SUMMARY DESCRIPTIONS OF MAP UNITS FOR
1:50 000 scale NTS SHEETS 14D/3,4,5 and 6, and 24A/1 and 8
(Not all units are present on this sheet)

QUATERNARY

Surficial deposits

Glacial and fluvial deposits of sand, gravel, and boulders; swamp and bog locally, especially on map sheets 14D/4 and 14D/5. (Significant bedrock outcrops, in addition to those indicated on the maps as being visible on the ground or spotted from the air, are likely present within some of the areas dominated by the glacial debris, particularly on the walls of river valleys.)

MIDDLE MESOPROTEROZOIC

Strange Lake intrusive suite

MZ-S *Western part of map sheet 24A/8, along the border with Quebec.*
Fine- to medium-grained, hornblende-biotite granitoids, alkali feldspar granite; includes pegmatitic and aplitic phases; crystallization age, indicated by U-Pb isotopic data from zircon, is 1240 +/- 2 Ma (see Geochronological Notes for map sheet 24A/8).

Nain (Harp) dykes?

MZ-H *The largest olivine gabbro dykes in the area, particularly those found on map sheets 14D/3 and 4. These are especially prominent examples of rocks otherwise encountered only as "phenocryst-free" dykes as described in an accompanying map note regarding dyke symbols.*
Predominantly medium- to coarse-grained olivine- and titanaugite-bearing, locally friable, diabase and gabbro, but some rocks are olivine-free. Except for a local low-temperature alteration of the olivine to iddingsite, the rocks are fresh looking. Ophitic textures are common, although the finest grained parts of these dykes exhibit microscopic quenched textures and microphenocrysts of plagioclase and pyroxene. These dykes are probably members of a 1270 Ma swarm which intrudes the Nain Plutonic Suite along the Labrador coast. The olivine gabbro intrusion (Unit MZ1) may be contemporaneous with these dykes or it may be an older intrusion.

Nain Plutonic Suite

MZ1 *Confined to the northeast corner of map sheet 14D/3.*
Fine-grained to very coarse-grained, dark-green- to brown- to white-weathering, biotite-bearing olivine gabbro and leucogabbro; locally displays a crude stellate array to the plagioclase laths. Generally massive, but locally exhibits a well-defined plagioclase lamination and a diffuse compositional layering. This intrusion is geologically disconnected from the closed members of the 1350 -1290 Ma Nain Plutonic Suite (NPS), but may be the same age. Alternatively, it may be related to a slightly younger dyke swarm that intrudes the NPS (see Unit MZ Dm above), and thus be a particularly large example of these gabbroic dykes.

EARLY MESOPROTEROZOIC

Napeu Kainiut intrusion

MN-M *Confined to the westernmost edge of map sheets 14D/4, and parts of 24A/1 and 8.*
Hypidiomorphic quartz monzonite and granite; probably the same age as the Mistastin Lake batholith, but lacks rapakivi characteristics.

Mistastin Lake batholith

M1-Mg *Occupies the southern parts of map sheets 14D/3 and 4.*
Predominantly medium to coarse-grained chamoisite (orthopyroxene-bearing) quartz monzonite and granite, displaying rapakivi characteristics such as ovoid quartz "eyes" and potassium feldspar megacrysts having plagioclase mantles; locally has more mafic, quartz-free, syenitic variants (margefer) along its margin. The chief mafic mineral is inverted pigeonite, locally occurring with subordinate hornblende and biotite along the western margin; olivine appears to be absent. Fine-grained mafic enclaves derived from the disaggregate of contemporaneous mafic intrusions are locally present. Rafts/septa of the country rock gneisses and AnD5(b)(b) massive anorthositic rocks are widely distributed, and a pyroxene hornfels thermal metamorphic aureole has developed in the gneisses adjacent to the batholith (see accompanying additional note on map sheets 14D/3 and 4 regarding the extent of the aureole).

M1-Mm *Occurs only along the southern part of map sheet 14D/3.*
Medium- to coarse-grained subophitic leuconorite and anorthosite, having widespread distribution of chatoyant plagioclase (labradorite).

LATE PALEOPROTEROZOIC

Granite of uncertain affinity

PS-GO *Designates an areally-restricted unit near the Quebec border, straddling map sheets 14D/5 and 24A/8*
White-weathering massive to weakly foliated granitic pegmatite, locally having screens of gneiss and being anomalously radioactive by comparison with enclosing gneissic rocks. This unit may be a variant of Unit P3-CG or Unit P1-CG.

PS-DG *Includes only the granitic rocks of the western parts of map sheets 14D/4 and 5.*
Massive to weakly foliated, generally medium- to fine-grained, pink biotite-muscovite granite, having rare garnet; pegmatoidal phases are locally present. The unit possibly includes rocks of more than one generation, and may, in part, be the larger expression of some of the massive to weakly deformed granitic pegmatites that are intruded into the gneisses. It is possible that some of the granitic rocks assigned to Unit APC-DGgp are equivalent to this unit, but the two are separated on the maps because this unit seems to postdate the mylonitic imprint of the abutting gneisses and contains inclusions of mylonitized foliated gneisses, whereas Unit APC-DGgp appears to share the mylonitic imprint and exhibits the mylonitic foliation. U-Pb data from zircon and monazite within one medium-grained massive intrusion provide ambiguous ages for the time of crystallization - from ca.1990 Ma to ca. 1760 Ma (see Geochronological Notes for map sheet 14D/4, sample 14D/4(1)).

