# HUNT RIVER BELT
# MAP-AREA
# LABRADOR
## (parts of 13N/7,9,10,15,16)

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Notes

Hunt River belt lies 240 km north of Goose Bay and can be reached by helicopter or float-equipped aircraft chartered from Goose Bay. The northeastern part of the belt is readily accessible by boat from Hopedale.

Rocks of the Hunt River supracrustal belt comprise amphibolites, ultramafic rocks and minor sedimentary rocks at upper amphibolite facies. The belt, initially mapped by Taylor (1977) in 1971 and subsequently studied by Jesseau (1976), was shown to extend 32 km farther northeastward (from latitude 55°30') to the mouth of Big Bay (Ermanovics and Korstgård, 1981). Rocks in this part of the belt occupy low lying areas, in contrast to the southwestern part where they are well exposed and form a prominent ridge.

The amphibolites (unit 2) are subtly laminated, fine to very fine grained, and contain nematoblastic-hypidioblastic amphiboles as well as plagioclase and generally less than 5 per cent quartz. Three main varieties are recognized in thin section: hornblende + plagioclase + quartz; diopside + hornblende + plagioclase; hornblende + garnet + plagioclase + biotite + quartz. The latter assemblage is restricted to layers a few centimetres thick containing as much as 25 per cent garnet. Two occurrences of pillow structure were observed. The amphibolites appear to have been derived from tholeiitic basalts that show an Fe-enrichment trend. Their chemistry is similar to "...the lower parts of volcanic cycles from Archean greenstone belts" (Jesseau, 1976, p. 188): 44-45% $SiO_2$; 13-15% $Al_2O_3$; 4-8% MgO; 70-160 ppm Zn; 11-230 ppm Cu; 40-120 ppm Ni; 18-600 ppm Cr.

Rocks of sedimentary origin include pelites (unit 3) and grey to variegated layered quartzofeldspathic gneiss (unit 4). Pelitic schist is coarse grained and porphyroblastic, and is only found within the amphibolites in the southwestern part of the belt. Stable mineral associations are plagioclase + cordierite + biotite, plagioclase + staurolite + garnet, and quartz + biotite + sillimanite(?). The "...intercrystalline crosscutting relationships and discordant helicitic inclusion trails in the porphyroblastic minerals indicate that there were several stages of mineral growth (in these rocks)" (Jesseau, 1976, p. 40). Variegated, medium grained quartzofeldspathic gneisses (unit 4) probably derived from greywacke, are well exposed between 197 metre and 219 metre Lakes. They grade to amphibolites and their colour index (biotite, garnet, staurolite, or mainly epidote and amphibole) is in the range of 10 to 25. Included in this unit are layered gneisses (unit 4a) whose colour index (amphibole + epidote) is in the range 20-40. The origin of these rocks is problematical.

Ultramafic rocks (unit 5) include dykes of talcose serpentinite (5a), tremolite schist (5b), and sills of hornblendite (5c), in sharp contact with amphibolite. Serpentinites weather rusty brown and are generally compositionally layered. Relict olivine and orthopyroxene may indicate a peridotitic source rock for these serpentinites. Tremolite schists are monomineralic and contain traces of talc and chlorite. Hornblendites may be distinguished in the field from amphibolites by their coarser grain or schistose structure. The serpentinites have the following chemical characteristics: 36-43% $SiO_2$; 35-40% MgO; 1700-2900 ppm Ni; 2300-4000 ppm Cr (Jesseau, 1976, p. 85, Table 3.2).

Meta-anorthositic gabbro (6a) and metadiorite and meta-quartz monzodiorite (6b) are included in the Hunt River group of rocks because they are compositionally unique among plutonic rocks of the Hopedale block and because they are confined to the periphery of the Hunt River belt. The metadioritic rocks intrude Hunt River amphibolite, but the contact between anorthositic gabbro and amphibolite is not exposed. Anorthositic gabbro contains gneissic layering which consists of discontinuous hornblende lenses in a granoblastic, medium grained matrix of zoned labradorite-bytownite (trace of quartz or quartz veinlets). Diorite and quartz monzodiorite are medium to coarse grained with colour indices averaging 40; they develop gneissic layering in strongly deformed areas.

Zones of rusty brown gossan a few centimetres to 3 metres wide occur throughout the amphibolites, in shear zones, and adjacent to the ultramafic bodies. The gossans occur in rocks that are more siliceous than their host amphibolites and appear to be the result of oxidation of sulfides and alteration of Fe-bearing silicates such as biotite and garnet. Malachite stains occur locally with rusty zones on the west side of the southwestern part of the belt where metadiorites (unit 6b) are in contact with layered gneiss (4a). Jesseau (1976) reported chalcopyrite, galena (rare), pyrrhotite and mainly pyrite from small discontinuous rusty lenses in amphibolite and from tremolite-rich rocks adjacent to ultramafic bodies.

Grey orthogneisses (unit 1), presumed to have been derived from plutonic rocks, surround the Hunt River belt. They are deformed and metamorphosed to the same degree as the Hunt River supracrustal rocks. The gneisses are grey, medium grained, granoblastic, and leucocratic. The rocks are tonalitic to granodioritic and contain various combinations of 5 to 20 per cent garnet, biotite, epidote, clinopyroxene and amphibole. These rocks, correlative with Maggo gneiss near Hopedale, yielded a Rb-Sr whole-rock isochron age of 3226 ± 106 Ma (see map) just west of Hunt River belt (N. Grant, pers. comm., 1981, Miami University, Oxford, Ohio). The age is interpreted as a metamorphic age or metamorphically up-dated age. The relationship of this grey gneiss to the Hunt River supracrustals is in doubt. Where the contact is exposed, it is sharp and may be a faulted contact; elsewhere, red, sheared granitoids occupy the interface.

