williams-Jones, 1990; Salvi and Williams-Jones, 1996) work. The SLAC comprises several distinct phases that vary in modal abundance of rock forming minerals and the relative concentrations of REE and HFSE. Historically, IOC geologists differentiated these different phases based on the abundance of “exotic” minerals, which they describe as being comprised of gittinsite, elpidite, pyrochlore, zircon, clays, sphene, astrophyllite, narsarsukite and fluorite and other textural characteristics. Accordingly, they describe three general phases: an early “exotic poor” (i.e. REE and HFSE poor) granite, “exotic-rich” granite and pegmatitic peralkaline granite (e.g. Miller,
In general, these units comprise quartz, potassium feldspar, albite, arfvedsonite and exotic minerals. Additional examination by academic researchers following the early industry exploration and research differentiated these granitic phases by petrographical phase relationships: the exotic poor granite was termed a hypersolvus granite (one-feldspar system) and the exotic rich granite was termed a subsolvus (two-feldspar system) (e.g. Salvi & Williams-Jones, 1990). The highest concentrations of REE and HFSE are in the subsolvus granite and pegmatite-aplite phases. Recent research (e.g. Salvi & Williams-Jones, 1996) indicates that widespread high temperature ($\geq 350^\circ$C) orthomagmatic Na-rich fluids initially altered the subsolvus granites, which was followed by low temperature ($\leq 200^\circ$C) externally derived Ca-rich alteration fluids. The Labrador licenses are underlain mainly by the hypersolvus granite and minor Archean gneiss in the east.

### 3.2 Deposit Type

The Strange Lake deposit is part of a post-tectonic, peralkaline granite complex, which has intruded along the contact between older gneisses and monzonite of the Churchill Province of the Canadian Shield (Beauregard and Gaudreault, 2009).

The Complex is sub-circular and consists of generally concentric, high-level granitic intrusions bounded by sharp contacts with country rocks. Ring faults, at or near the contact of the alkalic complex, dip outward at low to moderate angles ($20^\circ - 35^\circ$). At the geometric centre of the complex is a small (approximately 1.5 km$^2$) stock of medium grained, generally non-porphyritic subsolvus granite with very high overall values of zirconium, niobium, yttrium and REE. Rooted within this medium-grained granite stock are dykes of aplite-pegmatite that contain significant values of rare metals.

The principal deposits outlined to date are the B Zone, which occurs west of the NL-Quebec provincial border, and the Main Zone, situated 2.5 km to the southeast of the B Zone, which is transected by the border. The Labrador licenses described in this report occur south of the Main Zone deposit and exploration is focused on Main Zone style mineralization.

Many of the REE targets were located by IOC using a combination of geophysical techniques including radiometric and VLF-EM, prospecting and mapping. Similar techniques, applied by Quest, have resulted in the discovery of additional REE exploration targets.
3.3 Genetic Model

Evolution of the SLAC resulted in progressive enrichment in REE and HFSE, from relatively low abundance in the hypersolvus granites, to relatively enriched in subsolvus granites. During crystallization of the SLAC, high temperature, Na-rich fluids altered portions of the subsolvus granite, resulting in a relative depletion in Zr, Y and REE relative to subsolvus granites that were not enriched in Na. It has been postulated that during the evolution of the subsolvus granites in the SLAC, the above elements were mobilized by Ca-free, fluorine-rich fluids, forming REE-fluorine complexes (e.g. Salvi and Williams-Jones, 1996). Subsequently, externally derived Ca-rich low temperature fluids began mixing with F-rich fluids that were concentrated in the carapace of the intrusion; the calcium caused a destabilization of the fluorine complexes and resulted in the precipitation of low temperature REE and HFSE bearing phases and fluorite (Salvi and Williams-Jones, 1996). Thus, formation of the SLAC (or other peralkaline-hosted REE deposits) requires multiple phases of alteration including the evolution of a fluorine-rich fluid to concentrate and mobilize REE and HFSE and the subsequent introduction of destabilizing Ca-rich fluids resulting in REE precipitation in order to form potentially economically exploitable mineralization (Salvi and Williams-Jones, 1996).