PALEOARCHEAN TO MIDDLE PALEOPROTEROZOIC

Churchill Province Gneisses and Associated Rocks

Gabbronorite dykes

P1-DG *The largest granular dykes found in the area, especially on map sheets 14D/3, 4 and 5. These dykes are particularly prominent examples of intrusions that are otherwise encompassed by "first generation" dykes as described in the accompanying map note regarding dyke symbols.*
Generally dark-green to grey to brown, fine- to medium-grained, granular rocks, but locally are coarse-grained. These are "granulite facies" rocks, containing both ortho- and clinopyroxene, but this gabbronorite mineral assemblage may be, in part, a primary rather than metamorphic feature. The dykes retain relicts of gabbroic texture, and locally contain variably recrystallized plagioclase phenocrysts several centimetres in maximum size (e.g., southeast corner of map sheet 14D/5); some of the best preserved plagioclase phenocrysts exhibit flashes of iridescent sheen.

Gabbronorite, monzogabbronorite, gametiferous granite, and schistose to gneissose derivatives

P1-DGn *Early Paleoproterozoic. Confined to western part of map sheet 14D/4 and the eastern part of map sheet 14D/5.*
Undivided migmatitic unit comprising the mafic rocks of units P1-CG and P1-DGs intruded by white to pink gametiferous granite of Unit P1-CGw. Either the mafic or granitic rock may be the dominant one in individual outcrops; mafic rocks in areas of abundant gametiferous granite are likewise garnet-bearing.

P1-DGs *Early Paleoproterozoic. Confined to western parts of map sheet 14D/4,5 and the eastern part of map sheets 24A/1 and 8.*
White-, to pale-grey-, to pink-weathering, gametiferous and non-gametiferous massive to foliated biotite granite, and biotite+/-garnet granitic gneiss derived from it; orthopyroxene or sillimanite is locally present, and some of the rocks are enderbitic. These granitoid rocks occur chiefly as large bodies and metre-scale dykes intrusive into units P1-CG and P1-DGs; some may locally prove to a lit-par-lit type migmatite (cf. Unit P1-CGm). These rocks display a variety of foliation types, varying from a weak mineral fabric to a distinct gneissic layering; high strain zones have ultramylonitic rocks. Garnets in this unit have two habits: (i) a homogeneous type randomly scattered through the rock, having irregular to oval morphology, and seemingly syn- to post-tectonic, and (ii) elongate, pretectonic(?) aggregates within the foliation and having associated green spinel, likely derived by granulite-facies metamorphic transformation of another mineral. The unit also locally contains numerous screens of mafic rocks, and may include some gametiferous rocks of supracrustal origin.

P1-DO *Early Paleoproterozoic. Confined to map sheet 24A/8, near the Quebec border.*
Charnockitic, mangeritic and enderbitic rocks, locally gametiferous, of unknown stratigraphic relationship to enclosing Unit P1-CG, but could be a more quartzofeldspathic variant of it. Most of the rocks assigned to this unit contain both orthopyroxene and clinopyroxene, as well as green to brown hornblende; some of the mangerites also have megacrysts of potash-rich potassium feldspar. This unit differs from Unit P1-CGpx in the paucity of biotite, the scarcity of garnet, and the lack of sillimanite.

P1-CGs *Early Paleoproterozoic. Confined to western parts of map sheets 14D/4 and 5 and the eastern parts of map sheets 24A/1 and 8.*
Rocks considered to be porphyritic equivalents of Unit P1-CG., having either plagioclase or, more commonly, potassium feldspar megacrysts. Most of the rocks are porphyritic quartz-bearing gabbronorite and monzogabbronorite, and augen schist and gneiss derived from them; restricted areas of nonporphyritic rocks also occur within this unit, as do more leucocratic rocks, including foliated enderbite and enderbitic gneisses. Regionally, this group of rocks is intruded by varying sized dykes of gametiferous granite, leading to a distinctly migmatitic gneiss in places. The augen gneisses encompassed by this unit differ from some superficially similar augen-textured gneisses within Unit AP-CDgn directly to the east in being pyroxene-bearing rocks.

