MINERAL DEVELOPMENT DIVISION
DEPARTMENT OF MINES AND ENERGY
GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

11 P/13 1:50,000 11 P/13

LEGEND

DEVONIAN

13 Equigranular, medium grained leucocratic granite: 13a, Biotite granite with minor muscovite and garnet; 13b, garnetiferous muscovite granite.

12 CHETWYND GRANITE: 12a, Medium to coarse grained pink to red biotite grainte; 12b, quartz-feldspar porphyry.

11 Porphyritic granite to monzonite (Ironbound Hills area): 11a, Coarse grained porphyritic granite unfoliated to foliated; 11b, coarse grained, porphyritic, gray monzonite.

10 Coarse grained, porphyritic, mafic-rich granite.

PRE-DEVONIAN?

9 Foliated porphyritic or porphyroblastic granite: 9a, OTTER POINT GRANITE?; 9b, augen orthogneiss.

8 Syntectonic, equigranular tonalite to leucogranite: 8a, Well- foliated granodiorite, tonalite; 8b, well-foliated muscovite-bearing granite, with or without biotite and/or garnet; 8c, pink to white biotite granite with well segregated biotite lenses; 8d, dominantly granitic blastomylonite and mylonite, including screens of injection gneiss and amphibolite, possibly some younger granite.

ORDOVICIAN TO SILURIAN

LA POILE GROUP

7 GEORGES BROOK FORMATION: 7a, Crystal tuff; 7b, rhyolite, rhyolite tuff, lapilli tuff, crystal tuff, agglomerate, minor sedimentary rocks; 7c, mafic volcanic rocks including flows, pyroclastic rocks and dikes; 7d, reworked volcaniclastic rocks and/or lithic sandstone and conglomerate with dominantly volcanic clasts; 7e, gabbro p[illegible]g.

6 ROTI GRANITE: Equigranular granodiorite to quartz and feldspar porphyry, largely fine grained porphyritic granite.

BAY DU NORD GROUP

5 DOLMAN FORMATION: 5a, Crystal tuff, minor lapilli tuff; 5b, massive gray, streaky, feldspathic schist.

4 PIGLET BROOK RHYOLITE: Pink to cream rhyolite.

3 BAGGS HILL GRANITE: Fine grained subvolcanic granite, granophyre, quartz-feldspar porphyry.

2 Metasedimentary and metavolcanic rocks: 2a, Dark phyllite with metagraywacke and graphite schist bands; 2b, metagraywacke and metasiltstone; 2c, silicic metavolcanic rocks, including pyroclastic rocks and tuffaceous metagraywacke; 2d, white weathering rhyolite, rhyolite tuff; 2e, polymictic volcanic conglomerate; 2f, mafic metavolcanic rocks; 2g, amphibolite; 2h, injection gneiss.

ORDOVICIAN? OR OLDER?

1 Metagabbro, layered metagabbro, metapyroxenite; metadiabase and volcanic rocks; genetically related amphibolite.

SYMBOLS

Drift covered area
Geological boundary (defined, approximate, assumed, gradational)
Bedding, tops known (inclined, vertical, overturned)
Bedding, tops unknown (inclined, vertical)
Schistosity, cleavage, foliation (dip indicated):
- Schistosity of unknown or multiple age (inclined, vertical)
- S_1
- S_2
- S_3

Axes of minor folds, unknown age (horizontal, inclined, vertical)
- F_1
- F_2
- F_3

Dip or plunge estimate (gentle, moderate, steep) g m s
Shearing and dip (inclined, vertical)
Strain slip cleavage (inclined, vertical, dip unknown)
Gneissic foliation (inclined, vertical)
Lineation (horizontal, inclined, vertical)
- Type of lineation denoted by letter:
- Mineral lineation M
- S intersection S
- Deformed clasts D
- Rodding, mullion structure R
- Metamorphic aggregates A

Lineament, shear zone, displacement not demonstrated (defined, approximate, assumed)
Fault zone, ductile shear zone (approximate width indicated)
Joint (horizontal, inclined, vertical)
Mineral Occurrence py

MINERAL AND ROCK ABBREVIATIONS

pegmatite	peg	fluorite	fl
andalusite	and	magnetite	mt
beryl	be	molybdenite	mo
cordierite	cd	pyrite	py
chalcopyrite	cp		

Geology by Lesley Chorlton, (1979); published, 1980.

This preliminary map may be subject to revision and correction.

Geological cartography by Mineral Development Division, Department of Mines and Energy, Government of Newfoundland and Labrador.

