

**GEOLOGY OF THE BURGEO GRANITE AND ASSOCIATED ROCKS IN THE RAMEA (11P/11) AND
LA HUNE (11P/10) MAP AREAS, SOUTHERN NEWFOUNDLAND**

by

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ABSTRACT

The La Hune (11P/10) and Ramea (11P/11) map areas are dominated by the Silurian-Devonian Gaultois, Burgeo, North Bay and François granites. A conformable sequence of metasediments and metavolcanics of probable Ordovician age occurs in the Grey River and Devil Bay - Hare Bay areas. Migmatites, metasediments and granitic gneisses occur in the northern part of the La Hune map area mainly as two northwest-trending belts.

The Gaultois Granite is a medium to coarse grained, strongly deformed to locally mylonitic, K-feldspar porphyritic, biotite-rich granite to granodiorite.

The Burgeo granite is an extensive, syntectonic, composite intrusion with a wide variation in textures and mafic mineral content. Generally it is a coarse grained, K-feldspar porphyritic, biotite ± hornblende granite to granodiorite. The Burgeo granite is weakly to moderately deformed but locally it is mylonitic near the contact with metasediments at Grey River and Hare Bay.

The North Bay Granite is a medium grained, massive to weakly foliated, K-feldspar porphyritic, biotite ± muscovite granite, with a U/Pb age date of 396 Ma.

The François granite is a posttectonic granite that intrudes the Gaultois and Burgeo granites. Dikes related to the François granite also intrude the North Bay Granite. The François granite occurs as two overlapping, circular lobes with concentric rings of fine and coarse grained, massive, K-feldspar ± quartz porphyritic, biotite granite which rarely contains muscovite.

Conglomerate, sandstone, shale and limestone nonconformably overlie the François granite near Cape La Hune.

East of Grey River, the Burgeo and Gaultois granites have been thrust southwards on north dipping fault planes. There is no evidence that this thrusting has affected the François granite. West of Grey River the Burgeo granite is extensively sheared in its southern regions, possibly as a result of thrusting. Northwest trending mylonitization occurs along the trace of the Dragon Bay Fault, near Dolland Brook, affecting the Burgeo and Gaultois granites and the migmatites, metasediments and granitic gneiss.

Only the François granite contains significant mineral potential. Some greisen veins were located and minor magnetite probably containing uranium was found in pegmatites. The entire François granite is 2 to 3 times more radioactive than the other granitoids in the area. Extensive silicification of the brecciated Burgeo granite occurs along the Bay de Loup Brook fault and thus may have some gold potential.

INTRODUCTION

The Ramea (11P/11) and La Hune (11P/10) map areas (Figure 1) are located along the south coast of Newfoundland between Burgeo (9 km to the west) and St. Alban's (70 km to the east) (Figure 1). The communities of Grey River, Ramea and François are serviced by coastal boat from Burgeo and Hermitage. Helicopter support is available in St. Alban's and Milltown. Access to the interior is restricted by high coastal cliffs and is best gained by helicopter. Coastal exposure is excellent but high seas often prevent boat work.

Inland exposure is excellent and the northern areas were mapped on foot from helicopter-placed fly camps with a base camp in Milltown. The extremely rugged coastal areas were mapped using a helicopter.

This report deals mainly with the Burgeo, North Bay and Gaultois Granites, and Ordovician migmatites in the Hare Bay area; only a brief description of the François granite is given in this report as a detailed description is given in Poole et al. (1985). The metasedimentary and meta-volcanic rocks which occur to the east and