P1-CG *Early Paleoproterozoic. Confined to western parts of map sheets 14D/4 and 5 and the eastern parts of map sheets 24A/1 and 8.*
A metamorphosed suite of plutonic rocks comprising predominantly fine- to medium-grained gabbronorite and foliated to gneissose derivatives, having components that locally contain quartz and potassium feldspar; rock types range from melanocratic gabbronorite to quartz-bearing gabbronorite and monzogabbronorite to leucogabbronorite. Hydrous minerals are, overall, a minor constituent of this unit on a regional scale; apatite and zircon are widespread accessory minerals, especially in those rocks having significant modal quartz and potassium feldspar. The two pyroxene mineral assemblage is so widespread that it is likely an igneous attribute of these rocks. Although this unit is predominantly characterized by massive rocks, it does contain some fine-scale compositional layering, as well as primary compositional layering on a scale locally preserved, most of these porphyritic rocks are, however, allocated to a separate map subdivision (Unit P1-CGs). U-Pb (zircon) dating of a little-deformed subophitic textured gabbronorite/qtz norite from this metamorphosed plutonic suite has yielded an age of 2304 Ma, interpreted to be the time of crystallization (see Geochronological Notes for map sheet 24A/8, sample 24A/8(1)).

Foliated quartz diorite

Paleoproterozoic? Unit confined to the western part of map sheet 14D/5

APC-Q A foliated mafic rock that mesoscopically resembles parts of Unit P1-CG but lacks the pyroxene of that unit; it may be an amphibolitized equivalent, but has microscopic features suggestive of a melanocratic variant of the more quartzofeldspathic rocks to the east, especially by the presence of hornblende, biotite and titanite. White, medium -grained to pegmatitic granite dykes are locally abundant.

Quartzofeldspathic gneisses of diverse origins

P1-DQ *Early Paleoproterozoic. Includes the "granitic" rocks between the granulite-facies gneisses and the layered metagabbronorite on map sheets 14D/4 and 5.*
This unit includes more than one generation and variety of granitic rocks, and in places it resembles Unit P3-CG. In the south, it differs from the Unit P3-CG rocks in having much more biotite, and locally having muscovite and sillimanite. In the north, these biotite-rich granitic rocks have an abundance of alanite and epidote. The unit locally displays high strain-zones having fabrics akin to the mylonitic foliation of rocks inclusive within the granite of Unit P3-CG, implying it had undergone deformation prior to the emplacement of the latter granite. The predominant rock of this unit is a biotite granite to granodiorite, commonly containing muscovite and garnet, but it encompasses rocks of broadly to granitic composition. The northern part of the unit on map sheet 14D/5 has very little potassium feldspar, whereas the southern part of the unit on map sheet 14D/4 comprises microcline-rich biotite-leucogranites; the widespread distribution of muscovite, garnet, and sillimanite in the latter imply the precursor magma was either derived from a metasedimentary source or that it has been contaminated by interaction with the same. Some of these rocks have a foliation that is defined simply by biotite-rich schlieren, others are foliated megacrystic types, whereas others are distinctly compositionally layered. This map subdivision also encompasses areas where an earlier biotite-hornblende gneiss (Unit AP-CGh) occurs as numerous screens, as well as undivided areas where the older gneiss is dominant but injected by appreciable amounts of the granitoid rock. The unit is locally mylonitized, and displays an augen structure defined by relicts of potassium feldspar megacrysts in a matrix of biotite schist and granitic gneiss; where such generations of granitic pegmatite are present, some pegmatites are affected by the mylonitic overprint whereas others postdate the mylonitization but are nevertheless locally openly folded or exhibit a pinch-and-swell morphology. Zones of anomalous radioactivity related to an abundance of alanite or another radioactive mineral, are present throughout the unit. A U-Pb (zircon) age of 2328 +55/-47 Ma from a felsic biotite granite in the central part of the unit (on map sheet 14D/5) probably represents the time of crystallization, whereas an age of 1946+/25 Ma from the same sample suite is assumed to be the time of metamorphism and accompanying partial melting. (There is some ambiguity with regard to the metamorphic history of this rock. No field nor petrographic evidence is found that this ca. 2330 Ma rock was ever subjected to granulite facies metamorphism, yet the adjacent granulite facies terrane is, by comparison with other parts of the Churchill Province in northern Labrador, considered to be a product of early to mid-regional metamorphism at ca. 1860 Ma.)

AP-DQg *Paleoproterozoic? Distributed over map sheets 14D/3 and 14D/6.*
Pink-weathering, fine-grained to pegmatoidal, microline-bearing, biotite leucogranite; rarely gametiferous. Has narrow screens of older migmatitic gneisses locally, and in parts of the older gneiss units these generally layer-parallel granitic intrusions may constitute over 50% of an outcrop area (smaller sheets are shown schematically in such areas on the maps). Deformational features vary widely in this unit, from being nonexistent, to a weakly developed quartz and biotite foliation characterized by undulose extinction in the quartz component, to a mylonite. Mylonitic rocks have a diffusely layered and gneissic aspect. None of the numerous intrusions encompassed by this map subdivision seem to have been metamorphosed to granulite facies, implying that emplacement postdated peak regional metamorphism (see comment at end of Unit P1-CGs). Some of the rocks assigned to this subdivision through the central part of map sheet 14D/6 may, instead, be part of Unit A-CQs. These granitic rocks are especially abundant on map sheet 14D/3 where they are interlayered with amphibolite-facies gneisses of the Mistastin River mylonite (shear) zone south of the Kogaluk River and with the granulite-facies gneisses along the north margin of the Mistastin Lake batholith. Proximal to the Mistastin Lake batholith, these rocks locally contain orthopyroxene that is interpreted to be of contact metamorphic (pyrometamorphic) origin. This map unit may be equivalent, at least, to the weakly foliated pink granitic rocks (Unit P3-CG) of map sheets 14D/4 and 14D/5, but the two have been separated by virtue of the fact that this unit is overprinted by regional mylonitic foliations whereas the western ones seem to postdate these fabrics.

