

- SYMBOLS**
- Geological contact (defined, approximate, gradational, assumed, dip observed).....
 - Ground observation and/or data station.....
 - Aerial or binocular observations.....
 - Outcrop data compiled from another source (See note 3).....
 - Gneissic foliation (horizontal, inclined, vertical, dip unknown).....
 - Igneous layering or mineral lamination tops known.....
 - Igneous layering: tops unknown (inclined, horizontal, dip unknown).....
 - Mineral lamination, with plunge.....
 - Fold axes, with plunge.....
 - Foliation folded into mesoscopic structure.....
 - Airphotogeographic linears.....
 - Jointing/fracture patterns interpreted from air photos.....
 - Fault (defined, approximate, assumed).....
 - Narrow shear zones, with dip.....
 - Small faults or lenses of one gneiss in another.....
 - Q = quartzite; a = amphibolite, mafic granulite (may be metamorphosed mafic dykes in some cases); ms = rusty garnetiferous metasediments; hg = hypersthene gneiss, enderbite, fg = biotite-rich gneiss
 - Inclusions in plutonic rocks.....
 - gn = various country-rock gneisses; ma = meta-anorthositic gneiss; sig = anorthositic and related gabbroic rocks; i = intermediate (monogabbroic and monzonitic) rocks.
 - Ultramafic lenses and pods in the gneisses.....
 - Marble and calc-silicate units.....
 - Many veins and dykes of younger plutonic material.....
 - g = granite of unspecified age and origin, Rg = rapakivi granite, i = intermediate (monogabbroic, monzonitic) rocks; a = aplitic, wg = white hornblende - biotite granite
 - Pegmatites and granite dykes with anomalous BGS1 "total count" readings with respect to surrounding rocks.....
 - Potassium-argon age on biotite, with GSC reference number.....
 - Uranium-lead age determination on zircon.....
 - Uncertainty in designation of unit.....
 - Campsite location.....
 - Diabase dyke, absolute age unknown.....
 - Areas with extensive glacial overburden.....
 - limonite occurrence.....
 - Pyritiferous gossan zone.....
 - Nodular graphite occurrence (in rapakivi).....
 - Labradorite occurrence.....

- NOTES**
- The topographic base maps for this area were compiled from aerial photographs, which were taken when snow covered the western two-thirds of each of the map sheets. Hence, geographic features, such as ponds, are in many cases shown with inaccurate outlines; many ponds are not shown, and some ponds are shown, which do not exist; many of these photointerpreted pond outlines are shown as dashed lines on the topographic base. These inaccuracies are particularly common in areas with subdued relief, for instance between Kondrat Brook and the Kogalik River. The poor ground-control has meant that some station localities and contacts between units in such low-relief areas may be misplaced by hundreds of meters.
 - The contact between the granitoid plutons and the country-rock gneisses is, in some cases, an areolite one, since large reefs of gneiss are abundant in the border zones of the plutons and numerous dykes of the granitoid pervade the gneisses up to 1.5 km from the main body of the pluton. These zones constitute intrusive megabreccias and do not allow delineation of a sharp intrusive boundary.
 - Other sources of outcrop data used in the compilation of these maps
Hill, J. D.
1960. Field notes and maps pertaining to field work in the Nottawanwan River area. Unpublished data on file with the Newfoundland Department of Mines.
Wheeler, E.P. II
1952. Adamellite intrusive north of Davis Inlet, Labrador. Bulletin of the Geological Society of America, Volume 65, pages 1031-1050.
1972. Anorthositic-adamellite-basement relations in the Ikkinkullit drainage basin. In The Nain Anorthosite Project, Labrador: Field Report 1972. Edited by S.A. Morse, Contribution No. 11, Geological Department, University of Massachusetts, Amherst, Mass., pages 65-70.
1973. Plutonic and metamorphic rocks of Ikkinkullit headwaters. In The Nain Anorthosite Project, Labrador: Field Report 1973. Edited by S.A. Morse, Contribution No. 13, Geological Department, University of Massachusetts, Amherst, Mass., pages 45-62.
 - Names in parentheses are unofficial, and refer to features and/or follow orthography given in Wheeler, E.P. II
1953. List of Labrador Eskimo Place Names, National Museum of Canada, Bulletin 131, 105 pages.
- Geology by B. Ryan and D. Lee, July - August, 1985. Additional outcrop data compiled from sources given in Note 3. These are provisional geological maps and any additional data would be appreciated. The legend, symbols and notes are common to both 14D/1 (Makhavinekh Lake) and 14D/8 (Reid Brook). Not all units, symbols or notes are relevant to this sheet.

LEGEND

MIDDLE PROTEROZOIC (AND YOUNGER?)