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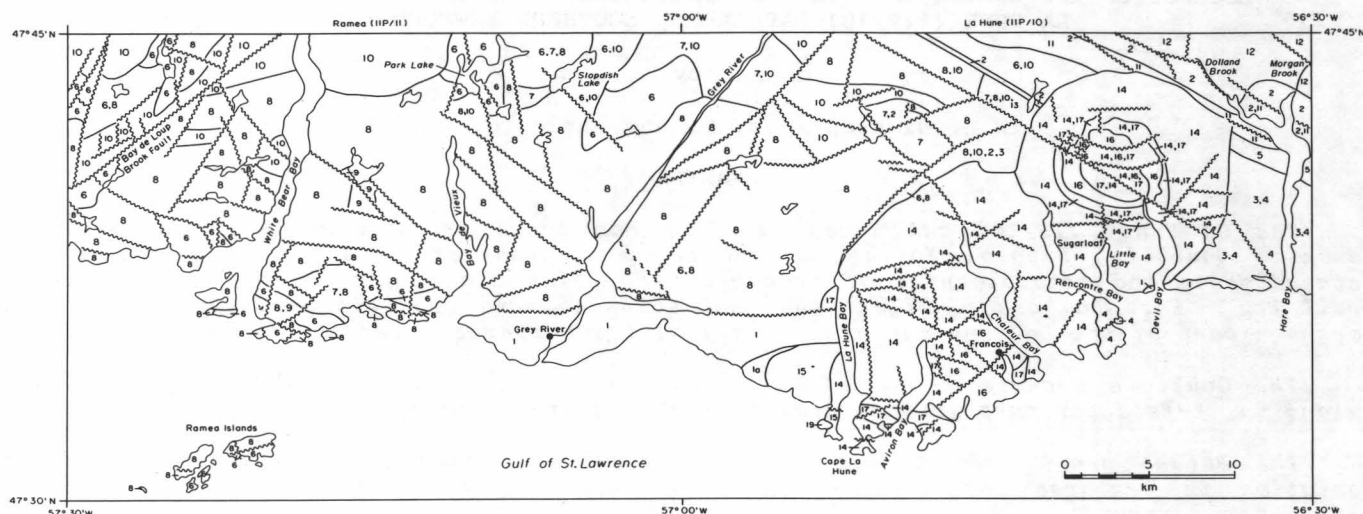


Figure 1: Geology of the La Hune (11P/10) and Ramea (11P/11) map areas.

west of the community of Grey River are described in detail by Blackwood (1985).

Prior to 1984, reconnaissance geological mapping was carried out by Buchan's Mining Company (Scott and Conn, 1950), Riley (1959), Williams (1971) and Smyth (1979a,b). A detailed report on the wolframite mineralization at Grey River is given in Higgins (1980). Reconnaissance lake sediment geochemistry was carried out by Butler and Davenport (1978, 1980) and Davenport and Butler (1981, 1982). Detailed follow-up work on rock geochemistry and surficial sediments in the northern part of the François granite are given in McConnell (1984) where a multi-element (U, F, Mo, Zn, Pb) lake sediment anomaly occurs.

An airborne radiometric survey was carried out over the granitoids of the south coast of Newfoundland including the La Hune and Ramea areas (Geological Survey of Canada, 1983a,b) which highlighted the François granite as highly radioactive with only local anomalies in the Burgeo and Gaultois Granites.

REGIONAL SETTING

The La Hune and Ramea map areas cover the southeastern corner of the 3000 km² Burgeo granite (informal name), which is dominated by variably deformed biotite granodiorite and granite. The Burgeo granite has intruded Ordovician and presumed Ordovician metasedimentary and metavolcanic rocks, which form a concave belt along the northern margin of the batholith, and an easterly trending belt along the southern margin in the Grey River and Devil Bay areas.

The relative age of the main plutonic units is based on contact relationships

and/or degree of deformation. Preliminary U/Pb isotopic work supports the geological interpretation. West of the eastern lobe of the François granite, medium grained equigranular biotite ± muscovite granite dikes from the Burgeo granite cut the Gaultois Granite. Furthermore, the Gaultois Granite is strongly deformed throughout the La Hune map area whereas the Burgeo granite is generally less deformed. This indicates that the Gaultois Granite is the older of the two. The North Bay Granite is only weakly deformed and intrudes a migmatite zone which separates the Burgeo and North Bay Granites. The Burgeo granite and the southwestern part of migmatite zone have been extensively mylonitized along the Dragon Bay Fault zone (Blackwood, 1983) in the Dolland Brook map area (Blackwood, 1984; Dickson and Delaney, 1984) whereas the North Bay Granite is essentially massive in this area and intrudes the migmatites. These relationships have been used by Blackwood (1984) and Dickson and Delaney (1984) to indicate that the North Bay Granite is the younger of the two.