AP-DQ *Unit occurs through the central and northwestern parts of map sheet 14D/4 and the western part of map sheet 14D/5.*
Dark-grey-weathering, biotite- and hornblende-rich gneiss and intercalated mafic gneiss, intruded in a lit-par-lit manner by several generations of medium-grained to pegmatoidal granite. The paleosomal component of this rock locally displays again of feldspar suggesting derivation from a quartzofeldspathic sediment, but most of the paleosome is composed of biotite-hornblende-quartz-feldspar hornblende psammite. In contrast to the paleosome of mesocratically similar granulite-facies rocks within Unit AP-CGp, those at amphibolite-facies have an abundance of titanite and allanite. The pegmatites likely that intrude this unit are probably related to the granitic rocks of units P1-CQf and P3-CG. This subdivision includes some rocks along its eastern margin that, if orthopyroxene were present, would be assigned to Unit AP-CGp.

ACGe *Archean. Confined to the eastern part of map sheet 14D/6.*
A pink- to white- to dark-gray-weathering, foliated granitoid to granitic gneiss, dominated by a variably containing prominent augen of white- to pink-weathering potassium feldspar and plagioclase (the former feldspar type is in excess of the latter). The unit is derived from a megacrystic plutonic protolith of overall granodiorite composition, but has within it more equigranular and finer grained granitic variants. North of Khongnikh Lake, the eastern part of the unit is charnockitic, having orthopyroxene and (lesser) clinopyroxene as regional constituents. The contact between the two subdivisions of the unit is rather abrupt at map scale, and although this boundary is portrayed as an "orthopyroxene-in" metamorphic isograd, it may demarcate, instead, a primary plutonic boundary or a tectonic contact between superficially similar rocks. In the western, pyroxene-free, rocks, biotite appears to be the sole mafic mineral. Farther north of Khongnikh Lake, but both hornblende and biotite are present south of the lake, biotite and alkali are widespread in the mafic component of the rocks, and the augen are pinkish in hue. The rocks are locally lacking a gneissose aspect. In the small brook north of Khongnikh Lake a mylonitic fabric is crosscut by amphibolite dykes, whereas in the brook at the southeast corner of the sheet the dykes predate the mylonitic fabric, relationships that can be interpreted in several ways with respect to episodes of deformation and dyke emplacement. Other outcrops exhibit a composite fabric produced by the folding and transposition of an early foliation; granitic veining and migmatization accompanied the generation of the composite fabric. In strongly deformed rocks the original feldspar megacrysts are reduced to leucocratic streaks ("ex-augen"), lenticular to lozenge-shaped polycrystalline aggregates) separated by anastomosing mafic ribbons. Screens of biotite-rich paragneiss are commonly present in the more homogeneous parts of the unit. Garnet, spinel, alanite, sillimanite, and muscovite is present where this metaphoric rock abuts (has intruded) the most extensive areas of metasedimentary rocks. Geochronological investigation of a foliated, sillimanite-bearing, megacrystic biotite-rich granite from this unit near Khongnikh Lake has indicated a crystallization age of 2574+/-4 Ma (See Geochronological Notes for map sheet 14D/6, sample 14D/6(2)) consistent with the field conclusion, based on the presence of "first generation" dykes, that this is an Archean rock (see accompanying notes regarding dykes).