18 White-weathering hornblende-biotite tonalite and granodiorite
Many of the smaller dykes (shown schematically) in the other rocks of the area are of this type.

MIDDLE PROTEROZOIC (ELSONIAN PLUTONIC SUITE)

- Dominantly pink to orange-brown weathering, coarse-grained, hornblende (s. olivine ± clinopyroxene) quartz monzonite and granite; marginal phase is finer grained and porphyritic in places; white-weathering hornblende-biotite gneiss predominates northwest of Trout Pond.
This intrusion is characterized by ovoid potassium feldspar megacrysts, mantled by a rind of plagioclase containing concentric zones of mafic mineral inclusions (rapakivi texture). The unit is generally very deeply weathered, giving rise to friable outcrops with a rubby, somewhat granular and ruddy talus accumulations. The outer contact is steeply dipping, although shallow in places, but the inner contact with Unit 11 is subhorizontal.
17a - a border facies of densely porphyritic clinopyroxene-olivine quartz monzonite characterized by abundant plagioclase feldspar megacrysts and aggregates of megacrysts in a dark olivine-rich groundmass ("clot porphyry")
The feldspars show selected orientation. North of Reid Brook the clot porphyry is minimally interlayered with olivine-free, fine grained gabbro.
- Medium to coarse-grained, grey-white to rusty-weathering, hornblende-quartz monzonite to hornblende granite; locally contains fayalite and/or augite and/or their alteration products. Quartz commonly has a blue iridescent color and potassium feldspars are locally ovoid.
- Medium grained, white to pink-weathering, in places slightly rusty, hypidomorph-textured hornblende, clinopyroxene, and olivine-bearing quartz monzonite, quartz syenite, and granite 15g - chiefly grey to pink-weathering quartz-feldspar porphyry and fine grained quartz monzonite containing conspicuous spots of olivocratic black hornblende; these rocks display granoblastic-hornfelsic microstructures.
The porphyry is transitional into the fine grained quartz monzonite, and both show transitional and sharp intrusive contacts against the younger, coarser rocks of Unit 15.
- Rusty brown weathering, medium to fine-grained, locally porphyritic, gabbroic to quartz monzonitic; tabular to ovoid plagioclase feldspar phenocrysts (and xenocrysts); locally commonly comprising aggregates of smaller equant grains and interstitial quartz; locally contains hornblende and biotite; poikilitic orthopyroxene and hornblende.
These rocks are distinguished from Unit 13 by the absence of olivine, generally steeply dipping contacts against older rocks and the paucity of mineral layering.
- Chocolate-brown to rusty-brown weathering, medium-grained, but in places porphyritic and xenocrystic, olivine gabbro to quartz-bearing olivine monzonite; locally characterized by fine-colored plagioclase phenocrysts and dark grey plagioclase xenocrysts; the latter derived from fragmented anorthositic pyroxene and locally occurring black hornblende may be poikilitic, bronze-colored biotite blebs occur adjacent to quartzofeldspathic gneiss.
The unit is well layered and friable, occurring as a subhorizontal sheet, which is locally well layered. Anorthositic and gneissic inclusions are widely distributed within the unit, and it is transected by many younger granitic dykes.
13b - hornblende monogabbro and hornblende quartz monzonite
The felsic member of this subunit may be a younger intrusion related to Unit 15.
13c - grey to brown-weathering quartz-feldspar porphyry.
It contains inclusions of anorthositic and gneiss, and appears to be gradational into Unit 13. It locally shows evidence of being contemporaneous with a mafic sheet that occurs as an ovoid blob in the porphyry and forms a diffusely banded nod to it in the dykes. This porphyry is confined to the base of the gabbroic sheet in the area south of Makhavinekh Lake.
- Black to purplish-grey weathering, clinopyroxene-bearing troctolite and norite.
Sillite texture, defined by radiating plagioclase prisms, is well displayed by the unit east of Reid Brook.
12a - well-layered, rusty-brown to orange-weathering troctolite, olivine gabbro and olivine gabbroic; locally with comb-layering.
- Pale grey to white-weathering norite, leucocratic and anorthositic; variable grain size; textural variations range from subophitic pyroxene (has an homogeneous distribution) to biotitic pyroxene concentrated in ovoid spongy clots enclosing plagioclase.
These rocks are locally layered and show evidence of being the result of more than one intrusive episode. Adjacent to younger mafic rocks, the pyroxene is replaced by hornblende, epidote and cordierite, and plagioclase is altered ("bleached") to sericite, epidote and chlorite. Bleaching is particularly pervasive in the area south of Makhavinekh Lake where Unit 11 is overlain by the gabbroic Unit 13.
11 - foliated, schlieren, grey-weathering anorthositic of uncertain affinity.