The François granite is the youngest intrusive unit in the map area. It is entirely massive and crosscuts the tectonic fabric in the Gaultois and Burgeo granites. Quartz-feldspar porphyry dikes clearly related to the François granite intrude the North Bay Granite and fine grained dikes of François granite cut the Burgeo and Gaultois Granites.

Ongoing isotopic studies of zircons from the Burgeo granite in the White Bear River area (O'Brien and Tomlin, 1984) indicate an early to mid-Silurian age for this unit. Similarly, an early Devonian age of 396 Ma is indicated for medium to coarse grained, massive to weakly foliated, K-feldspar porphyritic, biotite granite, of

LEGEND

DEVONIAN?

- 19 *Red and green conglomerate, sandstone, shale and limestone.*

DEVONIAN

Francois granite (Units 14 to 18)

- 18 *Pink to red, fine grained, massive, equigranular, biotite granite dikes.*
- 17 *Pink to red, fine grained, massive, quartz-feldspar-biotite porphyritic granite.*
- 16 *Gray, medium grained, massive, quartz-K-feldspar porphyritic, biotite granodiorite.*
- 15 *Pink, fine to medium grained, K-feldspar porphyritic, biotite syenite.*
- 14 *Pink, coarse grained, massive, equigranular to K-feldspar porphyritic, biotite granite.*

DEVONIAN OR OLDER

- 13 *Gray, fine grained, massive diabase dikes.*

North Bay Granite (Unit 12)

- 12 *Pink to buff, medium grained, weakly foliated, equigranular to locally K-feldspar porphyritic, biotite ± muscovite granite.*

Burgeo granite (Units 6 to 11)

- 11 *Pink or buff to locally black, fine to medium grained, very strongly foliated proto-mylonitic and ultramylonitic, locally K-feldspar porphyritic, biotite granite.*
- 10 *Buff, medium grained, weakly foliated, equigranular to K-feldspar porphyritic, biotite ± muscovite granite.*
- 9 *Pink, coarse grained, massive, equigranular, biotite granite.*
- 8 *Pink to buff, coarse grained, massive to moderately foliated, K-feldspar porphyritic, biotite granite.*
- 7 *Buff to gray, medium grained, equigranular to locally K-feldspar porphyritic, moderately foliated, biotite granodiorite.*
- 6 *Buff to gray, coarse grained, K-feldspar porphyritic, moderately foliated, biotite granodiorite.*

Gaultois Granite (Units 3 to 5)

- 5 *Buff, medium grained, K-feldspar porphyritic, strongly foliated to locally mylonitic, biotite granite and granodiorite.*
- 4 *Gray to buff, coarse grained, K-feldspar porphyritic, strongly foliated to locally mylonitic, biotite granite.*
- 3 *Gray, coarse grained, K-feldspar porphyritic, strongly foliated to mylonitic, biotite ± hornblende granodiorite.*

ORDOVICIAN?

- 2 *Gray to black, biotite ± muscovite psammitic schist, granitoid gneiss and migmatite.*
- 1 *Undivided psammitic to pelitic biotite schist, migmatite, amphibolite and various foliated granitoids. 1a, Hornblende metagabbro.*

the North Bay Granite, in the Dolland Brook area (Dickson and Delaney, 1984).

DESCRIPTION OF UNITS

Ordovician Metasediments and Metavolcanics (Unit 1)

An elongate belt of metasedimentary and metavolcanic rocks of presumed Ordovician age (Unit 1) occurs in the Bay de Vieux to La Hune Bay area and continues along the coast to the east of Devil Bay. This unit is described by Blackwood (1985) as a lower sequence of metavolcanics overlain to the south by a sequence of upper greenschist to lower amphibolite facies metasediments and migmatites. This sequence is in fault contact with the Burgeo granite with locally developed mylonite zones. Cordierite porphyroblasts and a hornfels texture are developed close to the contact with the Burgeo granite and indicate a possible intrusive relationship (Blackwood, 1985). The reader is referred to Blackwood (op cit.) for a detailed description of the southern metamorphic unit (Unit 1).