Amphibolite-facies quartzofeldspathic gneisses

AP-CAg *Likely includes Neoarchean and Paleoproterozoic rocks. This unit encompasses all the amphibolite-facies rocks east of the granulite-facies rocks on map sheet 14D/3 as well as the gneisses on map sheets 14D/5 and 6.*
This is a multicomponent, undivided, gneissic unit that includes a wide variety of rocks, and may be equivalent to the gray hornblende-biotite gneisses west of the granulites on map sheets 14D/4 and 14D/5. The majority of the gneisses assigned to this large subdivision are pale-grey-, dark grey-, buff-, pink- and white-weathering, variably migmatitic, quartzofeldspathic rocks, having a melanocratic paleosome of quartz dioritic to tonalitic to granodiorite composition, injected by a white-weathering biotite-leucogranitic neosome. The local preservation of feldspar augen in the paleosome implies that some parts of the plutonic precursor had been porphyritic; some of the augen gneisses within this unit along the northern margin of map sheet 14D/6 resemble those of Unit A-CQs to the east, and could be intrusives related to the latter unit. Hornblende and biotite are the main mafic minerals in these amphibolite-facies rocks, but in some cases hornblende is absent. The rocks are commonly migmatitic, locally nebulitic, and the local preservation of orthopyroxene indicate that granulite facies conditions were locally reached or that the plutonic precursor was locally an orthopyroxene-bearing rock (e.g. eastern part of map sheet 14D/3; northeastern part of map sheet 14D/6). These gneisses are locally characterized by conspicuous porphyroblasts of black hornblende, are rarely gametiferous (perhaps, in some cases, signifying a mesasedimentary component), and are locally strongly mylonitic (especially along the eastern side of map sheet 14D/3 - the Mistastin River mylonite zone). Mafic layers (amphibolite; mafic granulite), from a few centimetres to a couple of metres in width, some of which are derived from mafic dykes, are an integral part of these gneisses. Massive to foliated pink granite dykes (probably mostly related to Unit AP-CQgp) are widespread components, and in some places give rise to a "sheeted complex" of mesocratic to melanocratic migmatite and leucocratic granite. A number of generations of granitic pegmatite are present; some pegmatites are affected by the mylonitic fabric of the gneisses, but others postdate the mylonitization but are nevertheless locally openly folded or exhibit a pinch-and-swell morphology. Zones of anomalous radioactivity related to an abundance of alanite or another radioactive mineral, are present throughout the unit. A U-Pb (zircon) age of 2328 +55/-47 Ma from a felsic biotite granite in the central part of the unit (on map sheet 14D/5) probably represents the time of crystallization, whereas an age of 1946+/25 Ma from the same sample suite is assumed to be the time of metamorphism and accompanying partial melting. (There is some ambiguity with regard to the metamorphic history of this rock. No field nor petrographic evidence is found that this ca. 2330 Ma rock was ever subjected to granulite facies metamorphism, yet the adjacent granulite facies terrane is, by comparison with other parts of the Churchill Province in northern Labrador, considered to be a product of early to mid-regional metamorphism at ca. 1860 Ma.)

Granulite-facies quartzofeldspathic gneisses

AP-CGp *Likely includes Neoarchean and Paleoproterozoic rocks. Predominant rock type through the western part of map sheet 14D/3, the eastern half of map sheets 14D/4 and 14D/5, and the central part of map sheet 14D/6.*
An undivided and diverse group of buff-, white-, grey- and pink-weathering gneissic rocks; the majority are granitic in composition, but this unit does include a few rocks of intermediate to mafic compositions (including metamorphosed mafic dykes) in this setting do have granulite facies assemblages. Predominant rock comprises a gray to buff paleosome alternating with a white to pink granitic neosome (a "pink-and-grey" gneiss), especially those rocks that transgress the boundary between map sheets 14D/3 and 14D/4, and those occurring along the northern half of the boundary between map sheets 14D/5 and 14D/6. A mesocratic plutonic rock having a random array of pink granitic veins seems to have been the protolith to the gneisses in some places, and gneiss rise to the layered pink and grey aspect of the rocks in some places. The unit includes homogeneous, schlieric, and diffusely- to nebulous-layered metaplutonic rocks having a already discernuous foliation, as well as compositionally well-layered gneisses and granite-veined migmatitic gneisses; laminar-banded "straight gneisses" are present within parts of the paleosome. Mafic layers (amphibolite; mafic granulite), from a few centimetres to a couple of metres in width, are locally abundant (especially in the eastern half of map sheets 14D/5 and 6). In the Long Pond area, especially, these granulitic gneisses are invaded by largely concordant pink aplitic and pegmatitic granitic sheets. Enderbitic and charnockitic compositions dominate within the unit, but more quartz-dioritic variants are locally present. Both biotite and hornblende are normally present in the granulite-facies rocks, and define the foliation, but some parts of the unit are almost devoid of biotite. The Kogaluk River, the border area between map sheets 14D/5 and 14D/6, Orthopyroxene lozenges and lenticular gray quartz are the foliation-forming minerals in some areas. Clinopyroxene is locally volumetrically significant, and garnet is rare but widely distributed, especially in hornblende-rich layers along the western side of the unit on sheet 14D/5. The rocks locally have a speckled appearance from pulverulent orthopyroxene and/or hornblende.

