



Note: some units may not appear on all maps NAIN PROVINCE

- EARLY APHEBIAN TO HELIKIAN**
KIKKERTAVAK DIABASE-GABBRO
- Ak** Diabase and gabbro dykes of several generations including Harp dykes (Nhdb). Rb-Sr whole-rock ages of 2200 and 1200 Ma have been established
 - Akdb³** Diabase 3 m wide; Akdb diabase, width unspecified
 - Akdg¹⁵** Gabbro 15 m wide; Akds diorite; generally differentiates of large gabbro dykes

Unconsolidated deposits: gravel, stratified sand and silt; minor clay

LATE ARCHEAN (A, FIORD STRUCTURAL TREND)
MIGMATITE; felsic, gneissic, undivided metaplutonic rocks derived from middle Archean rocks. The age of the metamorphism accompanying the formation of this unit is ca. 2760 Ma. Rocks may contain up to 20% microcline

- Amga** Mobilized during amphibolite facies metamorphism of polymetamorphic metaplutonic rocks
- Akmg** Mobilized during intrusion of the Kanairiktok Plutonic Suite (Ak); screen migmatite

KANAIKTIKOK PLUTONIC SUITE
 Tonalite, granodiorite, and rare granite containing 10 to 15% biotite or hornblende, or both; medium- to coarse-grained, foliated to gneissic and locally schlieric metaplutonic rocks; prograde mineral assemblages include epidote (± plagioclase) + hornblende + biotite, and garnet + biotite. Rb-Sr whole-rock and U-Pb zircon determinations indicate an emplacement age of ca. 2838 Ma for tonalite and a metamorphic age of ca. 2760 Ma for the suite

- Ak** Tonalitic rocks
- Aktn** Tonalitic rocks
- Akgn** Gneissic and schlieric rocks

FLORENCE LAKE GROUP
 Mafic volcanic and felsic clastic and volcanoclastic rocks metamorphosed to upper greenschist facies; this regional metamorphism downgrades garnet, biotite, muscovite, andalusite, cordierite and staurolite contact metamorphic assemblages produced during intrusion of the Kanairiktok Plutonic Suite (Ak)

ULTRAMAFIC ROCKS: mainly serpentinite and rare asbestos; minor metapyroxenite, metagabbro

LISE LAKE FORMATION: felsic (colour index 15-20) and siliceous greywacke with argillaceous, gritty and conglomeratic units; poorly bedded, rare graded beds, locally banded; generally not reworked; disseminated sulphides and rare cherty horizons; generally grades to fine grained members containing blue quartz clasts (AFLq) or plagioclase aggregates (AFLp); minor carbonatized ultramafic rocks formation includes 20% intermediate rocks (AFA)

ADLATAK FORMATION: intermediate (colour index 15-20 - 35-40) greywacke with argillaceous siltstone, sandstone and conglomerate; clast, in part derived from mafic volcanics; poorly sorted but locally finely layered; sills with hornblende phenocrysts (AFAh); minor carbonatized ultramafic rocks (AFA); formation includes 50% mafic and felsic rocks (AFL and AFSV)

SCHIST LAKES FORMATION: mafic (colour index 35-40 - 70) layered flows and sills intercalated with 20% intermediate and felsic rocks; sills reflect composition of host rocks; flows are pillowed locally (AFSp), and commonly average 12% matrix carbonates; minor ferruginous metachert sulphide facies; AFsl, impure limestone (marble) and calcisilicate

MIDDLE ARCHEAN (A', HOPEDALE STRUCTURAL TREND)
MAGGO MIGMATITE: veined and anatectically reconstituted, irregularly layered, felsic granodioritic gneisses and amphibolites produced during shear deformation of Maggo gneisses and Weekes amphibolite; alkali-rich neosomes containing biotite, hornblende and garnet grade to zoned quartzofeldspathic and mafic paleosomes containing amphiboles, garnet, pyroxene and andesine

HUNT RIVER GROUP
 Polymetamorphic, polydeformed metasediments and meta-igneous rocks

PEGMATITE; foliated leucocratic rocks containing garnet, muscovite and tourmaline