Ordovician Migmatite and Associated Granitoid Gneiss and Metasediments (Unit 2)

Unit 2 has been divided into two sub-units. Subunit 2a outcrops in the northeast corner of the La Hune map area as a 1-4 km wide, northwest-trending belt of poly-deformed, biotite ± muscovite psammitic migmatite with granitic and migmatitic gneiss which have been intruded by massive, equigranular, biotite-muscovite granite (Unit 12).

Unit 2b forms a 50-100 m wide northwest-trending belt in the north central part of the La Hune map area. It is mainly an equigranular to porphyroclastic, biotite-muscovite granite gneiss with minor convoluted migmatite. Deformation varies from strong to protomylonitic.

In the northwest corner of the La Hune map area, strongly foliated migmatite occurs as locally abundant large (20 m²) xenoliths in weakly foliated biotite granodiorite.

Devonian or Older Gaultois Granite (Units 3-5)

The Gaultois Granite outcrops on both sides of Hare Bay and continues along the coast to the mouth of Rencontre Bay. The Gaultois Granite also occurs northwest of the eastern portion of the François Granite. The main component of the Gaultois Granite is an intensely deformed, biotite-rich, K-feldspar porphyritic granitoid. On the coast between Devil Bay and Hare Bay, the Gaultois Granite is in contact with Ordovician metavolcanics (Unit 1) but the

nature of the contact is uncertain because of intense deformation.

Unit 3 of the Gaultois Granite is a coarse grained, K-feldspar porphyritic, strongly foliated to protomylonitic, biotite ± hornblende granodiorite. It is bordered on the south by Unit 4, a K-feldspar porphyritic, strongly foliated to mylonitic, biotite granite to granodiorite. Unit 5 is a medium grained, K-feldspar porphyritic, strongly foliated to mylonitic, biotite granite. A 10 m wide dike of massive, metamorphosed, coarse grained equigranular biotite granite of unknown origin cuts the Gaultois Granite east of Hare Bay.

Devonian or Older Burgeo granite (Units 6-11)

The oldest unit of the Burgeo granite is medium to coarse grained, commonly K-feldspar porphyritic, biotite granodiorite (Unit 6). Unit 7 is mainly medium grained, equigranular to locally K-feldspar porphyritic, biotite granodiorite which is commonly spatially associated with Unit 6. Both units are rich in biotite (around 10%) and locally may contain hornblende e.g. near Slopdish Lake (local name). K-feldspar phenocrysts range from 1 to 5 cm in length and may comprise up to 10% of the rock. The granodiorite is cut by dikes of coarse grained porphyritic granite (Unit 8).

Unit 8 is a coarse grained, porphyritic biotite granite with a highly variable proportion of biotite. The majority of this unit is buff with 2 to 5 cm long K-feldspar phenocrysts in an equigranular groundmass with 3 to 5% biotite. Along the coast, west of White Bear Bay, the granite is conspicuously pink to red and generally contains less than 2% biotite. Between Bay de Vieux and White Bear Bay, much of the area is underlain by pink, coarse grained K-feldspar porphyritic granite with less than 2% biotite.

Unit 9 also occurs in this area and is a coarse grained equigranular biotite granite with about 1 to 2% biotite. Dikes of this unit often exceed 50 m in width and have intruded coarse porphyritic biotite granite (Unit 8).

Medium grained, equigranular to K-feldspar porphyritic, biotite ± muscovite granite (Unit 10) underlies the northern parts of the map areas and also commonly occurs as dikes which intrude all other units of the Burgeo granite. Xenoliths of migmatite are locally abundant in this unit. Muscovite forms less than 1% of the rock and is commonly absent. K-feldspar phenocrysts vary in abundance up to 10% and are 1-2 cm in length.