This unit may represent the same group of rocks as the hornblende-biotite gneisses to the east and west, but at a higher metamorphic grade - the contact as demarcated on the maps is largely a metamorphic boundary. The unit certainly contains gneisses derived from more than one generation of granitoid rocks, as evident just west of Moon-base lake where interbanded mafic gneisses and quartzofeldspathic gneisses are injected by sheets of white weathering, homogeneous, more siliceous gneiss. The unit probably includes rocks with a wide age range; the least deformed and non-layered ones mesocortically resemble the Archean tonalitic rock (Unit AN-CT) along the northeast margin of map sheet 14D/3 (e.g., have dark gray plagioclase and quartz with little to no potassium feldspar). The majority of the gneisses are strongly deformed and to anorthositic layers are locally abundant. Mafic outcrops have metamorphosed and deformed mafic dykes, presumed to be of Paleoproterozoic age, both oblique and parallel to the gneissic layering. The dykes generally lack the veined and migmatized aspect of the gneissose plutonic host, and their presence has proven to be a fairly reliable indicator that the host protolith, as well as the migmatite event it exhibits, are Archean. Gneisses without the dykes that are grouped in this unit are less-reliably designated as Archean and thus could be Paleoproterozoic. The high-grade metamorphism exhibited by these rocks is presumed to be a Paleoproterozoic event, partly because it overprints the mafic dykes, but alternatively, the metamorphism could be Archean and the granulite-facies assemblage of the dykes is a "primary" one (a feature induced by recrystallization in the deep crust shortly after emplacement. Rocks of this gneissic unit from near Long Pond, where U-Pb (zircon) data from a felsic gneiss has been interpreted to indicate a crystallization age of 2822 Ma (metamorphic age from zircon of 2801+/-6.27 Ma (see Geochronological Notes for map sheet 14D/3, sample 14D/3(2)). Mylonitic foliations and a fine-laminated aspect characterize these rocks straddling the boundary between map sheets 14D/4 and 14D/5, defining the Moon-base shear zone. A laminated and mylonitic "straight gneiss" from within the Moon-base shear zone has yielded a U-Pb (metamorphic) age of 1857 ±3 Ma from thorites(?) (see Geochronological Notes for map sheet 14D/5, sample 14D/5(1)).

Meta-anorthosite and related rocks

A-CAm *Paleoarchean to Neoarchean. Confined largely to the Long Pond - Kogaluk River area, along the western margin of map sheet 14D/3 and the eastern margin of map sheet 14D/4. minor occurrences elsewhere in the area.*
Predominantly white-weathering, locally quartz-bearing, recrystallized and foliated anorthosite and leucogabbronorite and migmatized variants; biotite and black hornblende in the more mafic rocks provide a colour contrast that highlights both remnant primary textures and the superimposed foliation. The unit, as outlined on the maps, includes both areally coherent masses and also zones of inclusion trains within quartzofeldspathic migmatitic gneisses (some individual outcrops in the latter setting may have few such inclusions, and thus contacts bounding the anorthositic rocks could be constructed differently from shown). Localized high-strain zones within the anorthositic and leucogabbroic rocks are widely distributed in the gneisses distal from the main belts as well (see Symbols list). Primary structures such as oval feldspar megacrysts and compositional layering, are locally well-preserved in the rocks of this map unit, and melanocratic layers have been folded into tight to isoclinal folds accompanied by recrystallization. Most of the anorthositic and leucogabbronorite rocks are locally plastically intruded and "exploded" by the surrounding quartzofeldspathic gneisses, and they are cross-cut by deformed and metamorphosed mafic dykes that postdate the emplacement of the plutonic precursor to the quartzofeldspathic gneisses and its subsequent migmatization. The foregoing intrusive relationships with the mafic dykes were features initially used as a field indicator of Archean age for this map unit, and this interpretation was subsequently confirmed by zircon geochronology of quartzofeldspathic gneisses that host numerous rafts of anorthositic and leucogabbroic rocks (see Unit APCQn and Geochronological Notes for map sheet 14D/3, sample 14D/3(2)). Parts of this unit were mapped as Archean on the basis of lithologic similarity to the anorthositic rocks of the Mistastin Lake batholith; the anorthositic and leucogabbroic rocks in the eastern half of map sheet 14D/3, and in the northeast corner of map sheet 14D/6, are granoblastic types comprising plagioclase, clinopyroxene and orthopyroxene (see accompanying note on the thermal aureole on map sheets 14D/3 and 14D/4).

AP-CDh *Archean. Confined to the western part of map sheet 14D/6.*
A pink- to white- to dark-gray-weathering, foliated granitoid to granitic gneiss, dominated by a variably containing prominent augen of white- to pink-weathering potassium feldspar and plagioclase (the former feldspar type is in excess of the latter). The unit is derived from a megacrystic plutonic protolith of overall granodiorite composition, but has within it more equigranular and finer grained granitic variants. North of Khongnikh Lake, the eastern part of the unit is charnockitic, having orthopyroxene and (lesser) clinopyroxene as regional constituents. The contact between the two subdivisions of the unit is rather abrupt at map scale, and although this boundary is portrayed as an "orthopyroxene-in" metamorphic isograd, it may demarcate, instead, a primary plutonic boundary or a tectonic contact between superficially similar rocks. In the western, pyroxene-free, rocks, biotite appears to be the sole mafic mineral. Farther north of Khongnikh Lake, but both hornblende and biotite are present south of the lake, biotite and alkali are widespread in the mafic component of the rocks, and the augen are pinkish in hue. The rocks are locally lacking a gneissose aspect. In the small brook north of Khongnikh Lake a mylonitic fabric is crosscut by amphibolite dykes, whereas in the brook at the southeast corner of the sheet the dykes predate the mylonitic fabric, relationships that can be interpreted in several ways with respect to episodes of deformation and dyke emplacement. Other outcrops exhibit a composite fabric produced by the folding and transposition of an early foliation; granitic veining and migmatization accompanied the generation of the composite fabric. In strongly deformed rocks the original feldspar megacrysts are reduced to leucocratic streaks ("ex-augen"), lenticular to lozenge-shaped polycrystalline aggregates) separated by anastomosing mafic ribbons. Screens of biotite-rich paragneiss are commonly present in the more homogeneous parts of the unit. Garnet, spinel, alanite, sillimanite, and muscovite is present where this metaphoric rock abuts (has intruded) the most extensive areas of metasedimentary rocks. Geochronological investigation of a foliated, sillimanite-bearing, megacrystic biotite-rich granite from this unit near Khongnikh Lake has indicated a crystallization age of 2574+/-4 Ma (See Geochronological Notes for map sheet 14D/6, sample 14D/6(2)) consistent with the field conclusion, based on the presence of "first generation" dykes, that this is an Archean rock (see accompanying notes regarding dykes).