GABBRO, DIORITE AND QUARTZ-MONZODIORITE; medium- to coarse-grained rocks in which colour indices average 40; gneissic layering is local

ANORTHOSITIC AND GABBROIC ROCKS (colour index 1-20); layered gneisses comprising lenses of amphibole in a granoblastic matrix of zoned labradorite-andesine, locally, in areas of lesser strain, polycrystalline plagioclase concentrations of football-size and larger occur in 10 to 20% interstitial granoblastic amphibole and pyroxene

ULTRAMAFIC ROCKS: talcose serpentinite, tremolite schist and hornblende; serpentinites weather rusty brown and contain either primary or secondary olivine and orthopyroxene suggestive of peridotite source rocks

METAPELITES: coarse grained, porphyroblastic schist; stable mineral associations include plagioclase + cordierite + biotite, plagioclase + staurolite + garnet, and quartz + biotite + sillimanite; unit at Canoe Lake contains biotite, andesine, staurolite, cordierite, garnet and kyanite

PARAGNEISS: variegated, granoblastic, layered (flaggy weathering), quartzofeldspathic gneiss (colour index 10-25); layered hornblende gneiss (colour index 20-40); minor tremolite/actinolite schist; rocks were probably derived from greywacke; stable mineral associations include biotite + garnet + staurolite, and plagioclase + epidote + amphibole ± diopside

AMPHIBOLITES: derived from tholeiitic basalts and hornblende sheets; subtly laminated; colour index 40-90; nematoblastic-hypidioblastic amphiboles in a fine grained matrix of mainly plagioclase and minor quartz. Members include diopside amphibolite, and garnetiferous amphibolite restricted to laminae a few centimetres wide containing as much as 30% garnet. Two occurrences of pillow structures were observed; late amphiboles, chlorite, epidote and carbonate are ubiquitous. Rocks of possible andesitic composition occur in the northern half of Hunt River belt

MAGGO GNEISS
 Undivided grey, leucocratic, granoblastic (± porphyroblastic) quartzofeldspathic gneisses of tonalitic-granodioritic composition, and mesocratic hornblende gneiss cut by granoblastic, mafic, hornblende-plagioclase, tholeiitic dykes (Hopedale dykes). A number of Rb-Sr whole-rock and U-Pb zircon determinations yield ages in the range 3000 to 3300 Ma; in part or in whole younger than Hunt River Group

GRANODIORITE-TONALITE PORPHYROBLASTIC GNEISS; locally layered and migmatized; microcline, biotite, hornblende, quartz, plagioclase and sporadic garnet give way westward to upper amphibolite and, locally, granulite facies 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, granulite facies assemblages

RElict GRANULITE FACIES, linedated, granodioritic rocks and layered quartzofeldspathic gneisses; probable equivalents of A' Mgd and A' Mtn confined to mainly west of longitude 61°20' of the map area where the rocks are progressively overprinted by Proterozoic greenschist facies; east of this longitude orthopyroxene is only locally metastable in amphibolite facies

WEEKES AMPHIBOLITE
 Rocks assumed to be derived in part from Hunt River Group and in part from unknown, possible older rocks; hornblende + clinopyroxene + garnet, garnet + biotite, and hornblende + biotite + orthopyroxene + hornblende give way to orthopyroxene + clinopyroxene + garnet (± hornblende, biotite) assemblages westward in the map area. Includes amphibolites with Fjordian S-L fabrics

ANORTHOSITIC ROCKS associated with ultramafics and amphibolites

ULTRAMAFICS; mainly serpentinites, tremolite-actinolite schists and garnetiferous amphibolites; metastable orthopyroxene and rare olivine

AMPHIBOLITE; commonly associated with ultramafics and rare laminae and layers of ferruginous or aluminous metasediments (A' wpl); unit 2 km west of Nagatsaik Island contains biotite, gedrite, andesine, phillitized cordierite, sillimanite, garnet, zircon, rutile, and ± kyanite