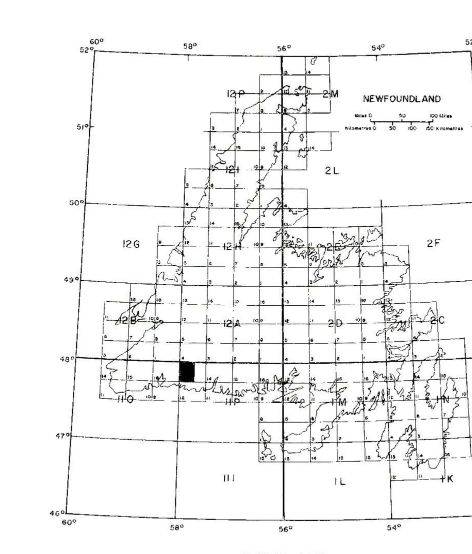
Copies of this map may be obtained from the Publications and Information Section, Mineral Development Division, Department of Mines and Energy, P. O. Box 4750, St. John's, Newfoundland A1C 5T7.

Base map as same scale published by the Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa, 1971.

Elevations in feet above mean sea level.

Approximate magnetic declination, 1972, for centre of map 27° 24′ west decreasing 2.6′ annually.

This project was financed under the Canada/Newfoundland Mineral Development Subsidiary Agreement (1977-1981) by contributions from the Government of Newfoundland and Labrador (10 percent) and from the Departments of Regional Economic Expansion (45 percent) and Energy, Mines and Resources (45 percent) of the Government of Canada.



INDEX MAP

MAP 80 201

PETER SNOUT

11 P/13(81)

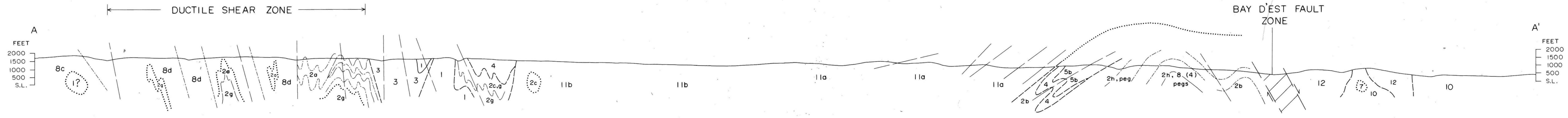
NEWFOUNDLAND

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Milles
Metres 1000 0 1000 2000 3000 4000 Mètres
Yards 1000 0 1000 2000 3000 4000 Verges

CONTOUR INTERVAL 50 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

NOTE: See reverse side for cross section



SCHEMATIC CROSS SECTIONS

To Accompany Map 80 201

Geological boundary, (approximate, assumed, gradational)

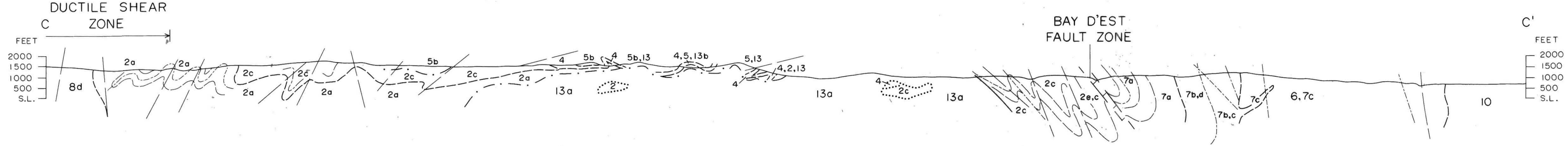
S_1 schistosity and/or bedding

S_2 schistosity and/or S_1

S_3 schistosity, locally includes S_2/S_1, small lineaments

Fault, ductile shear zone

Vertical and Horizontal scale; 1:50,000



Mineral Development Division
Department of Mines and Energy
Government of Newfoundland and Labrador

11 P/13 (81)

NOTES ON THE GEOLOGY OF PETER SNOUT (11P/13, WEST HALF) NEWFOUNDLAND

by

Lesley Chorlton, 1979
published, 1980
(To accompany Map 80201)

St. John's, Newfoundland

NOTES ON THE GEOLOGY OF PETER SNOUT (11P/13, WEST HALF), NEWFOUNDLAND

11P/13(81)

by Lesley Chorlton, 1979; published, 1980.
(To accompany Map 80201)

The Peter Snout area is located inland from the town of Burgeo on the southwest coast of Newfoundland. The Burgeo Highway passes through the east half of the area, but access to the west half is mainly by air.

Previous geological mapping in the area includes a 1:253,440 scale map by Riley (1959), a 1:63,360 scale map by Buchans Mining Company (Photographic Survey Co., date unknown), and a brief reconnaissance survey by Smyth (1979a). The results of these surveys were incorporated into a 1:50,000 scale compilation map by Smyth (1979b). In addition, diamond drill holes were sunk in the northern part of the area by Hudsons Bay Oil and Gas (Lassila, 1979). Surficial deposits have also been surveyed (Grant, 1974).