AN-CT *Neoarchean. Confined to the northeastern corner of map sheet 14D/3.*
A pale-grey- to dark-grey- to pink-weathering rock, that varies from a weakly foliated, augen textured, hornblende +/- biotite tonalite to a tonalitic gneiss; screens of older migmatitic gneiss are locally present and the tonalite forms sheets in the proximal gneisses. It is possible that this unit is a well-preserved representative of the precursor to some the regional tonalitic gneisses. The tonalite exhibits abundant primary plutonic textural characteristics where least deformed, including a network of pink granitic veins that had intruded the darker rock prior to deformation. Primary plagioclase is dark gray, and the hornblende is disposed as clots that give the rock a speckled appearance; orthopyroxene is present in the northern part of the unit and seems to be a remnant of the igneous assemblage. The rock is locally weakly mylonitized, and in the ca. 2822 Ma metamorphosed and deformed basic dykes, a field feature that can be used as an indicator of an Archean age for this unit. A U-Pb age of 2677 +15/-12 Ma has been derived from zircon from this unit, supporting the field interpretation of the tonalite's age, and probably indicating the time of crystallization (see Geochronological Notes for map sheet 14D/3, sample 14D/3(1)).

Granulite-facies quartzofeldspathic gneisses

AP-CQg *Likely includes Neoarchean and Paleoproterozoic rocks. Predominant rock type through the western part of map sheet 14D/3, the eastern half of map sheets 14D/4 and 14D/5, and the central part of map sheet 14D/6.*
An undivided and diverse group of buff-, white-, gray- and pink-weathering gneissic rocks; the majority are granitic in composition, but this unit does include a few rocks of intermediate to mafic compositions (including metamorphosed mafic dykes) in this setting do have granulite facies assemblages. Predominant rock comprises a gray to buff paleosome alternating with a white to pink granitic neosome (a "pink-and-grey" gneiss), especially those rocks that transgress the boundary between map sheets 14D/3 and 14D/4, and those occurring along the northern half of the boundary between map sheets 14D/5 and 14D/6. A mesocratic plutonic rock having a random array of pink granitic veins seems to have been the protolith to the gneisses in some places, and gneiss rise to the layered pink and grey aspect of the rocks in some places. The unit includes homogeneous, schlieric, and diffusely- to nebulous-layered metaplutonic rocks having a already discernuous foliation, as well as compositionally well-layered gneisses and granite-veined migmatitic gneisses; laminar-banded "straight gneisses" are present within parts of the paleosome. Mafic layers (amphibolite; mafic granulite), from a few centimetres to a couple of metres in width, are locally abundant (especially in the eastern half of map sheets 14D/5 and 6). In the Long Pond area, especially, these granulitic gneisses are invaded by largely concordant pink aplitic and pegmatitic granitic sheets. Enderbitic and charnockitic compositions dominate within the unit, but more quartz-dioritic variants are locally present. Both biotite and hornblende are normally present in the granulite-facies rocks, and define the foliation, but some parts of the unit are almost devoid of biotite. The Kogaluk River, the border area between map sheets 14D/5 and 14D/6, Orthopyroxene lozenges and lenticular gray quartz are the foliation-forming minerals in some areas. Clinopyroxene is locally volumetrically significant, and garnet is rare but widely distributed, especially in hornblende-rich layers along the western side of the unit on sheet 14D/5. The rocks locally have a speckled appearance from pulverulent orthopyroxene and/or hornblende.

