

References

Brouillette, P., Girard, E., and Huch-Vaena, G., 2019. Geological Survey of Canada Bedrock Data Model and tools: design and user guide documentation including ArcGIS® 7.5 add-in. Geological Survey of Canada, Open File 8247, 129 p. <https://doi.org/10.4095/8247>

Emanovics, I.F., 1993. Geology of Hopedale Block, southern Nash Province, and the adjacent Proterozoic terranes, Labrador, Newfoundland. Geological Survey of Canada, Memoir 431, 161 p. <https://doi.org/10.4095/183866>

Emanovics, I.F., 1992. Geology, northern Hopedale Block, Labrador, Newfoundland. Geological Survey of Canada, Map 1867A, scale 1:100 000. <https://doi.org/10.4095/183866>

Suggested Readings

Brines, 1959. Investigation of chrome garnet, Hopedale area, Labrador. CGS25, Newfoundland Department of Mines and Energy, File 13M/82, 3 p.

Brines, 1962a. Geological plan, anomaly 138, Newfoundland Department of Mines and Energy, File 13K15/5063, Map G63001-3, scale 1:24 000.

Brines, 1962b. Geology of Second Chance Lake, Newfoundland Department of Mines and Energy, File 13K15/5063, Map G63001-10, scale 1:31 680.

Brines, 1964. Shovelikujuk concession, Labrador, geology. Newfoundland Department of Mines and Energy, File 13K15/5063, Map G63001-1, scale 1:24 000.

Brines, 1971a. Geological survey northwest of Florence Lake 6-03/1970, Newfoundland Department of Mines and Energy, File 13K15/5068, Map G71007-1, scale 1:24 000.

Brines, 1971b. Geological survey Ujok Bay 6-03/1970, Newfoundland Department of Mines and Energy, File 13K15/5068, Map G71007-1, scale 1:24 000.

Emilia, R.F., 1980. Geology and petrology of the Harp Lake complex, central Labrador: An example of Eloxian magmatism. Geological Survey of Canada, Bulletin 286, 136 p. <https://doi.org/10.4095/102158>

H.L.J.D., 1962. Geology of the Flowers River-Nasakwan River area, Labrador. Newfoundland Department of Mines and Energy, Report 62, 162 p.

Jessieu, C.W., 1976. Structural, metamorphic and geochemical study of the Harp River area, central Nash Province, Labrador. MSc thesis, Memorial University of Newfoundland, St. John's, Newfoundland, 211 p.

Ryan, A.B., 1984. Regional geology of the central part of the Central Mineral Belt, Labrador. Newfoundland Department of Mines and Energy, Memoir 5, 193 p.

Ryan, A.B., Kay, A., and Emanovics, I.F., 1983. Notes to accompany Maps 83-38 to 83-41 showing the geology of the Malankuk subprovince between Kapook Bay and Bay of Islands, Labrador. Newfoundland Department of Mines and Energy, 21 p.

Taylor, F.C., 1977. Geology, Hopedale, Newfoundland. Geological Survey of Canada, Map 1443A, scale 1:250 000. <https://doi.org/10.4095/124181>