The oldest rocks in the area are the mafic complex of the Blue Hills of Couteau, and the volcanic, subvolcanic, and sedimentary rocks of the Bay du Nord and La Poile Groups. The Baggs Hill Granite, the Piglet Brook Rhyolite, and the Dolman formation have been informally included in the Bay du Nord Group (Chorlton, in press). The Dolman formation has been dated as 449±20 Ma using U/Pb zircon methods (Dallmeyer, 1979). The Georges Brook Formation and the Roti Granite represent the La Poile Group in this area, and are in contact with the Bay du Nord Group across the Bay d'Est Fault. The Georges Brook Formation has tentatively been dated as 459±18 Ma using the Rb/Sr whole rock technique (Wanless, personal communication). The Georges Brook Formation may be either a temporal equivalent of, or transitional to, the Bay du Nord volcanic rocks, since consistently interrelated volcanic lithologies apparently pass through the fault zone uninterrupted by the break implied by the rise in metamorphic grade northward across the fault. The oldest rocks were deformed and metamorphosed prior to the emplacement of a series of granitoid bodies, which was initiated during or closely following the attainment of the metamorphic peak, and ended prior to or during the third deformation episode.

Unit 1 occurs as disrupted lenses of a large mafic igneous complex which is cut by Baggs Hill Granite; some of the amphibolite inliers in the Bay du Nord Group possibly belong to this unit. Some exposures display well preserved igneous textures, eradicated in other areas by a medium grade tectonite fabric and/or by crisscrossing shear zones. Most of the coarse grained rocks are unlayered, but primary cumulate layering was noted locally. The coarse grained phases are cut by dikes or bodies of microgabbro. Thin dikes of basalt, some of which enclose chunks of leucogabbro, also cut the gabbro and diabase in the eastern portion of the largest gabbro lens, and zones of intrusion breccia are exposed in the nearby brook. All of the mafic phases are cut by a network of white, sugary, plagiogranite stringers.

The coarse grained rocks are highly varied and have not yet been representatively sampled. One little-deformed sample is composed of large (over 1 cm) augite grains, altered to blue-green hornblende with remnant schiller texture, in an allotriomorphic granular matrix of blocky, zoned plagioclase (mainly calcic andesine) with accessory apatite, garnet, zircon, and abundant pyrrhotite. The augite pseudomorphs poikilitically enclose small laths of unzoned plagioclase and contain patches of cummingtonite. Another sample consists of a relatively fine grained intergrowth of unzoned, acicular or tabular plagioclase (labradorite) and large, poikilitic, uralitized augite grains with less abundant brown patches and rims. Small plagioclase crystals are enclosed in the ferromagnesian grains. A more deformed sample consists of a granoblastic intergrowth of highly polygonized blue green hornblende and lightly saussuritized plagioclase with abundant accessory pyrrhotite. Abundant fibrous amphibole and plagioclase-plagioclase boundaries marked by tiny recrystallized plagioclase grains are common in sheared rocks, and tourmaline and retrogressive patches of micro-crystalline chlorite are found locally. The microgabbro consists of a hypidiomorphic granular intergrowth of unzoned plagioclase laths (An_{50}) and stubby pyroxene pseudomorphs in subequal proportions, with abundant accessory epidote and sphene-rimmed opaques. The pyroxene grains have been uralitized, and have dusty cores and non-occluded rims of more highly pleochroic, fibrous actinolite. Optically continuous brown patches, some next to opaques, are common, as well as curved fractures affecting only the pyroxene pseudo-morphs. Some of the mafic grains are lamellar fibrous amphibole, and are possibly orthopyroxene pseudomorphs. The plagiogranite consists of large unzoned plagioclase grains (An_{35}) with accessory quartz and allanite. The plagioclase grains display albite and pericline twins and have graphically mottled extinction.

Unit 2a refers to laminated phyllite and graywacke of the Bay du Nord Group, and occupies a band between the Baggs Hill Granite (3) associated with Bay du Nord felsic volcanic rock (2c) and the northern ductile shear zone. In the west, the unit is composed mainly of highly phyllitic, slightly calcareous, biotite-muscovite-quartz schist with fine grained opaques and accessory tourmaline and epidote. Boudins of bedded micaceous siltstone with feldspathic sandy lenses are locally preserved. In the east, the unit is less phyllitic and consists of laminated siltstone and black slate interbedded with graywacke which contains lenses of feldspathic grit. The fine grained schists contain garnet and tourmaline in addition to biotite, muscovite, quartz, and graphite.

Unit 2b is mainly associated with injected equivalents (2h) and the Piglet Brook Rhyolite (4). The rocks are 'salt-and-pepper' schists, consisting of quartz, biotite, and variable amounts of muscovite with minor garnet and accessory tourmaline and sphene. Laminations and streaks may represent transposed bedding or metamorphic mafic-rich segregations; thin calc-silicate bands or lenses consisting of actinolite, quartz, epidote, sphene, and minor plagioclase occur locally.

Unit 2c refers to Bay du Nord felsic volcaniclastic rocks. Sheared, bedded crystal tuff, tuffaceous graywacke, lapilli tuff, and conglomerate containing Baggs Hill Granite, Piglet Brook Rhyolite, and minor siltstone clasts are common lithologies.