LATE ARCHEAN (FIORD STRUCTURAL TREND) MODIFIED MIDDLE ARCHEAN GNEISS

- A'M** Tonalitic gneiss; compositionally well preserved Maggo gneiss (A'M), Weekes amphibolite (A'W), and transposed remnants of Hopedale dykes. May contain mixed Hopedale and Fjordian S-L fabrics
- A'Mgd** Mainly texturally layered, porphyritic, felsic gneiss
- A'Mtn** Mainly homogeneous, granoblastic felsic gneiss
- A'Mga** Zones of boudined, coarse grained anorthositic rocks and amphibolite

MAKKOVIK SUBPROVINCE

PALEOHELIKIAN
KOKKORVIK DYKES
 Dioritic dykes and sheets (Lamprophyric); subhorizontal to shallow dipping, grey-red weathering, amphibole-phyric; locally zoned. Two Rb-Sr whole-rock determinations indicate an age of 1640 Ma; superscript indicates width of dyke

DIABASE AND MAFIC DYKES (rare occurrences)

BALLET POND SCHISTS
 Tectonically distinctive rocks probably derived from Windsor Harbour Gneisses rather than Archean gneiss directly. May have developed during Kanairiktok Shear

QUARTZOFELDSPATHIC AND MAFIC LAYERED SCHISTS derived from layered gneisses (A'HM or A'M)

FELSIC SCHISTS derived from granitic rocks (A'HK or A'K)

ISLAND HARBOUR PLUTONIC SUITE
 Trondhjemite (granodiorite) and granite; undivided, coarse grained, feldspar-phyric, massive granite and weakly foliated granodiorite commonly with epidote/allanite, muscovite, biotite (± hornblende) and trace amounts of fluorite; early border phases of medium grained, foliated, plagioclase-phyric granodiorite; late leucocratic trondhjemite-dykes. Rb-Sr whole rock and U-Pb zircon age determinations yield 1790 to 1840 Ma for various phases of the suite

PORPHYRITIC MICROCLINE GRANITE

TRONDHJEMITE (GRANODIORITE); variably foliate and plagioclase porphyritic

APPINITIC (HORNBLende GABBRO) DIORITE AND HORNBLende

MIGMATITE AND GNEISSIC GRANODIORITE; Archean gneisses deformed during early Proterozoic and intruded by rocks of the Island Harbour Plutonic Suite; includes gneissic granodiorite that may have formed during synkinematic intrusion of early granodiorite (A'Pg)

MORAN LAKE GROUP (Am)
WARREN CREEK FORMATION; grey to black mudstone, slate, siltstone, sandstone, minor limestone, dolostone and chert

JOE POND FORMATION; massive and pillowed basalt, pillow breccia and bedded tuff; minor dolostone and chert; unconformably on Archean rocks

KIKKERTAVAK METADIABASE - METAGABBRO (AkM)
 Discordant amphibolites derived from early members of the Kikkertavak diabase and gabbro dyke swarm, (Ak). Dykes become green and foliate 2 - 3 km in Proterozoic 'forelands' (mapped as Archean) east of Ingrid Group, and northwest of Moran Lake Group and in Kanairiktok Bay

DISCORDANT AMPHIBOLITE derived from gabbroic dykes

DISCORDANT AMPHIBOLITE 3 m wide; derived from diabase and unspecified mafic dykes

WINDSOR HARBOUR GNEISSES
 Undivided metaplutonic rocks derived from Archean rocks of adjacent Nain Province and characterized by thinned amphibolite facies planar fabrics and by subvertical mineral lineations of Aphebian age. Concordant and discordant masses of massive to foliate trondhjemite and granite may compose 30% of these map units

LAYERED GNEISSES, derived from layered Archean assemblages including A'M and possibly A'W

TONALITE AND GRANODIORITE GNEISSES, derived from rocks of the Kanairiktok Plutonic Suite (Ak)

ANORTHOSITIC ROCKS AND AMPHIBOLITE, derived from middle Archean rocks (A'Hga or A'Wan); ultramafic A'HWU

GRANODIORITE ORTHOGNEISS; homogeneous, seriate, muscovite-biotite-bearing rocks of unknown derivation; may contain numerous schlieric masses of felsic metaplutonic rocks