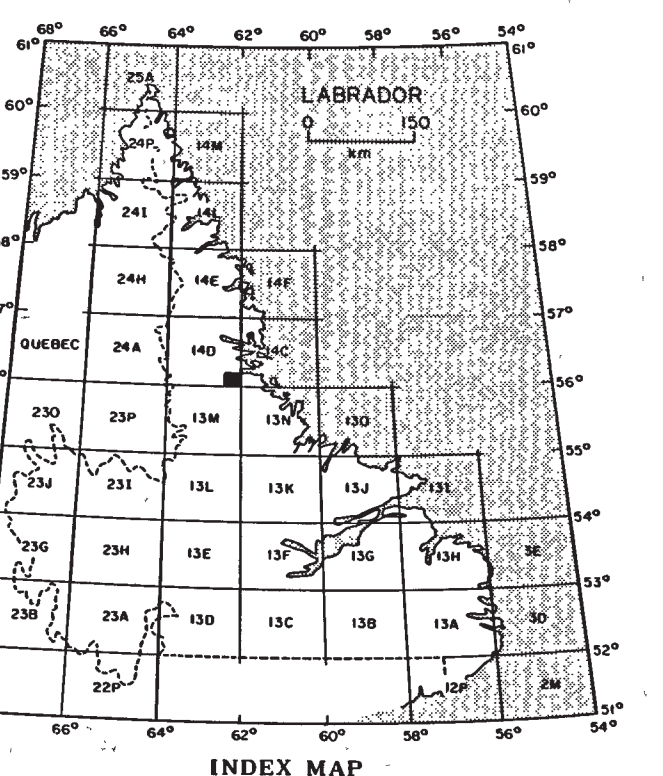
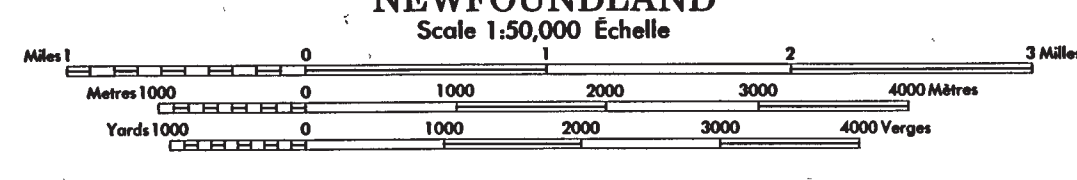
LOWER PROTEROZOIC (AND ARCHEAN?) (CHURCHILL PROVINCE)