Unit 2d is a white weathering rhyolite or indurated tuff. It is composed of microcrystalline quartz, plagioclase, microcline, biotite, sericite, minor rutilated chlorite, and opaques as both specks and polycrys-talline clots. Apatite is an abundant accessory mineral.

Unit 2e, exposed within and north of the Bay d'Est Fault zone north of Dumbo Pond, is composed of polymictic cobble to boulder conglomerate thickly interbedded with felsic to mafic lapilli tuff and graywacke, and is cut locally by mafic (amphibolite) dikes. The clasts in the conglomerate include rhyolite or microgranite porphyry, aphanitic rhyolite, felsic to intermediate tuff, pink felsite (Piglet Brook?), vein quartz, and metabasalt in variable proportions. The quartzofeldspathic matrix contains biotite, muscovite, rare garnet, and abundant fine grained magnetite. The boulders and cobbles are stretched.

Units 2f and 2g are both typically amphibolitic. Basalt with calc-silicate filled vesicles interbedded with felsic tuff and mafic volcaniclastic rocks were recognized near the Bay d'Est Fault and the Blue Hills of Couteau, and separated as Unit 2f. Elsewhere, the amphibolites (2g) may have either volcanic or plutonic origins. Most of the rocks are composed of a pinstriped, granoblastic, coarse to fine grained intergrowth of hornblende and plagioclase, with minor epidote and sphene and locally concentrated platy opaques. The hornblendes are polygonized, and the pinstriped banding is locally crenulated. In some rocks north of the fault zone, biotite has developed along discrete bands, whereas to the south chlorite has formed instead.

Unit 2h consists largely of semipelitic schist veined with equigranular white granite to granodiorite. Both veins and hosts are highly foliated.

Unit 3 refers to the Baggs Hill Granite, the name applied by Cooper (1954) to a subvolcanic granite. Quartz-plagioclase porphyry is the most common phase in the map area. The quartz phenocrysts are polygonized and annealed; the plagioclase phenocrysts and glomerophenocrysts are locally rimmed with granophyre and altered to checkered albite. The matrix is composed of fine grained quartz, biotite, and plagioclase.

Unit 4 refers to the Piglet Brook Rhyolite (Chorlton, in press), a pink, sparsely porphyritic felsite with a finely granular texture. Small reddened feldspar phenocrysts and tiny red garnet grains are visible in a matrix of fine grained quartz, sericitized plagioclase, and microcline, with less abundant muscovite, biotite, and locally developed chlorite. Accessory minerals include tourmaline and fine grained, isometric opaques. The phenocrysts consist of highly occluded plagioclase and microcline, partly replaced by muscovite. In one sample, traces of fibrolite were formed inside muscovite flakes.

Unit 5 refers to the Dolman formation, an informally named unit of felsic pyroclastic rocks. The main rock type is indurated quartz and feldspar crystal-bearing tuff, which grades downward into less felsic crystal tuff, conglomerate, and bedded volcaniclastic rocks of the Bay du Nord Group (2c). Where more deformed, the pyroclastic rock passes into gray, feldspathic, streaky, biotite schist. Samples of metatuff collected from the east side of the Blue Hills of Couteau contain crystal clasts of microcline-rimmed orthoclase, bleb antiperthite (35 percent exsolved alkali feldspar), and strained quartz in a matrix of fine grained quartz, feldspar, and biotite with less abundant muscovite and accessory apatite, opaques, sphene, and epidote. The opaques are concentrated in tiny lenticular patches. The very deformed, streaky rocks are composed of trails of the quartzofeldspathic intergrowth separated by segregations of fine grained biotite and sphene, accessory apatite, and opaque clots. Some samples contain augen of very polygonized, sutured quartz and ovoid phenoclasts of microcline and ribbon antiperthite.

Unit 6 refers to the Roti Granite (Cooper, 1954), which cuts the oldest deposits of the Georges Brook Formation in the La Poile area (110/9), but is commonly cut by Georges Brook mafic dikes both there and in the present area. Clasts of Roti Granite are present in Georges Brook volcaniclastic rocks. The granite in this area is very deformed and largely porphyritic. Small reddened gossan zones near its northern contact reflect the presence of weathered, finely divided pyrite. Remnant quartz phenocrysts appear locally as large flattened augen in the foliation of the quartzofeldspathic matrix. The feldspars are extremely altered, and many are replaced by coarse muscovite poikiloblasts. Fibrolite needles occur within muscovite flakes and are also locally developed in the quartzofeldspathic matrix. Many of the granite samples contain short stringers of epidote and chlorite, although most are mafic-poor and appear leached. Leaching, muscovite porphyroblastesis, and fibrolite growth are probably contact metamorphic effects due to the emplacement of Unit 10.