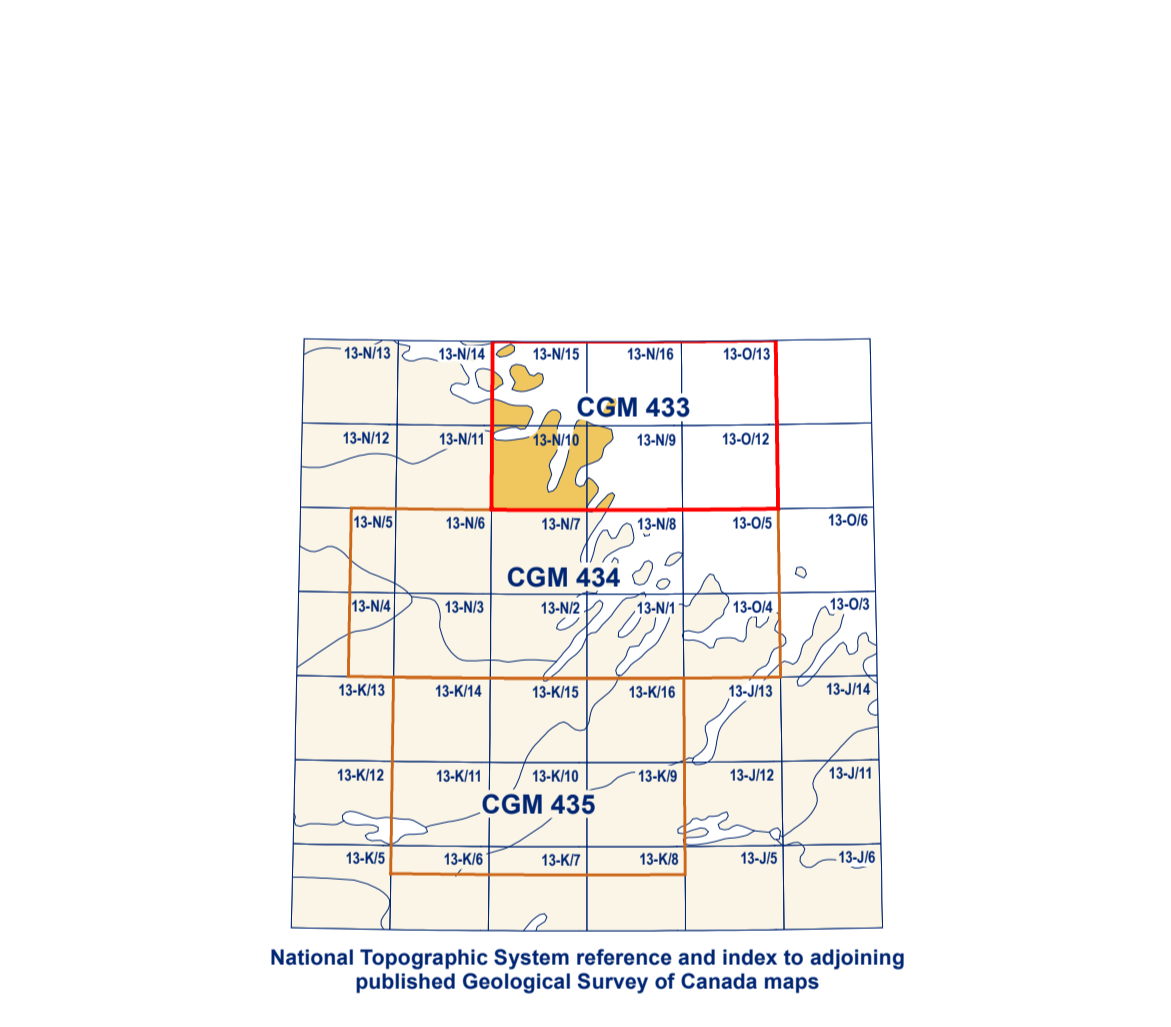
Taylor, F.C., 1979. Reconnaissance geology of a part of the Peabackton Shield, northeastern Quebec, northern Labrador and Northwest Territories. Geological Survey of Canada, Memoir 303, 99 p.

Abstract

This new bedrock geology map product represents the conversion of Map 1667A (Emanovics, 1992) and its legend to digital format. All geoscientific knowledge and information from Map 1667A have been converted to the Geoscientific Information System (GIS) format and are available in a consistent and accessible manner. The conversion of paper-only maps to digital format is intended to facilitate the efficient completion, interpretation, management, and dissemination of digital geoscientific information in a structured and consistent manner.