The northeastern part of the Burgeo granite, in the La Hune map area, has been extensively deformed and mylonitized along the trace of a major fault which is a continuation of the Dragon Bay fault zone of Blackwood (1983). This zone of mylonitic granitoids extends from the contact with the mylonitic metasediments of Unit 2 into the Burgeo granite up to 3 km. Coarse and medium grained granites (Units 8 and 10) have been mylonitized and reduced to a very fine grained, K-feldspar porphyroclastic blastomylonite (Unit 11) near the contact with the metasediments. The fabric in the mylonitic and associated strongly deformed granite is defined by flattened quartz and fine grained biotite; feldspar augen up to 2 cm in length are common in the originally coarse porphyritic granites.

Diabase and gabbro xenoliths are common throughout the Burgeo granite and occur mainly in coarse grained, porphyritic biotite granite (Unit 8). Extensive areas of the Ramea Islands are underlain by mafic rocks. The xenoliths range in size from a few centimetres to over 500 m in length. In a few places, swarms of 30 cm long oval xenoliths are cut by thin aplite and pegmatite veins. In other places the more sizeable xenoliths are cut by granite dikes. These mafic xenoliths vary from fine grained diabase to coarse grained gabbro and all have been metamorphosed, with coarse actinolite prominent in the gabbroic xenoliths. The larger diabase and gabbro occurrences are not interpreted to be dikes because of the lack of chilled margins on the diabase. Furthermore, granite dikes cross-cutting the diabase are similar in composition and texture as the host granite.

O'Brien and Tomlin (1984) have interpreted an extensive area of layered peridotite, gabbro and diabase in the Burgeo granite in the White Bear River map area as having an ophiolitic origin. The diabase and gabbroic xenoliths in the Ramea and La Hune map areas have no apparent layering. However, the possibility exists of an ophiolitic source for the xenoliths.

Devonian or Older North Bay Granite (Unit 12)

The North Bay Granite (Unit 12), within the map area, consists of medium grained, equigranular to locally highly K-feldspar porphyritic, weakly foliated, biotite \pm muscovite granite locally with large xenoliths (20 m²) of migmatite derived from Unit 2. The North Bay Granite has intruded the strongly deformed migmatite terrane and clearly postdates the main deformational episodes. Biotite is more abundant than muscovite which may be absent. K-feldspar phenocrysts are locally abundant and are about 2 cm long. The North Bay Granite is cut by a prominent north-

west-trending fault but there is little evidence of deformation along the fault.

Devonian or Older Diabase Dikes (Unit 13)

Three southerly-trending diabase dikes were located in the La Hune and Ramea map areas. The dikes are fine grained, equigranular to slightly plagioclase porphyritic. Two dikes are less than 15 cm thick and the other is over 2 m thick. Chilled margins are prominent. No tectonic fabric is apparent in the dikes but the presence of minor epidote and chlorite indicates that the dikes have been metamorphosed in the lower greenschist facies.

Devonian François granite (Units 14-18)

A very brief description of the François granite is given here. For a more extensive description see Poole, Delaney and Dickson (1985).

The François granite is a posttectonic intrusion comprised mainly of coarse grained, porphyritic to equigranular, biotite granite, medium grained, porphyritic biotite granodiorite, fine grained quartz-feldspar-biotite porphyry, medium grained porphyritic biotite syenite and numerous fine grained granite dikes which have intruded the other plutonic units in the La Hune map area and the Dolland Brook map area (Dickson and Delaney, 1984). A 10 m thick north-northeast trending, massive, quartz-feldspar porphyry dike has intruded the mylonites and migmatites, north of the François granite and west of Dolland Brook. This dike is a continuation of one mapped by Dickson and Delaney (1984) and thus the dike has a minimum length of 5 km. A conspicuous feature of the northeast part of the François granite is a series of concentric zones of the various units which range in width from 150 m to 2 km. Numerous faults have offset slightly the various concentric rings.