LAYERED QUARTZOFELDSPATHIC GNEISSES, MIGMATITE AND MINOR AMOUNTS OF AMPHIBOLITE

GRANODIORITIC ORTHOGNEISS AND GNEISSIC MIGMATITE

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GRANODIORITIC ORTHOGNEISS AND GNEISSIC MIGMATITE

NAIN-CHURCHILL PROVINCES

- NEOHELIKIAN**
FLOWERS RIVER IGNEOUS SUITE
- Nf** Peralkaline granite; massive, fine- to medium-grained, leucocratic; rare, layered gabbro (Nfg)
- HARP DYKES**
 Diabase dykes; fresh olivine diabases, in part gabbroic and olivine-phyric; Nhdb, diabase width unspecified

PALEOHELIKIAN
NAIN IGNEOUS COMPLEX (Pn)
 '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

GABBROIC AND ANORTHOSITIC ROCKS: clinopyroxene, orthopyroxene and olivine

ANORTHOSITE AND LEUCOGABBRO; coarse- to very coarse-grained, foliate plagioclase and plagioclase-olivine cumulates

LEUCOGABBRO; medium- to coarse-grained, massive to layered

GABBRO; fine grained, plagioclase-phyric; occurs as thin, marginal phases between anorthosite (Pnan) or leucogabbro (Pnag), and host rocks of the complex

HARP LAKE COMPLEX (Ph)
 'Granitic' rocks: medium- to coarse-grained, quartz-poor, rusty-weathering; amphibole, clinopyroxene and olivine

GRANITE; leucocratic, pink to red, rare olivine

ADAMELITE; local rapakivi texture

GABBROIC AND ANORTHOSITIC ROCKS: clinopyroxene, orthopyroxene and olivine

FERRODIORITE, locally monzodiorite or diorite

ANORTHOSITE, LEUCONORITE, LESS COMMON LEUCOGABBRO

ANORTHOSITE, LEUCOCROCOLITE, LEUCONORITE, MINOR LEUCOGABBRO

GABBRO; massive to weakly layered; occurs as thin marginal phases between anorthositic rocks and host rocks of the complex

CHURCHILL PROVINCE

INGRID GROUP

A A succession of mafic lavas, and polymictic conglomerate and grits altered to lower greenschist facies; fault contact with Archean rocks

Aicf Conglomerate, felsic and polymictic; minor mafic volcanic conglomerate, sandstone and purple siltstone

Aicm Conglomerate, mafic volcanic; minor felsic polymictic conglomerate, grit, sandstone, purple siltstone and mafic lavas

Ais Grit, sandstone and minor purple siltstone and silty mudstone; minor polymictic conglomerate; rare dacitic rocks

Aipv Basalt, porphyritic; minor mafic to intermediate lavas and mafic volcanic conglomerate

Aimv Lavas, mafic to intermediate; minor porphyritic basalt and mafic volcanic conglomerate; rare pillowed lavas

CHURCHILL PROVINCE GNEISSES
 Polymetamorphic gneissic to finely layered metaplutonic rocks of unknown derivation; biotite, amphibole and rare garnet; diopside in numerous amphibolite 'inclusions' and discontinuous layers; muscovite-bearing mylonite in gradational tectonic contact with western part of Ingrid Group; in part older and younger than Ingrid Group