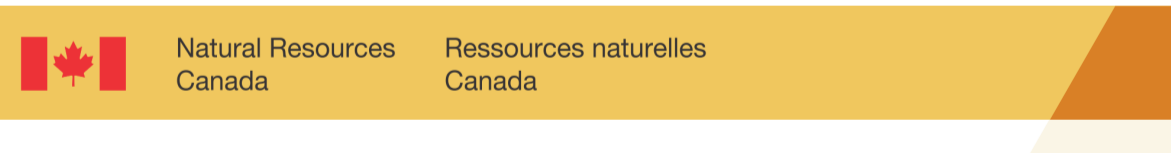
Résumé

Ce nouveau produit cartographique de la géologie du sous-sol (roubroux) correspond à la conversion en format numérique de la Carte 1667A (Emanovics, 1992) et de sa légende. Toutes les connaissances et l'information de nature géoscientifique de la Carte 1667A ont été converties en format numérique de la base de données géoscientifique de la Commission géologique du Canada (Brouillette et al., 2019). La conversion de cartes papier uniquement en format numérique est destinée à faciliter la complétion, l'interprétation, la gestion et la diffusion efficaces de l'information géoscientifique cartographique en mode numérique de façon structurée et cohérente.

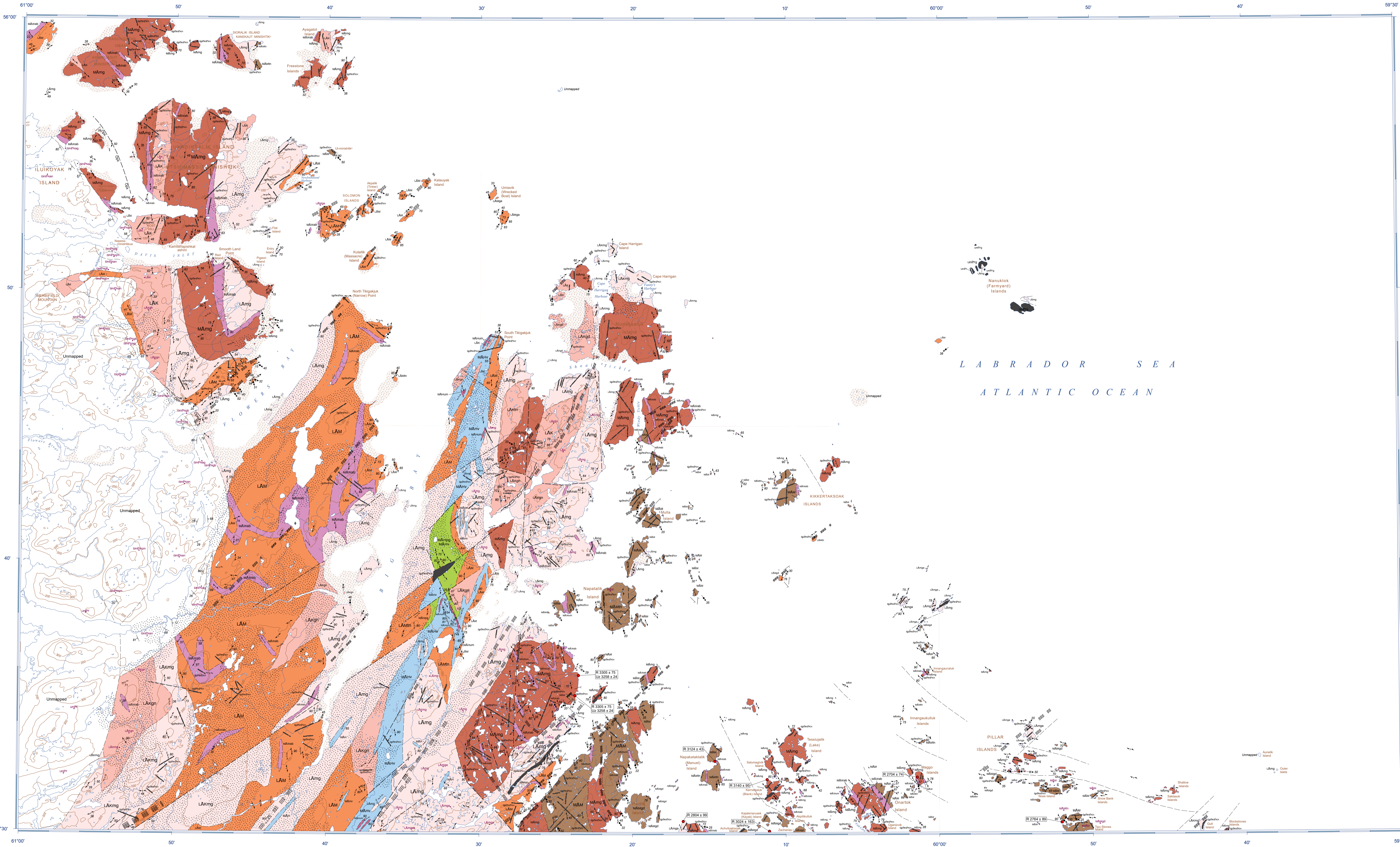


Catalogue No. M183-1143-2022-PDF
ISBN 978-0-662-1226-1
<https://doi.org/10.4095/29284>

© Her Majesty the Queen in Right of Canada, as represented by the Minister of Natural Resources, 2022



CANADIAN GEOSCIENCE MAP 433
BEDROCK GEOLOGY
NORTHERN HOPEDALE BLOCK
Newfoundland and Labrador
NTS 13-N/9, 10, 15, 16, and 13-O/12, 13
1:100 000



This legend is common to CGM 433, CGM 434, and CGM 435. Some map units may not appear on all maps.

QUATERNARY

- Unconsolidated deposits, gravel, stratified sand and silt; minor clay.

MAIN PROVINCE

EARLY PALEOPROTEROZOIC TO MESOPROTEROZOIC

KIKERTAVAK DIABASE-GABBRO-DIORITE

- LAKg** Diabase, gabbro, and diorite dykes of several generations including Harp dykes. Rb-S whole-rock ages of 2200 and 1200 Ma have been established (Emanovics, 1993).
- LAKm** Migmatite, felsic, gneiss, unfoliated metapelite rocks derived from middle Archean rocks; the age of the metamorphism accompanying the formation of this unit is ca. 2160 Ma (Emanovics, 1993); rocks may contain up to 20% microcline.