Unit 7 refers to the Georges Brook Formation (Chorlton, 1979), which comprises the volcanic and sedimentary rocks of the La Poile Group. Intermixed greenstone (7c), welded rhyolite tuff (7b), and quartz porphyry (6?) cut by mafic dikes are concentrated north and just northeast of Dumbo Pond, and also occur south of the Bay d'Est Fault on the west side of the map area. The upper crystal tuff (7a) occupies a wedge of land south of the Bay d'Est Fault on the east side of the map area. It grades downward and southeastward into thickly bedded lapilli tuff, volcanic conglomerate, and graywacke with minor pelitic lenses (7b,c) which underlie the highest hill in the vicinity, and into the well bedded conglomerate and coarsely crossbedded sandstone (7c) exposed along Grandy's Brook; both terrains are cut by mafic dikes. Lapilli tuff at the top of the hill hosts high magnetite concentrations.

Unit 7a contains quartz, very altered feldspar, and pseudomorphed ferromagnesian crystal clasts in a fine grained, chlorite and epidote-bearing, quartzofeldspathic matrix. The ferromagnesian grains are biotite and/or hornblende, altered to chlorite, sphene, and locally epidote.

Unit 7b refers to felsic pyroclastic rocks, which contain quartz and feldspar crystal clasts and fragments of basalt and rhyolite in a quartzofeldspathic matrix with abundant epidote, chlorite-biotite intergrowths, and magnetite. The pelitic lenses are composed of sericitized pseudomorphs of andalusite, recrystallized to coarse muscovite grains inside their margins, in a quartzofeldspathic, chlorite and muscovite rich, oxide-dusted matrix which locally contains cordierite. Chlorite-muscovite splotches affect nearby, more quartzofeldspathic, rocks. The heavily mineralized tuffs contain abundant euhedral magnetite, chlorite patches, and unusually abundant apatite and tourmaline.

Mafic volcanic rocks of Unit 7c are composed of actinolite, epidote, fine grained albite, minor remnant plagioclase, and local quartz with accessory opaques and sphene. The probably related gabbro (7e) consists of 1 to 4 mm diameter, actinolite-rimmed, uralitized pyroxene laths, individual acicular actinolite grains, and chlorite patches in a matrix of fine grained albite, quartz, epidote, and remnant plagioclase.

The conglomerate in Unit 7d contains pebble to boulder-sized, subangular to rounded fragments of rhyolite, rhyolite porphyry, granite porphyry, basalt, intermediate tuff, white granite or trondhjemite, rare fine grained gabbro and black shale, and local vein quartz.

Unit 8 refers to equigranular granite to tonalite emplaced at the metamorphic culmination between the early stages of regional deformation. It intruded and enclosed xenoliths of metasedimentary schist in the north and metasedimentary and metavolcanic schist in the south. Its southern exposures are locally cut by the largely unfoliated, equigranular granite (13), from which it was not everywhere distinguished in the field. In the north, the unit is traversed by a wide shear zone, producing two texturally contrasting granitoid terrains. Sheets of porphyritic granite (11), which possibly occur within the shear zone, could not be distinguished in the field, but were suspected after petrographic examination of some samples of blastomylonite.

In the south, the main rock type is foliated equigranular granodiorite to tonalite, with minor granite and pegmatite. The granodiorite and tonalite are composed of quartz, plagioclase, microcline (2 to 10 modal percent), and biotite. The biotite includes numerous zircon grains, and is oriented parallel to the schistosity defined by deformed quartz. Minor rutilated chlorite and traces of an anhedral opaque mineral were noted in some thin sections. The granite contains more microcline and rare flakes of muscovite.

In the northern shear zone, the granite has a strong planar fabric and encloses similarly foliated screens of semipelitic schist and amphibolite. Fine, medium, and coarse grained granitic schist and coarse grained augen schist alternate in bands. The more coarse grained rocks are composed of quartz, plagioclase, and alkali feldspar with less than ten percent biotite and local muscovite with or without accessory allanite, zircon, and garnet. The alkali feldspar consists of hair perthite (less than 5 percent exsolved plagioclase) with oval quartz inclusions and microcline around rims and fractures. Rare ribbon perthite (10 to 25 percent coarse plagioclase) and myrmekite lobes were observed locally. The quartz in all samples forms recrystallized, sutured domains, defining a schistosity which locally forms augen around corroded, bent feldspar grains. In the most deformed rocks, the alkali feldspar and plagioclase augen are isolated in the foliated matrix and display thin quartz-filled tension cracks. Coarse muscovite buttons occur within the foliation planes instead of biotite, and have partly reacted to produce sillimanite around their margins and tips; trails of fibrolite needles occur along the button-bearing foliation planes. Sparse, red, tabular garnet grains are oriented parallel to the foliation and fragmented within it. Less deformed biotite-bearing rocks contain rare muscovite, but contain abundant accessory opaque, euhedral allanite, and large, clear, prismatic zircon.