Later granitoids of various ages (unit 8) intrude rocks of the Hunt River belt and grey gneisses. These granitoids were metamorphosed to gneisses during the last deformation with rocks of the Hunt River belt at epidote-amphibolite grade.

The last penetrative deformation in Hunt River belt (D4 of Jesseau, 1976) and adjacent rocks was accompanied by epidote-amphibolite grade metamorphism. The structures produced at this time were northeasterly trending L-S fabrics affecting most of the Hopedale block (Fiord structural trend, Ermanovics and Korstgård, 1981). This orogenic episode downgraded earlier upper amphibolite facies assemblages (D2 or D3 of Jesseau, 1976, hornblende + diopside + plagioclase + garnet) in rocks of the Hunt River belt and grey gneisses. Structures produced at this time were northwesterly trending L-S fabrics that are recognized as an early, but not the oldest, deformational episode in Hopedale block (Hopedale structural trend, Ermanovics and Korstgård, 1981). In Hunt River belt the Hopedale structural trend is expressed as folded southeast plunging mineral lineations in the southwestern part of the belt and as L-S fabrics in a portion of the northeastern part of the belt.

Chemical analyses of 12 elements (Cu, Ni, Zn, As, Pb, Co, Ag, Mn, Mo, Fe, U and F) from a survey of regional lake sediments showed that lake sediments from the southwestern part of Hunt River belt contain anomalously high values of U, Cu, As and Mo (GSC, 1979 Open File 558). The supracrustal rocks have not been prospected. Targets of interest are the rusty gossan zones associated with amphibolites, ultramafics and amphibolite-metadiorite contacts.

REFERENCES


Ermanovics, Ingo and Korstgård, J.A., 1981. Geology of the Hopedale block and adjacent area, Labrador: Report 3; in Current Research, Part A, Geological Survey of Canada, Paper 81-1A, p. 69-76.

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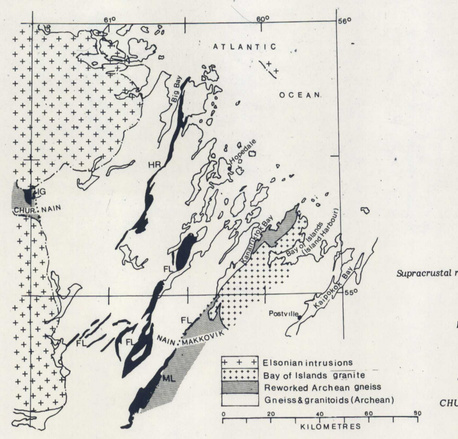
Jesseau, C.W., 1976. A structural-metamorphic and geochemical study of the Hunt River supracrustal belt, Nain Province, Labrador; unpublished M.Sc. thesis, Memorial University of Newfoundland, 211 p.

Taylor, F.C., 1977. Geology - Hopedale, Newfoundland; Geological Survey of Canada, Map 1443A.


Index diagram of Hopedale block, Labrador. Florence Lake group, GSC Open File 580; Ingrid group, GSC Open File 755.

*Supracrustal rocks (black shading):*

*IG = Ingrid group (Proterozoic)*
*HR = Hunt River belt (Archean)*
*FL = Florence Lake group (Archean)*
*ML = Moran Lake Group (Proterozoic)*
*CHUR. = Churchill Province*

LEGEND

PROTEROZOIC

- d / G — Diabase dykes and gabbro
  - G, gabbro (actual size shown)
  - $d^3$, diabase dyke (three metres thick)
  - d, diabase dyke (thickness not specified)

ARCHEAN

- 8 — Metagranitoids and migmatite: undivided, foliated to gneissose granite to tonalite; mainly granodiorite
  - 8a: mix of units 2 and 8

Hunt River belt (units 7 to 2)

- 7 — Metapegmatite: foliated, leucocratic rocks containing garnet, muscovite and tourmaline
- 6 — Meta-anorthositic gabbro (6a) and metadiorite and meta-quartz monzodiorite (6b): early intrusive rocks confined to the periphery of Hunt River belt
- 5 — Ultramafic rocks: talcose serpentinite (5a); tremolite schist (5b); and hornblendite (5c)
- 4 — Paragneiss: variegated, layered, quartzofeldspathic gneiss (colour index 10 to 25); layered hornblende gneiss 4a (colour index 20 to 40)
- 3 — Pelites: coarse grained porphyroblastic schist; garnet, cordierite, staurolite, plagioclase, biotite and quartz
- 2 — Amphibolite: fine grained, laminated rocks with colour index in the range 90 to 40; rare pillow structure; diopside, hornblende, garnet and plagioclase (+ quartz); secondary epidote, amphiboles, chlorites and carbonate
  - 2a: layered amphibolite, probably derived from unit 2
- 1 — Grey gneiss: medium grained, granoblastic, finely layered quartzofeldspathic gneiss, generally containing less than 20% garnet, biotite, pyroxene and hornblende; secondary amphibole, epidote and chlorite; may in whole or in part be younger than Hunt River supracrustal rocks

Geological boundary (approximate, assumed)
Limit of mapping
Gneissic layering (vertical, inclined)
Foliation, unspecified (vertical, inclined)
Mineral Lineation (folded Hopedale structural trend L-fabric)
Fault or shear zone
Area of outcrop (observed); single outcrop
K-Ar hornblende age GSC 73-178 (millions of years) (K)
Rb-Sr whole-rock isochron age (millions of years) (R)

Geology of Hunt River belt south of latitude 55°27' in part after Jesseau (1976). Geology and interpretation of map area by I. Ermanovics and field assistants in 1979 and 1980; geological cartography by I. Ermanovics (1981). For a discussion of the regional geology of the Hopedale block see Ermanovics and Korstgård (1981).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