- LAKa** Metadiabase derived during amphibolite-facies metamorphism of polydeformed metapelite rocks.
- LAKz** Mobilized zone derived during intrusion of the Kanakitok Plutonic Suite (LAK).

LATE ARCHAEAN (A, FIORD STRUCTURAL TREND)

- LAK** Tonalite, granodiorite, and rare granite containing 10 to 15% biotite or hornblende, or both; medium- to coarse-grained, foliated to gneissic and locally schistose metapelite rocks; programs mineral assemblages include quartz (epidote), hornblende-biotite, and garnet-biotite. Rb-S whole-rock and U-Pb zircon determinations indicate an emplacement age of ca. 2170 Ma for the suite (Emanovics, 1993).
- LAm** Tonalitic rocks.
- LAng** Granodioritic rocks.
- LAsp** Gneissic and schistose rocks.

FLORENCE LAKE GROUP

- LAF** Mainly volcanic and felsic clastic and volcanoclastic rocks metamorphosed to upper greenschist facies; this regional metamorphism developed greenschist, biotite, muscovite, epidote, cordierite, and kaolinite contact-metamorphic assemblages produced during intrusion of the Kanakitok Plutonic Suite (LAK).
- LAFm** Ultramafic rocks; mainly serpentinite and rare asbestos; minor metapelite and metagabbro.

LISE LAKE FORMATION: felsic (colour index 15 to 20) and siliceous greywacke with argillaceous, gritty, and conglomeratic units; poorly bedded, rare granobed, locally basined; generally not reworked; disseminated sulphide minerals and rare cherty horizons.

- LALf** Fine graded members containing blue quartz clasts.
- LALp** Fine graded members containing plagioclase aggregates.