- Rusty-weathering, friable, granitoid-pyroxene-hornfels facies, cordierite-rich gneiss; unit comprises alternating layers of nonitic composition and quartzofeldspathic layers containing lenticular, somewhat anastomosing, aggregates of biotite to purple cordierite. Locally contains osunilite or its breakdown products; contains narrow mafic granulite layers.
It is intruded by dykes and layer-parallel sheets of subophitic gabbroic Unit 16. This unit is an intensely contact-metamorphosed equivalent of Unit 2. Cordierite is secondary, due to contact metamorphic replacement of garnet by cordierite + hypersthene and of sillimanite by cordierite + garnet.
10s - graphite- and sulphide-rich paragneiss.
- Grey-weathering, granitoid facies, augite-textured, biotite-rich quartzofeldspathic gneiss containing white-weathering plagioclase facies; numerous screens of banded biotite gneiss, mafic gneiss, and rusty paragneiss; local injections of white garnetiferous aplitic to augen granite.
The fabric in the gneisses is chiefly an anastomosing type, and in many places is labeled aplitic and augen granite may be correlative with Unit 6, also contains minor pink granite sheets like Unit 1.
8 - biotite-rich, garnetiferous, locally sillimanite-bearing, quartzofeldspathic gneiss, and lesser amounts of hornblende-bearing varieties; interlayered mafic gneiss, and rusty sulphide-bearing paragneiss lenses; commonly migmatitic, having a fine-grained network of veins and sheets of mafic gneiss, white pink granite and granitic gneiss.
The latter rocks are possibly correlative with Units 5 to 7 or 8. Garnet in this gneiss is usually replaced by biotite, while orthopyroxene is preserved in parts of the gneiss.
8s - rusty, sulphide-bearing paragneiss and garnetiferous granite gneiss.
8a - layered mafic gneiss and foliated metabasite.
- Homogeneous, weakly foliated to mylonitic, pink-weathering granitic gneiss.
7s - rusty paragneiss.
- White to dark-grey weathering, garnetiferous granitic gneiss containing prominent white to pink-weathering plagioclase facies; numerous screens of biotite-rich gneiss, rusty paragneiss and mafic gneiss occur throughout the unit.
The granitic gneiss may be a variant of Unit 5. Garnet is locally replaced by green biotite.
8s - rusty paragneiss.
- White-weathering, siliceous, garnetiferous granitic gneiss, locally containing screens and wispy schlieren of paragneiss, amphibolite and biotite-rich gneiss.
The foliation varies from a whitish biotite alignment to an anastomosing mylonitic schistosity. Garnet is variably replaced by green biotite.
- Well-layered, amphibolite facies, grey, biotite-rich, quartzofeldspathic gneiss, containing layers and schlieren of rusty paragneiss; commonly garnetiferous and may be wholly of metamagmatic origin; locally contains parallel mafic gneiss lenses; extremely migmatized by layer-parallel to discordant networks of white to pink-weathering, commonly garnetiferous, granitic veins and sheets.
Garnets in this unit are variably replaced by cordierite + hypersthene adjacent to younger plutons.
4s - fine grained, laminated, grey to pale-brown, biotite-muscovite ± garnet ± cordierite metasediment.
4a - amphibolite.
- Mainly pale-brown to yellowish-brown weathering, massive to lined enderbite (orthopyroxene tonalite) to enderbite gneiss but locally varying in composition to gabbroic and mafic; elongate, monomineralic, orthopyroxene lenses characterize the unit in many places, and small garnets have been noted west of Makhavinekh Lake. On its northernmost exposures, the unit is transected in many places by a network of dark green pyroxene veins and white granitic dykes; some of the latter emanate from the rapakivi granite, which intrudes the enderbite in this area.
3s - rusty granitic paragneiss; southern units west of Makhavinekh Lake contain hypersthene + cordierite pseudomorphs of garnet.
- White to slightly rusty-weathering, granitoid facies, garnet + quartz + feldspar + biotite ± sillimanite gneiss; characterized by a lenticular quartz (mylonitic) fabric, that locally defines a gently-plunging lineation; red to lavender garnet is up to 5 cm in diameter and prismatic sillimanite is up to 3 cm in length.
The unit contains numerous tabular screens and schlieren of rusty paragneiss and discrete, and south of Trout Brook (Unit 16). Numerous mafic and intermediate granulite lenses are present south of Makhavinekh Lake. This gneiss unit, as a whole, has been affected by a pyroxene-bearing thermal overprint from the adjacent plutons, such that garnet is variably replaced by a grey-weathering, cordierite + hypersthene (± plagioclase ± olivine) assemblage and sillimanite is replaced by a black-weathering, cordierite + spinel assemblage.
2a - rusty-weathering, garnet + sillimanite + graphite + biotite + quartz + feldspar paragneiss and minor mafic granulite, white garnetiferous granite sheets are intruded subparallel to the gneissosity.
2m - mafic and intermediate granulite.
2g - white to pink-weathering, granitic sheet; locally pegmatoid; vertical to subhorizontal, and strongly foliated to undeformed.
Direct correlation of post-tectonic varieties with specific younger plutonic rocks is not firmly established. Some of these granitic sheets have elevated (5 to 20 times) radioactivity in comparison to surrounding gneisses.

ARCHEAN (NAIN PROVINCE)

- Grey to white-weathering, quartz-feldspar-biotite gneiss, containing abundant parallel layers and pods of mafic gneiss.
These rocks exhibit granitoid, retrogressed granulite- and amphibolite-facies mineral assemblages. Some of the mafic gneiss is derived from diabase dykes, which was emplaced during an early period of magmatism, but predating the imposition of a tectonic, somewhat mylonitic fabric with a steeply plunging lineation. Locally, the quartzofeldspathic gneiss has lenses and pods of massive to layered mafic gneiss of diverse origin, quartzite and biotite-rich metamagmatic gneiss.
1a - biotite-rich, cordierite-bearing metamagmatic schist and gneiss; garnet-bearing locally, associated with minor intercalated marble and calc-silicate rock, and grey to pink calcareous quartzite.
Westernmost unit on Akulakatak Peninsula exhibits contact metamorphic effects secondary to igneous, hypersthene and cordierite from adjacent rapakivi granite.
1m - dark-green to dark-grey-weathering, massive to banded, mafic gneiss.
1a - white-weathering, foliated and metamorphosed, gabbro, leucogabbro and anorthositic, locally containing dark-grey relics of igneous plagioclase.
These are intrusive into and contain relics of adjacent migmatites, and are locally characterized by mafic layers that may be metamorphosed dykes.
1g - buff to white-weathering, hypersthene-bearing granite; may be Proterozoic in age.

MAKHAVINEKH MOUNTAIN
LABRADOR NORTH DISTRICT
NEWFOUNDLAND
Scale 1:50,000 Echelle



INDEX MAP
MAP 89-17

Some names on this map are not official.
Geographic names are shown by the Surveying Branch.
CANTON SYSTEM, 1983 (21)
Division of Land Surveying and Mapping
North American Datum 1983
Department of Natural Resources