Devonian? Sediments (Unit 19)

A sequence of interbedded, red and green conglomerate with minor sandstone, shale and limestone is located to the southwest of La Hune Bay. This unit nonconformably overlies Unit 7 of the François granite (Blackwood, 1985). Williams (1971) reports that granite boulders occur near the base of this sequence. K/Ar dating of muscovite from this granite gave an age of 399 \pm 17 Ma. Williams notes that the granite clasts do not resemble the nearby granites. A more detailed description of this unit is given in Blackwood (1985).

DEFORMATION AND METAMORPHISM

The metasedimentary Units 1 and 2 have been polydeformed. The structure and metamorphism of Unit 1 is described in detail

by Blackwood (1985), who describes a generally conformable sequence of metavolcanic and metasedimentary rocks which increase in metamorphic grade from lower amphibolite facies in the north to upper amphibolite facies with associated migmatization in the southern units.

Unit 2 has been polydeformed during two main regional events. The main deformation produced tight isoclinal folds with an axial planar schistosity. This has been recumbently folded with superimposed open, easterly trending, gently plunging folds and locally a steep crenulation cleavage. Metamorphism reached upper amphibolite facies and was accompanied by extensive migmatization.

The mylonitization which has affected the northern margin of the Burgeo granite (Unit 11) extends into Unit 2 but is generally restricted to a narrow marginal zone, probably less than 500 m in width. This has resulted in a strongly schistose rock with a steep, planar, northwest-trending fabric.

Throughout the map area, the Gaultois Granite is very strongly deformed with narrow zones of protomylonite. The granite commonly resembles an augen gneiss as the foliae are completely recrystallized. Near the entrance to Rencontre Bay the Gaultois Granite is extensively mylonitized to a black, very fine grained to glassy rock with 5 mm x 1 mm relict K-feldspar augen.

The Burgeo granite is variably deformed. Near the contact with Unit 1, easterly-trending narrow zones of mylonite (10 m wide) occur in strongly foliated granite. Narrow protomylonite zones occur throughout the coastal parts of the Burgeo granite where the rocks are also extensively faulted and brecciated. On Ramea Islands, the granitoids are strongly deformed to mylonitic and locally the main fabric is cut by a well developed crenulation cleavage. Northeast of the community of Grey River, in the La Hune map area, the granite has been thrust to the south in numerous low angle imbricate thrusts with arcuate fronts bordered by tear faults. The thrusting affects the granite for roughly 10 km to the north of the contact with Unit 1. The effects of this thrusting show a decreasing intensity and increasing dip angle towards the north. This style of deformation continues to the west into the Ramea map area.

The early mafic granitoids of the Burgeo granite are commonly more deformed than the later, less mafic granitoids. This indicates that the Burgeo granite is a syntectonic intrusion with an extensive range in ages of plutonism. An upper limit on the age of deformation in the La Hune - Ramea map areas would be given by dating the

François granite which, apart from minor brecciation along faults, is entirely massive. The posttectonic Chetwynd granite, which is lithologically similar to parts of the François granite, has been dated at 372 ± 5 Ma (Anonymous, 1980; O'Brien and Tomlin, 1985), and sets the upper limit for deformation in Burgeo map area.

Along the trace of the Bay de Loup Brook fault the granites are locally mylonitic. The foliation parallels the fault. A subsequent brittle deformation has produced a 100 to 500 m wide breccia zone with 2-10 cm long angular clasts of deformed granite. This breccia has been healed in places by extensive silicification.

MINERALIZATION

The Burgeo granite contains minor occurrences of pyrite. Large diabase xenoliths on Ramea were found to contain disseminated magnetite and tourmaline, and associated brecciated granite contained 1-2 mm thick veinlets of magnetite and tourmaline. Massive granite on Ramea also contained noticeable magnetite. Minor fluorite was found in a granite dike associated with massive quartz cutting diabase, also on Ramea.

The Burgeo granite is extensively brecciated along the Bay de Loup Brook fault. This breccia has subsequently been silicified initially by red jasper-like quartz and subsequently by white to clear vein quartz. This zone of silicification occurs throughout the fault zone and the proportion of quartz varies from 5% to 95%. The fault zone reaches 500 m in width but is generally 100 m wide. Only one minor occurrence of pyrite was discovered and one occurrence of vein calcite was also found. The granite appears highly altered to sericite in a few places. The possibility of gold mineralization exists in this area.