ADAKTOK FORMATION: intermediate (colour index 15 to 20, 35 to 40) greywacke with argillaceous siltstone, sandstone and conglomeratic clast; in part derived from mafic volcanic rocks; poorly sorted but locally finely layered.

- LALm** Local silt with hornblende phenocrysts.
- LALn** Minor carbonized ultramafic rocks.

SCHIST LAKES FORMATION: mafic layered flows and silt intercalated with 20% intermediate and lesser rocks; silt reflect composition of host rocks. Flows commonly average 12% matrix carbonates; minor ferrous melanich schistlike minerals and rare cherty horizons.

- LALiv** Local pillowed flows.
- LALi** Impure limestone (marble) and calcite.

MIDDLE ARCHAEAN (M, HOPEDALE STRUCTURAL TREND)

- MAng** MAGGO MIGMATITE: varied and anastomosingly reconstituted, irregularly layered, high-grade gneisses and quartzite; formed during shear deformation of Maggo gneisses and Weekes amphibolite; alkali-rich neosomes containing biotite, hornblende, and garnet grade to zones quartzofeldspathic and mafic-palaeosomes containing amphibole, garnet, pyroxene, and andesine.
- MAH** Polydeformed, polydeformed metasediments and meta-igneous rocks.
- MAHs** Pegmatite, foliated leucocratic rocks containing garnet, muscovite, and tourmaline.
- MAHgs** Gabbro, diorite, and quartz monzonite; medium- to coarse-grained rocks in which colour indices average 40; local gneissic variety.
- MAHga** Anorthositic and gabbroic rocks (colour index 14 to 20); layered gneisses comprising large amphibole inclusions in a polymorphic conglomerate and discontinuous layers; locally in areas of lesser strain, polycrystalline plagioclase concentrations of foetal size and larger occur in 10 to 30% interstitial granoblastic amphibole and pyroxene.
- MAHm** Ultramafic rocks; talcose serpentinite, tremolite schist, and hornblende; serpentinite weathers rusty brown and contains either primary or secondary olivine and orthopyroxene suggestive of peridotite source rocks.
- MAHsp** Metapelite, coarse-grained, porphyroblastic schist, stable mineral assemblages include plagioclase-cordierite-biotite, plagioclase-tourmaline-garnet, and quartz-Hollister-illite-muscovite; unit at Carole Lake contains biotite, andesine, titanite, cordierite, garnet, and kyanite.
- MAHsg** Paragneiss, variegated, granoblastic, layered (fleggy weathering), quartzofeldspathic gneiss (colour index 18 to 22); layered hornblende gneiss (colour index 20 to 40); minor hornblende-biotite schist; rocks were probably derived from greywacke; stable mineral assemblages include quartz, garnet, hornblende, and plagioclase-epidote-amphibole-dioptase.
- MAHv** Amphibolites; derived from tholeiitic basalts and hornblende sheets; subtly laminated (colour index 40 to 50); hornblende-biotite amphibolites in a fine-grained matrix of mafic plagioclase and minor quartz; members include hornblende-biotite and hornblende-biotite amphibolites restricted to laminae a few centimetres wide containing as much as 30% garnet; two occurrences of pillow structures were observed; late amphibolite, chlorite, epidote, and carbonate are ubiquitous; rocks of possible andesitic composition occur in northern half of Harp River belt.
- MAH** Unfoliated grey, leucocratic, granoblastic (porphyroblastic) quartzofeldspathic gneiss of locally granoblastic composition, and mesocratic hornblende gneiss cut by granoblastic, mafic, hornblende-plagioclase, biotite dykes (Hopedale dykes); a number of Rb-S whole-rock and U-Pb zircon determinations yield ages in the range 3000 to 3300 Ma; in part in whole younger than Harp River Group (Emanovics, 1993).
- MAHgd** Granodiorite-biotite porphyroblastic gneiss; locally layered and migmatized; microcline, biotite, hornblende quartz, plagioclase, and sporadic garnet give way westward to upper amphibolite and, locally, garnetiferous assemblages.
- MAHm** Tonalite gneiss; homogeneous, medium-grained; migmatite and hornblende gneisses occur locally; biotite, hornblende, quartz, plagioclase, epidote, and sporadic garnet give way westward to upper amphibolite and, locally, garnetiferous assemblages.