North of the shear zone, the rock varies in composition from granite to tonalite, is white to cream but locally pink in color, and has a linear gneissic fabric defined by lensoid segregations of ferromagnesian minerals. It consists of a weakly foliated granoblastic intergrowth of quartz, unzoned plagioclase (An_{40}), microcline (0 to 10 percent), rare bleb and hair perthite, hornblende, and biotite with accessory sphene, epidote, apatite, and opaque. The quartz forms strained, locally recrystallized and sutured domains, and also occurs as ovoid inclusions in alkali feldspar and hornblende. The ferromagnesian minerals are loosely clustered and the hornblende displays a pronounced poikiloblastic habit.

Unit 9 is believed to be a continuation of the Otter Point Granite (Chorlton, 1979b) described in the La Poile area (110/9). There, the granite was crosscut by the Chetwynd Granite (12) after the formation of the planar fabric. Although this unit appears to contrast with the megacrystic granite (10) in its apparently lower content of ferromagnesian minerals and its foliation, it may be a more deformed part of the same intrusion. Schistose granitoid lenses with feldspar augen are also denoted as unit 9 in the centre of the area, perhaps incorrectly. These problems and a description of this granite await further work in the adjacent Burgeo area (11P/12).

Unit 10 refers to a large body of unfoliated megacrystic granite which extends far beyond the southwest corner of the map area. It has intruded the La Poile Group, and to the south of the map area it encloses a raft of Cinq Cerf granodiorite (Chorlton, 1979). The Chetwynd Granite (12a) and its porphyry dikes (12b) have intruded it, the latter with sharp contacts.

This intrusion is a remarkably homogeneous, coarse grained mafic-rich granite, with a few phenocryst-poor, fine grained patches exposed near its northern margin in Grandys Brook. It is typically composed of alkali feldspar laths (3 cm maximum diameter) and smaller, zoned plagioclase phenocrysts in a nonequigranular matrix of plagioclase (An_{25}), quartz, biotite, actinolite, chlorite, and abundant accessory sphene, opaque minerals, and epidote. The alkali feldspar megacrysts consist of rod or hair perthitic microcline (little exsolved plagioclase) with zonally arranged inclusions of plagioclase and quartz. Quartz occurs as unstrained to weakly strained single crystal domains. The zoned plagioclase is weakly saussuritized in its cores. Ferromagnesian minerals are loosely associated in clots; both actinolite and sphene are poikilitic.

Unit 11, which occupies the west-central part of the area, has been earlier described in part by Chorlton (1978, 1979). It has intruded the Bay du Nord Group, but was cut by the late equigranular granite (13). The intrusion has two major phases; (11a) a light gray, strongly to weakly foliated, porphyritic to porphyroblastic granite in the south and east, and (11b) a dark gray to greenish black, unfoliated, porphyritic monzonite to monzodiorite in the northwest.

The granitic phase (11a) is composed of large ragged poikiloblasts of microcline and fewer, altered, zoned plagioclase phenocrysts in a matrix of quartz, microcline, myrmekite, plagioclase, actinolite, and biotite with exceptionally abundant accessory sphene, epidote, tourmaline, zircon, and allanite. The microcline encloses plagioclase, quartz, and biotite inclusions; lobes of myrmekite locally project into the grain margins, and some grains contain small cores of hair perthite. Biotite and poikilitic actinolite form diamond and lens shaped clusters associated with concentrations of accessory minerals.

The dark colored monzonite (11b) has a nonequigranular, subidiomorphic, igneous texture. Large phenocrysts or poikiloblasts of alkali feldspar that include small grains of augite and plagioclase, and smaller phenocrysts of zoned plagioclase are surrounded by a coarse grained matrix of plagioclase, biotite, augite and local secondary actinolite with accessory fine grained opaque minerals and apatite. The alkali feldspar grains are nonperthitic to hair perthitic, and locally zoned. The composition of the matrix plagioclase is in the andesine range. The augite occurs as colorless, stubby subhedra, many multiply twinned and some with well developed diallage. Sphene is present as coatings on opaque grains where secondary actinolite is present.

Unit 12 refers to the Chetwynd Granite (Cooper, 1954; Chorlton, 1979), which intrudes the Otter Point Granite (9), the unfoliated megacrystic granite (10), and the Georges Brook Formation (7) in the present area. The main intrusion (12a) is composed largely of pink, coarse grained, biotite granite of variable texture, and is characterized by the presence of microcline ribbon perthite (25 percent or more exsolved plagioclase) as the most abundant mineral; biotite, chloritized biotite, and actinolite as the mafic phases; and abundant accessory sphene, zircon, and opaque oxide. The porphyry dikes (12b) contain phenocrysts of microcline and quartz with minor plagioclase and chlorite, and accessory sphene and opaques.