Blackwood (1985) discovered specular hematite along fractures in granite at the entrance to Southeast Arm. Also in the Grey River area there are sizeable subeconomic quartz veins containing wolframite, fluorite, barite and base metals (Higgins, 1980; Higgins and Smyth, 1980; Blackwood, 1985). These quartz veins are posttectonic and cut amphibolite and leucogranite in the Grey River enclave as well as porphyritic granite of the Burgeo granite. Pyrite was located on a joint surface in the North Bay Granite on Morgan Brook.

Lake sediment surveys conducted by Butler and Davenport (1978, 1980) and Davenport and Butler (1982) indicate anomalous W, Mo, Pb and F concentrations in the François granite, particularly in its eastern lobe and the southern part of its

western lobe. Anomalous Pb values are found in the vicinity of the Grey River tungsten deposit, and Co, F and Mo are marginally enriched in various parts of the Burgeo granite in the Ramea map area. Airborne radiometric surveys by the Geological Survey of Canada (1983a, 1983b) indicate high U and Th levels in the François granite. A more detailed account of the economic potential of the François granite is given in Poole et al. (1985).

SUMMARY

The oldest units in the La Hune and Ramea map areas are the sequences of probable Ordovician metasediments and metavolcanics that occur in the vicinity of the community of Grey River, along the coast west of Hare Bay, and in the Dolland Brook to Grey River area.

The Gaultois Granite is a medium to coarse grained, strongly deformed to protomylonitic, K-feldspar porphyritic, biotite granite to granodiorite. Dikes of Burgeo and François granite intrude the Gaultois Granite, which is also more intensely deformed than other granitoids in the area, and is thus considered to be the oldest granitoid unit.

The Burgeo granite is mainly a coarse grained, K-feldspar porphyritic, biotite ± hornblende granite to granodiorite. Medium grained biotite ± muscovite granite occurs along the northern parts of the map area and has intruded the coarse grained porphyritic granitoids. The Burgeo granite is weakly to moderately deformed with mylonitic deformation along its northern and southern contacts with the Ordovician units.

The North Bay Granite is a medium grained, massive to weakly foliated, K-feldspar porphyritic, biotite ± muscovite granite which has a U/Pb age date of 396 Ma. It intrudes a belt of migmatites near Dolland Brook.

The François granite is characterized by two overlapping circular lobes with concentric rings of fine and coarse grained, massive, leucocratic, K-feldspar ± quartz porphyritic to equigranular, biotite granites which very rarely contain muscovite. The François granite crosscuts the regional fabric in the Burgeo and Gaultois granites and dikes related to the François granite intrude the Gaultois, Burgeo and North Bay granites.

Near Cape La Hune, a Devonian (?) conglomerate sequence with minor layers of sandstone, shale and limestone, nonconformably overlies the François granite.

The Burgeo granite east of Grey River and the Gaultois Granite have been thrust southward on north dipping fault planes whose dip varies from subhorizontal in the south of the Burgeo granite to 45-60° further north and in the Gaultois Granite. The François granite, although locally brittly deformed along faults, does not appear to have been affected by this episode of thrusting. Further west, the Burgeo granite has been extensively sheared possibly in response to thrusting. A north-west-trending zone of mylonitization occurs along the trace of the Dragon Bay fault near Dolland Brook affecting the Burgeo and Gaultois granites and the migmatites, metasediments and granitic gneisses in the area. Extensive brittle deformation is superimposed on a mylonitic deformation along the Bay de Loup Brook Fault.

The François granite contains significant potential for Sn and U mineralization. Greisen veins were located in various parts of the granite and minor magnetite that likely contains uranium occurs in pegmatites near Sugarloaf. The radioactive background for the François granite is 2 to 3 times greater than that of the surrounding granitoids. In the Burgeo granite, extensive silicification occurs along the Bay de Loup Brook Fault and may have gold potential.

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