MAGGO GNEISS

- Unfoliated grey, leucocratic, granoblastic (porphyroblastic) quartzofeldspathic gneiss of locally granoblastic composition, and mesocratic hornblende gneiss cut by granoblastic, mafic, hornblende-plagioclase, biotite dykes (Hopedale dykes); a number of Rb-S whole-rock and U-Pb zircon determinations yield ages in the range 3000 to 3300 Ma; in part in whole younger than Harp River Group (Emanovics, 1993).
- Granodiorite-biotite porphyroblastic gneiss; locally layered and migmatized; microcline, biotite, hornblende quartz, plagioclase, and sporadic garnet give way westward to upper amphibolite and, locally, garnetiferous assemblages.
- Tonalite gneiss; homogeneous, medium-grained; migmatite and hornblende gneisses occur locally; biotite, hornblende, quartz, plagioclase, epidote, and sporadic garnet give way westward to upper amphibolite and, locally, garnetiferous assemblages.

WEEKES AMPHIBOLITE

- Rocks assumed to be derived in part from Harp River Group and in part from unknown, possible older rocks; hornblende-clinopyroxene-garnet, garnet-biotite, and hornblende-biotite orthopyroxene-hornblende gneiss may be orthopyroxene-clinopyroxene-garnet (hornblende, biotite) assemblages westward in the map area; includes amphibolites with Fordian S-L fabrics.

ULTRAMAFIC ROCKS

- Ultramafic rocks; mainly serpentinite, tremolite-talcite schists, and gneissiferous amphibolites; metastable orthopyroxene and rare olivine.
- Amphibolite, commonly associated with ultramafic rocks; unit 2 km west of Napasak Island contains biotite, gedrite, andesine, platinized cordierite, sillimanite, garnet, zircon, rutile, staurolite.
- Rare laminae and layers of ferrous or aluminous metasediments.

LATE ARCHAEAN (FIORD STRUCTURAL TREND)

MODIFIED MIDDLE ARCHAEAN GNEISS

- Tonalite gneiss; compositionally well preserved Maggo gneiss (MAH); Weekes amphibolite (MAHv), and truncated remnants of Hopedale dykes; may contain mixed Hopedale and Fordian S-L fabrics.
- Mainly texturally layered, porphyritic felsic gneiss.
- Mainly homogeneous, granoblastic felsic gneiss.
- Zones of boudinard, coarse-grained anorthositic rocks and amphibolite.

MAKKOVIV SUBPROVINCE

EARLY MESOPROTEROZOIC

KOKKORIV DYKES

- Dioritic dykes and sheets (amphophytic), subhorizontal to shallow-dipping, grey and weathering, amphibolite facies; locally zoned; two Rb-S whole-rock determinations indicate an age of 1640 Ma (Emanovics, 1993).
- Dabase and mafic dykes (rare occurrences).

LATE PALEOPROTEROZOIC

BALLET POND SCHISTS

- Texturally distinctive rocks probably derived from Windsor Harbour gneisses (after than Archean gneiss directly, may have developed during Kanakitok shear).
- Quartzofeldspathic and mafic layered schists derived from layered gneisses (ApHm or LAM).
- Felsic schists derived from granitic rocks (ApHm or LAK).

ISLAND HARBOUR PLUTONIC SUITE

- Trendy (granodiorite) and gabbro, unfoliated, coarse-grained, felsophytic, massive granitic and weakly foliated granodiorite commonly with epidote-biotite, muscovite, biotite (hornblende), and trace amounts of fluorite; early border phases of medium-grained, foliated, plagioclase-epidote, granodiorite; late leucocratic biotite-epidote, Rb-S whole-rock and U-Pb zircon age determinations yield 1790 to 1540 Ma for various phases of the suite (Emanovics, 1993).
- Porphyritic microcline granite.
- Trendy (granodiorite), variably foliate and plagioclase porphyritic.
- ApHm (hornblende gabbro) diorite, and hornblende.