GRANODIORITIC ORTHOGNEISS AND GNEISSIC MIGMATITE

LAYERED QUARTZOFELDSPATHIC GNEISSES, MIGMATITE AND MINOR AMOUNTS OF AMPHIBOLITE

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GRANODIORITIC ORTHOGNEISS AND GNEISSIC MIGMATITE

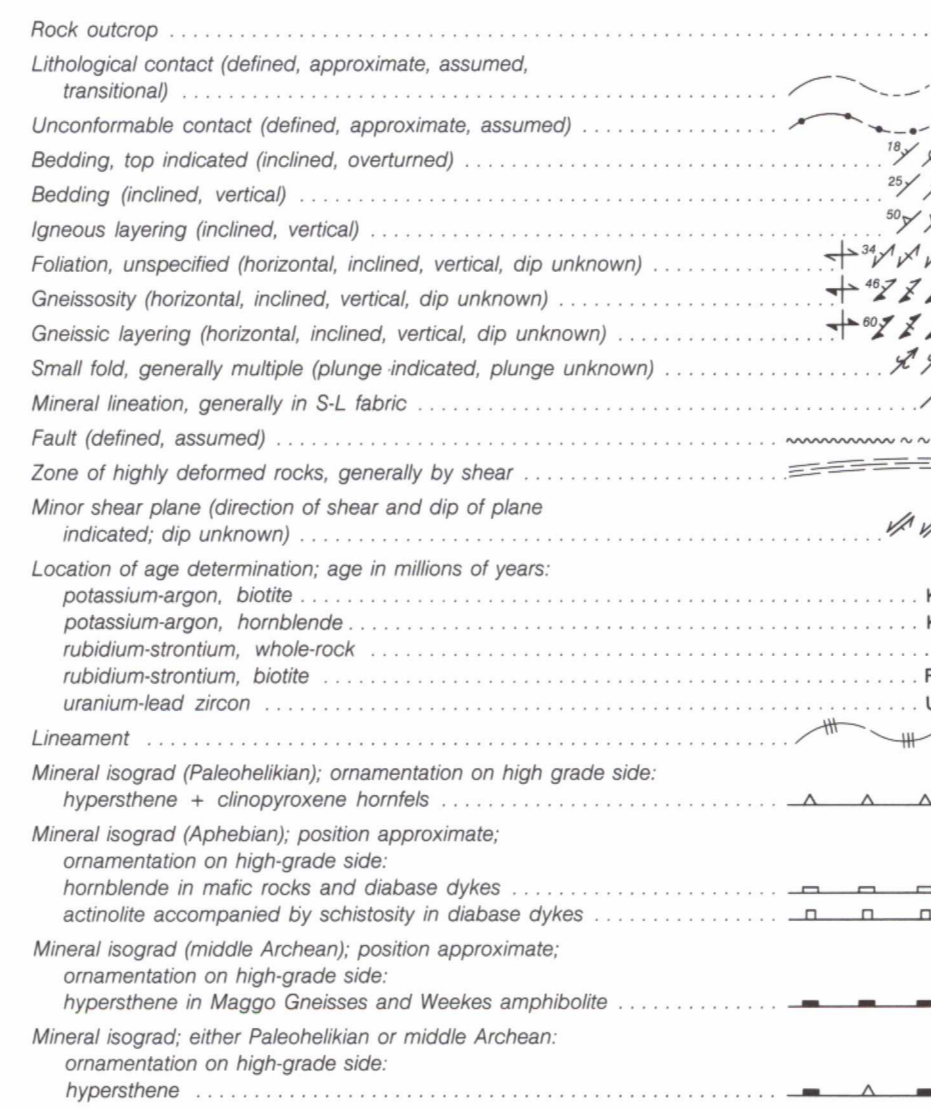
LAYERED QUARTZOFELDSPATHIC GNEISSES, MIGMATITE AND MINOR AMOUNTS OF AMPHIBOLITE

GRANODIORITIC ORTHOGNEISS AND GNEISSIC MIGMATITE

GRENVILLE PROVINCE

NEOHELIKIAN
SEAL LAKE GROUP
 Plateau basaltic and comagmatic sills; red sandstone and shale; unconformable on Archean rocks and the Harp Lake Complex (Ph)

PALEOHELIKIAN
BRUCE RIVER GROUP
 HEGGART LAKE FORMATION; massive to well bedded, buff to maroon, arkosic sandstone, minor polymictic conglomerate and mudstone; lies unconformably on Moran Lake Group (Am)



Geology by I.F. Ermanovics, 1978-1981; and assistants: J.A. Korstgård, 1980-1981; I. Annesley and M. Mazurski, 1979; A.E. Lalonde and J. Pearson, 1980
 Compilation by I.F. Ermanovics, 1985
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THIS LEGEND ACCOMPANIES MAPS 1667A, 1668A, AND 1669A
 Geology of the Hopedale Block, Labrador, Newfoundland, by I.F. Ermanovics

1667A-1669A (legend)



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