3.4 Mineralization

Two distinct styles of mineralization have been encountered on the area of the Property. The first style of mineralization is comprised of alkali granite-hosted REE-rich pegmatites and aplites. The second style of mineralization is comprised of sheared discontinuous paragneiss-hosted uranium-bearing pegmatites along the Stewart Lake Trend approximately 14 km northeast of the B Zone deposit. Uranium mineralization in this area is not subject to this report. The Labrador licenses may be host to minor amounts of granite-hosted REE-rich pegmatites, similar to Main Zone mineralization, which previous work (e.g. Miller, 1996) indicates occurs approximately 350 m north of license 16412M.

Mineralization of interest at Strange Lake occurs within peralkaline granite-hosted pegmatites and aplite. The REE and HFSE-bearing phases are hosted primarily in pegmatites as relatively fine-grained phases or pseudomorphs. The gangue phases comprise quartz, feldspar, amphibole and pyroxene. The potential ore minerals comprise predominantly kainosite (Ca-Y-Ce silica/carbonate), gerenite (Y-REE silicate), gadolinite (Y-Be-REE silicate), zircon, pyrochlore and gittinsite (Jambor, 1990).
4.0 Current Work Program

Quest did not conduct on-the-ground prospecting for this assessment report, due to the small amount of work required for this filing. Instead, time was spent compiling data and planning for the 2011 exploration program. During the course of exploration on Quest’s Quebec licenses, helicopter time was used to fly over the claims to ascertain the degree of outcrop and overall glacial patterns on these claims to aid in planning.

5.0 Results

Compilation work indicates that previous IOC drilling within and surrounding the Labrador licences intersected mainly subsolvus granite that exhibits weak alteration throughout. Mineralogy and textures are similar to drilling conducted to the north in Quebec during the 2009 exploration program. One hole, LB-9D, just south of licence 16412M appears to intersect hypersolvus granite; a key difference between these varieties of granite within the SLAC is zirconium abundance: hypersolvus granite appears to contain < 1.0% ZrO₂, whereas subsolvus granites contain > 1.5%, commonly > 2% ZrO₂. Pegmatites were not intersected in these shallow IOC holes. Regional radiometric data indicate that much of Quest’s Labrador licenses are underlain by a strong U-Th radiometric anomaly (Figure 2), which IOC used during historical exploration to discover the Main Zone pegmatite mineralization. Historical mapping by IOC does not indicate pegmatite mineralization at surface, but there is a lack of outcrop except in 16412M, where a high hill provides good exposure of aegirine altered subsolvus granite. Helicopter fly-overs during Quebec prospecting supports the regional glacial dispersion patterns, with surficial glacial sediments elongated ENE-WSW.

6.0 Conclusions and Recommendations

Data compilation indicates that the Labrador licenses are underlain by favourable geology (subsolvus granite) that is generally prospective for pegmatite mineralization; alteration and anomalous high field strength element values in nearby IOC drill holes also supports the prospectivity of these claims. It is recommended that prospecting and geological mapping be conducted and followed up by drilling in 2011.
Figure 2: Historical geology and IOC drilling in Labrador and Quebec. Main cluster of holes outlines the “Main Zone”.
Figure 2: Colour gridded airborne Thorium radiometric map of Strange Lake, Quebec and Labrador. Ice flow was from WSW to ENE.
7.0 References


Batterson, M.J., 1988. Landform classification, Newfoundland-Quebec, 14D/5. Government of Newfoundland and Labrador, Department of Mines, Mineral Development Division, Open File LAB/0758; Map 88-003


Batterson, M.J., 2001. Landforms and surficial geology of NTS the Long Pond map sheet (NTS 14D/03), Labrador, Open File 14D/03/0255; Map 2001-023


## Appendix 1: Personnel and Contractors

### Personnel

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**Grand total** 6

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**Grand total** $2,434.00