EARLY MESOPROTEROZOIC

WINDSOR HARBOUR GNEISSES

- Unfoliated metapelite rocks derived from Archean rocks of adjacent Nash Province and characterized by thin amphibolite-biotite planar fabrics and by subvertical mineral lineations of Algebates age; concordant and discordant masses of massive to foliated tremolite and granite may comprise 30% of these map units.
- Laminated gneisses, derived from layered Archean assemblages including LAM and possibly MAH.
- Tonalite and granodiorite gneisses, derived from rocks of the Kanakitok Plutonic Suite (LAK).
- Anorthositic rocks and amphibolite, derived from middle Archean rocks (MAHm or MAHv); ultramafic (ApHm).
- Ultramafic rocks.

ARCHAEO OR PALEOPROTEROZOIC

- Granodiorite orthogneiss; homogeneous, variate, muscovite-biotite-bearing rocks of unknown derivation; may contain numerous schistose masses of felsic metapelite rocks.

EARLY MESOPROTEROZOIC

FLowers RIVER IGNEOUS SUITE

- Peralkaline granite, massive, fine- to medium-grained, leucocratic; rare, layered gabbro (ApHm).

EARLY MESOPROTEROZOIC

MAIN IGNEOUS COMPLEX (m-ig)

- Granitic rocks; fine- to medium-grained, quartz-poor, rusty-weathering amphibole, clinopyroxene, and olivine.
- Syenite and quartz syenite.
- Monzonite and quartz monzonite; mantles of K-feldspar enclose plagioclase.

ARCHAEO OR PALEOPROTEROZOIC

- Gabbroic and anorthositic rocks; clinopyroxene, orthopyroxene, and olivine plagioclase and plagioclase-olivine cumulates.
- Anorthositic and leucogabbro; coarse- to very coarse-grained, foliate plagioclase and plagioclase-olivine cumulates.
- Leucogabbro; medium- to coarse-grained, massive to layered.

ARCHAEO OR PALEOPROTEROZOIC

- Gabbro; fine-grained, plagioclase-phyc; occurs as thin, marginal phases between anorthositic (ApHm) or leucogabbro (ApHm), and host rocks of the complex.

HAPP LAKE COMPLEX (h-lc)

- Granitic rocks; medium- to coarse-grained, quartz-poor, rusty-weathering; amphibole, clinopyroxene, and olivine.
- Granitic, leucocratic, pink to red, rare olivine.
- Adamellite; local saprophy texture.

ARCHAEO OR PALEOPROTEROZOIC

- Gabbroic and anorthositic rocks; clinopyroxene, orthopyroxene, and olivine.
- Ferrodiorite, locally monzonitoid or diorite.
- Anorthositic, leucocratic, less common leucogabbro.
- Anorthositic, leucocratic, leucocratic, and minor leucogabbro.

CHURCHILL PROVINCE

INIRD GROUP

- A succession of mafic lavas, and gneissic conglomerate and coarse-grained sandstone altered to lower polymorphic textures; in part contact with Archean rocks.
- Conglomerate, felsic and polytomic; minor mafic volcanic conglomerate, sandstone and purple siltstone.
- Conglomerate, mafic volcanic conglomerate; minor felsic polytomic conglomerate, gff, sandstone, purple siltstone, and mafic lavas.
- Uniformly.
- Coarse-grained sandstone and minor purple siltstone and silt mudstone; minor polytomic conglomerate; rare diatitic rocks.
- Basalt, porphyritic; minor mafic to intermediate lavas and mafic volcanic conglomerate; rare pillowed lavas.
- Lavas, mafic to intermediate; minor porphyritic basalt and mafic volcanic conglomerate; rare pillowed lavas.