This unit may represent the same group of rocks as the hornblende-biotite gneisses to the east and west, but at a higher metamorphic grade - the contact as demarcated on the maps is largely a metamorphic boundary. The unit certainly contains gneisses derived from more than one generation of granitoid rocks, as evident just west of Moon-base lake where interbanded mafic gneisses and quartzofeldspathic gneisses are injected by sheets of white weathering, homogeneous, more siliceous gneiss. The unit probably includes rocks with a wide age range; the least deformed and non-layered ones mesocortically resemble the Archean tonalitic rock (Unit AN-CT) along the northeast margin of map sheet 14D/3 (e.g., have dark gray plagioclase and quartz with little to no potassium feldspar). The majority of the gneisses are strongly deformed and to anorthositic layers are locally abundant. Mafic outcrops have metamorphosed and deformed mafic dykes, presumed to be of Paleoproterozoic age, both oblique and parallel to the gneissic layering. The dykes generally lack the veined and migmatized aspect of the gneissose plutonic host, and their presence has proven to be a fairly reliable indicator that the host protolith, as well as the migmatite event it exhibits, are Archean. Gneisses without the dykes that are grouped in this unit are less-reliably designated as Archean and thus could be Paleoproterozoic. The high-grade metamorphism exhibited by these rocks is presumed to be a Paleoproterozoic event, partly because it overprints the mafic dykes, but alternatively, the metamorphism could be Archean and the granulite-facies assemblage of the dykes is a "primary" one (a feature induced by recrystallization in the deep crust shortly after emplacement. Rocks of this gneissic unit from near Long Pond, where U-Pb (zircon) data from a felsic gneiss has been interpreted to indicate a crystallization age of 2822 Ma (metamorphic age from zircon of 2801+/-6.27 Ma (see Geochronological Notes for map sheet 14D/3, sample 14D/3(2)). Mylonitic foliations and a fine-laminated aspect characterize these rocks straddling the boundary between map sheets 14D/4 and 14D/5, defining the Moon-base shear zone. A laminated and mylonitic "straight gneiss" from within the Moon-base shear zone has yielded a U-Pb (metamorphic) age of 1857 ±3 Ma from thorites(?) (see Geochronological Notes for map sheet 14D/5, sample 14D/5(1)).

AP-CQn *Archean and Paleoproterozoic? This unit encompasses biotite-rich quartzofeldspathic gneisses throughout the region, and may include rocks not derived from a sedimentary protolith.*
Most of the unit comprises white- to gray- to rusty-weathering, biotite +/- garnet +/- sillimanite +/- orthopyroxene-bearing, locally migmatitic, quartzofeldspathic gneiss; minor amounts of more stoichiometric anorthosite in lenticular sheets of the latter type have been observed in several discontinuous areas within the unit. Meta-ultramafic and mafic rocks are locally associated with the aluminous metasedimentary rocks. While to-gray, diffusely layered (relict bedding?) sillimanite+/-muscovite quartzite, perhaps derived from chert in some cases, is a widespread component within this unit, especially in the central part of map sheet 14D/3 and the northern part of map sheet 14D/6. Grey, gametiferous, biotite - hornblende gneisses, particularly through the central part of map sheet 14D/3 north of the Kogaluk River, are also assigned to this unit, but these may not be of supracrustal origin even though elsewhere similar rocks occur within belts dominated by aluminous paragneiss and quartzite. Likewise, some of the gametiferous biotite-rich grey gneisses assigned to this unit in the northwestern part of map sheet 14D/6 may not be of sedimentary derivation.

AP-CPg *Archean and Paleoproterozoic? This unit denotes the meta-carbonate rocks scattered through the area.*
Dark-grey- to brown-weathering nodular marble and calc-silicate rocks, having various combinations of calcite, diopside, titanite, scapolite, and grossularite. Found as metre-scale units locally interlayered with the biotite-rich paragneiss (e.g., the easternmost belt of gametiferous paragneiss crossing the brook east of Long Pond on map sheet 14D/3) and also as lenses and isolated inclusions within the grey hornblende - biotite migmatites elsewhere (see Symbols list). One small calcareous unit near the southeast margin of map sheet 14D/3 contains abundant phlogopite, fontierite, chondrodite (a humite group mineral) and spinel.

Tonalite and derived tonalitic gneiss

AN-CT *Neoarchean. Confined to the northeastern corner of map sheet 14D/3.*
A pale-grey- to dark-grey- to pink-weathering rock, that varies from a weakly foliated, augen textured, hornblende +/- biotite tonalite to a tonalitic gneiss; screens of older migmatitic gneiss are locally present and the tonalite forms sheets in the proximal gneisses. It is possible that this unit is a well-preserved representative of the precursor to some the regional tonalitic gneisses. The tonalite exhibits abundant primary plutonic textural characteristics where least deformed, including a network of pink granitic veins that had intruded the darker rock prior to deformation. Primary plagioclase is dark gray, and the hornblende is disposed as clots that give the rock a speckled appearance; orthopyroxene is present in the northern part of the unit and seems to be a remnant of the igneous assemblage. The rock is locally weakly mylonitized, and in the ca. 2822 Ma metamorphosed and deformed basic dykes, a field feature that can be used as an indicator of an Archean age for this unit. A U-Pb age of 2677 +15/-12 Ma has been derived from zircon from this unit, supporting the field interpretation of the tonalite's age, and probably indicating the time of cr