Unit 13 is a medium grained leucocratic granite which intruded the Bay du Nord Group (2-5), and plutonic units (8 and 11) in the east-central part of the area; however, dikes of this granite extend far to the west. The granite is equigranular to slightly porphyritic, largely unfoliated, and weathers cream to pale gray in outcrop; local garnet-bearing, muscovite-rich phases (13b) are foliated, and fine, red-and-white mottling was noted in a few northwestern outcrops. The predominant rock type (13a) is composed of alkali feldspar, quartz, plagioclase, myrmekite, biotite, and muscovite with accessory garnet, apatite, and zircon. The alkali feldspar occurs largely as interstitial to porphyroblastic microcline with hair perthite cores. Individual grains may reach up to 7 mm in diameter in porphyroblastic rocks and are embayed at their margins by abundant, ovoid myrmekite domains. The plagioclase grains are simply and normally zoned with cores of about An_{35} in composition. The biotite is dark brown to greenish brown, encloses numerous zircons, and is partly chloritized in some samples. An unknown, acicular, colorless, high relief mineral with low birefringence and inclined extinction occurs along the basal cleavage of many biotite grains.

Pegmatite and tourmaline veins are concentrated around the Bay d'Est Fault, and pegmatites are also abundant in the shear zone south of Ironbound Hill.

The fault zone pegmatites and veins are hosted by sheared La Poile and Bay du Nord Group volcanic rocks. The pegmatites consist of graphic granite, quartz, tourmaline, accessory magnetite, and rare beryl. Tourmaline (schorl) - quartz veins are ubiquitous in this zone, and contain minor sulphides. One network of tourmaline and graphic granite veins on the north side of the fault contains beryl, molybdenite, pyrite, chalcopyrite, and malachite. Purple and green fluorite occurs along the schistosity nearby.

The pegmatites south of Ironbound Hill are hosted by the Rose Blanche Granite and very deformed Dolman tuff. These pegmatites consist of microcline, albite, quartz, muscovite, garnet, and local tourmaline.

Units 1 through 7 have been subjected to four regional tectonic events, units 8 and 9 to three, and units 10 through 13 to two. The first event was followed by a regional metamorphic peak in the amphibolite facies in the terrain north of the Bay d'Est Fault and in the greenschist facies south of the fault. Amphibolite facies conditions north of the fault probably prevailed until the third deformation, which was accompanied and followed by local retrogression. Greenschist facies conditions south of the fault were maintained until the intrusion of the late granitic batholith (10), which superimposed a contact metamorphic aureole resulting in the crystallization or recrystallization of biotite, muscovite, chlorite and oxide minerals in the Georges Brook Formation, and leaching and sillimanite development in the Roti Granite.

The main evidence for the first deformation is a remnant early schistosity preserved in the cores of porphyroblasts and inclined to the external foliation in the Bay du Nord semipelitic schists, and also a crenulated early schistosity essentially parallel to layering in second generation fold hinges. The second deformation resulted in tight to isoclinal folding and the formation of an intense regional schistosity and lineation. In this map area, second generation fold hinges affecting bedding and early schistosity were observed within the Bay d'Est Fault zone and to the north on hills overlooking Grandys Brook. Steeply plunging isoclines also occur within the northern shear zone. The third deformation resulted in refolding, shearing, and faulting thought to be related in part to the uplift of the Bay du Nord terrain on the Bay d'Est and related lineaments. It may also be related to the emplacement of Unit 11 and the development of the foliation characterizing the southeast part of that body, and the severe boundinaging of post second deformation pegmatites in the shear zone south of its contact. Open refolding of the second schistosity and fold hinges in the southeast contrasts with the fairly tight third phase folding about east-trending axial planes and the progressive development of east-trending blastomylonite zones within the northern shear zone. Transposition of earlier schistosities and the development of thin shear zones or lineaments is common throughout most of the area. The fourth event is less significant than the earlier ones. It gave rise to upright, open, chevron and kink folds at high angles to the regional grain, and local roughly north-striking block or strike-slip faults. Widely spaced crenulation cleavage is well developed in some areas.

The Bay d'Est Fault forms a sharp linear zone of fault gouge on the west side of the area, and forms an abrupt division between the Bay du Nord semipelitic and injected schists and Piglet Brook Rhyolite to the north, and contact metamorphosed Georges Brook volcanic rocks to the south. Its shear zone broadens to the east, and the sharp lineament either branches out or disappears under the overburden, although smaller discrete shear zones are prominent in the main brook. Despite the regional metamorphic transition from greenschist to amphibolite facies and an increase in the amount of stretching of markers such as boulders in the conglomerates northward across the shear zone in the east, volcanic facies and associations of volcanic prototypes are at least semicontinuous across it.

Mineralization

The most promising metallic mineralization is hosted in the La Poile/Bay du Nord Group volcanic rocks and is concentrated within the Bay d'Est Fault and along offshoots and synchronous shear zones to the southeast. Noteworthy sericitization and tourmalinization are associated with the latter. Pyrite and magnetite are the main metallic minerals. Disseminated pyrite and pyrite segregations along shear surfaces occur in the felsic volcanic rocks and the mafic dikes which cut them. Chalcopyrite was also noted in the dikes towards the western part of the main mineralized zone, and arsenopyrite was noted in some aplite veins. Magnetite accompanied by disseminated pyrite occurs mainly in the felsic rocks.