CHURCHILL PROVINCE GNEISSES

- Polymetamorphic gneisses to finely layered metapelite rocks of unknown derivation; biotite, amphibole, and rare garnet; diopside in numerous amphibolite inclusions and discontinuous layers; muscovite-bearing mylonite in a gradational tectonic contact with western part of Inird Group; in part older and younger than Inird Group.
- Granodioritic orthogneiss and gneissic migmatite.
- Laminated quartzofeldspathic gneisses, migmatite, and minor amounts of amphibolite.

GREENVILLE PROVINCE

SEAL LAKE GROUP

- Felsic basalts and conglomeratic silt; red sandstone and shale; unconformable on Archean rocks and the Harp Lake Complex (ApHm).

EARLY MESOPROTEROZOIC

BRUCE RIVER GROUP

- HEGGART LAKE FORMATION: massive to well bedded, buff to maroon, siliceous sandstone; minor polymorphic conglomerate and mudstone; less conformable on Moran Lake Group (ApHm).

Legend symbols:

- Rock outcrop, with map-unit designator
- Contact, undefined or deformational/unconformable
- Igneous layering, inclined
- Foliation
- Onset of orogenic mylonite
- Small silt, generally null
- Mineral lineation, generally in S-L fabric
- Fault, approximate
- Zone of highly deformed rocks, generally by shear
- Minor shear plane
- Location of age determination; age in million of years; rubidium-strontium, whole-rock (R); uranium-lead zircon (U)
- Intruded, orthopyroxene in
- Local occurrence, with map-unit designator

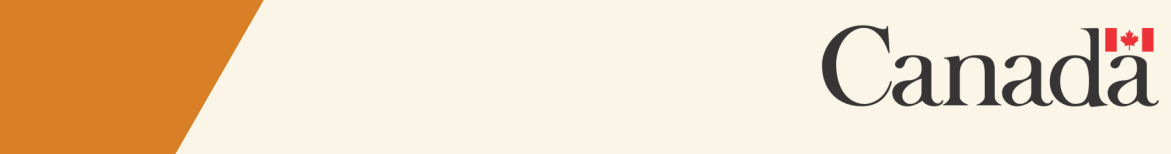
BEDROCK GEOLOGY
NORTHERN HOPEDALE BLOCK
Newfoundland and Labrador
NTS 13-N/9, 10, 15, 16, and 13-O/12, 13
1:100 000

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.
Elevations in metres above mean sea level.
Mean magnetic declination 2022, 21°08'W, decreasing 15.7' annually.
Readings vary from 21°15'W in the NE corner to 20°50'W in the SW corner of the map.
This map is not to be used for navigational purposes.

The Geological Survey of Canada welcomes corrections or additional information from users (geoscience-publications@nrcan.gc.ca).
Data may include additional observations not ported on this map. See map info document accompanying the distributed data for more information about this publication.
This publication is available for free download through GEOCAN (<https://geocan.nrcan.gc.ca>).

Author: Geological Survey of Canada
Geology by I.F. Emanovics, 1978 to 1981
Geological compilation by D. Corrigan and P. Brouillette, 2018 and 2019
Geology conforms to Bedrock Data Model v. 2.0 (Brouillette et al., 2019).
Geological data conversion by D. Corrigan and P. Brouillette, 2018 and 2019.

Geomatics by N. Côté and A. Morin
Cartography by N. Côté
Scientific editing by A. Weatherston
Initiative of the Geological Survey of Canada, conducted under the auspices of the Hudson-Ingalls project in part of Natural Resources Canada's Geo-mapping for Industry and Minerals (GEM) program
Map projection: Universal Transverse Mercator, zone 20
North American Datum 1983



Recommended citation
Geological Survey of Canada, 2022. Bedrock geology, northern Hopedale Block, Newfoundland and Labrador, NTS 13-N/9, 10, 15, 16, and 13-O/12, 13. Geological Survey of Canada, Canadian Geoscience Map 433 (Bedrock Data Model v. 2.0 conversion of Map 1667A), scale 1:100 000. <https://doi.org/10.4095/29284>