A notable occurrence of massive and disseminated magnetite is located on the hill overlooking Grandys Brook to the southeast of these showings. The magnetite is hosted by ash-flow tuff of the Georges Brook Formation and appears to be replacing parts of the matrix. The mineralization occurs a few metres north of the sheared contact with the Roti Granite, which contains several rusty zones caused by local disseminations of fine grained pyrite.

Tourmaline veins are abundant within the fault zone, and are present but less numerous to the southeast. One tourmaline vein which cuts mafic and felsic volcanic rocks on a waterfall north of the main mineralized zone contains beryl, molybdenite, malachite, pyrite and chalcopyrite. In the same outcrop, fracture fillings of green and purple fluorite were noted.

References

Chorlton, L.B.

1978: La Poile River map area (110/16), Newfoundland. Newfoundland Department of Mines and Energy, Mineral Development Division, Map 78168 with marginal notes.

1979: Geology of the La Poile map area (110/9), Newfoundland. Newfoundland Department of Mines and Energy, Mineral Development Divison, Report 78-5, 14 pages.

(in press) Geology of the La Poile River map area (110/16), Newfoundland. Newfoundland Department of Mines and Energy, Mineral Development Division, Preliminary report.

Cooper, J.R.
1954: La Poile-Cinq Cerf map area, Newfoundland. Geological Survey of Canada, Memoir 276, 62 pages.

Dallmeyer, R.D.
1979: Geochronology - Insular Newfoundland Mapping. Unpublished progress report for 6/1/79 - 11/1/79, Newfoundland Department of Mines and Energy, 57 pages.

Grant, D.R.
1974: Surficial geology map series: Peter Snout 11P/13. Geological Survey of Canada, Open file map 244.

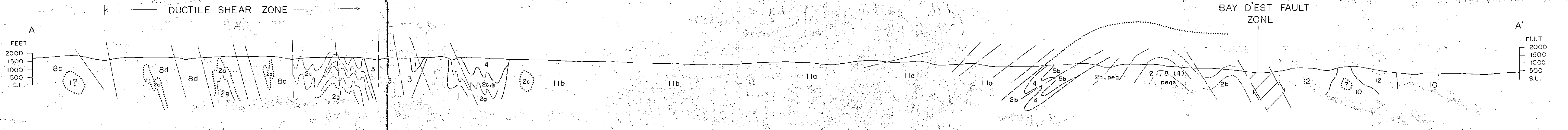
Lassila, P.
1979: Assessment report on diamond drilling, Top Pond Project, Couteau Lake. Hudson's Bay Oil and Gas, Report on file at Newfoundland Department of Mines and Energy.

Photographic Survey Co. for Buchans Mining Company date unknown: Geology of Peter Snout, 11P/13. 1:63,360 map on open file at Newfoundland Department of Mines and Energy.

Riley, G.C.
1959: Burgeo-Ramea, Newfoundland. Geological Survey of Canada, Preliminary map 22-1959.

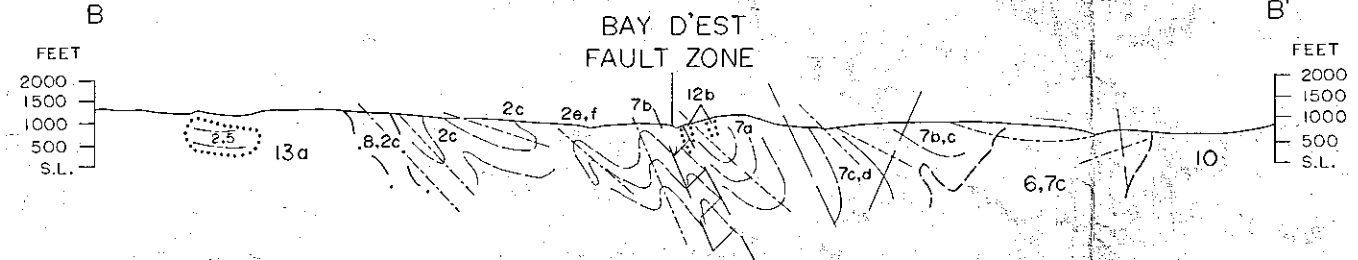
Smyth, W.R.
1979a: Reconnaissance of the Burgeo map area (11P west half), Newfoundland. *In* Report of Activities for 1978. *Edited by* R.V. Gibbons. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 79-1, pages 54-57.

1979b: Peter Snout, Newfoundland. Newfoundland Department of Mines and Energy, Mineral Development Division, Open file map 7952.



SCHEMATIC CROSS SECTIONS

To Accompany Map 80 201



Geological boundary, (approximate, assumed, gradational)

S_1 schistosity and/or bedding

S_2 schistosity and/or S_1

S_3 schistosity, locally includes S_2/S_1, small lineaments

Fault, ductile shear zone

Vertical and Horizontal scale; 1:50,000