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GEOLOGICAL SURVEY OF CANADA
CANADIAN GEOSCIENCE MAP 216E
CANADA-NUNAVUT GEOSCIENCE OFFICE
OPEN FILE MAP 2015-03E

GEOLOGY

PRITZLER HARBOUR

Baffin Island, Nunavut

Map Information Document

Preliminary

Geological Survey of Canada
Canadian Geoscience Maps

2015

Canada

PUBLICATION

CANADA-NUNAVUT GEOSCIENCE OFFICE
BUREAU GÉOSCIENTIFIQUE CANADA-NUNAVUT
KANATAMI-NUNAVUMI GEOSCIENCE TITIGAKVIIT

Map Number

Natural Resources Canada, Geological Survey of Canada
Canadian Geoscience Map 216E (Preliminary),
Canada-Nunavut Geoscience Office
Open File Map 2015-03E

Title

Geology, Pritzler Harbour, Baffin Island, Nunavut

Scale

1:100 000

Catalogue Information

Catalogue No. M183-1/216-2015E-PDF
ISBN 978-1-100-25547-7
doi:10.4095/296109

Recommended Citation

St-Onge, M.R., Rayner, N.M., Steenkamp, H.M., and Gilbert, C., 2015. Geology, Pritzler Harbour, Baffin Island, Nunavut; Geological Survey of Canada, Canadian Geoscience Map 216E (preliminary); Canada-Nunavut Geoscience Office, Open File Map 2015-03E, scale 1:100 000. doi:10.4095/296109

ABSTRACT

This map synthesizes the field observations and initial interpretations for the Pritzler Harbour area following five weeks of regional and targeted bedrock mapping on the eastern Meta Incognita Peninsula, Baffin Island, Nunavut. Under the Geo-mapping for Energy and Minerals (GEM) Program, this area was targeted in 2014 to upgrade the geoscience knowledge and document the economic potential of the greater Iqaluit area south of Frobisher Bay. Field observations have constrained the distribution of metasedimentary units comprising quartzite, marble, psammite, pelite, and semipelite, all of which can be correlated with the contiguous middle Paleoproterozoic Lake

Harbour Group in the type area north of Kimmirut. The spatial distribution of a suite of layered mafic to ultramafic sills intrusive into the sedimentary strata in the western portion of the Pritzler Harbour map area was also documented and will be the focus of further study. Layering in the sills was observed on the centimetre to metres scale, with many bodies containing disseminated sulphide, some associated with ferricrete. The distribution of high-grade felsic and mafic plutonic rocks, tentatively interpreted as part of the middle Paleoproterozoic Cumberland Batholith, were delineated. Four distinct phases of deformation and two metamorphic episodes were recognized. The deformation and metamorphic events can be correlated with similar features and assemblages previously documented both on Baffin Island and on the Ungava Peninsula of northern Quebec, and will be utilized to compare, and improve on, existing regional tectonic models.

RÉSUMÉ

La présente carte intègre les observations de terrain et les interprétations préliminaires pour la région de Pritzler Harbour découlant de cinq semaines de cartographie régionale et à objectifs spécifiques du substratum rocheux de la partie est de la péninsule Meta Incognita, dans l'île de Baffin, au Nunavut. Cette région a été ciblée en 2014 dans le cadre du programme Géocartographie de l'énergie et des minéraux (GEM) dans le but d'améliorer le niveau de connaissance géoscientifique et de documenter le potentiel économique de la région d'Iqaluit, située au sud de la baie Frobisher. Les observations de terrain ont permis de délimiter la répartition d'unités métasédimentaires composées de quartzite, de marbre, de psammite, de pélite et de semipélite. Toutes ces unités peuvent être corrélées avec le Groupe de Lake Harbour contigu datant du Paléoprotérozoïque moyen dans la région type au nord de Kimmirut. La répartition spatiale d'une série de filon-couches mafiques à ultramafiques mis en place par intrusion dans les strates métasédimentaires dans la partie occidentale de la région de Pritzler Harbour a également été documentée et fera l'objet d'une étude plus approfondie. Une stratification d'ordre centimétrique à métrique a été notée, ainsi que la présence de nombreux filon-couches contenant des sulfures disséminés, qui parfois étaient associés à des sédiments ferrugineux. On a établi la répartition des roches plutoniques felsiques et mafiques de faciès métamorphique de forte intensité rattachées de façon préliminaire au batholite de Cumberland datant du Paléoprotérozoïque moyen. Quatre phases distinctes de déformation et deux épisodes métamorphiques ont été reconnus. Les événements de déformation et de métamorphisme, qui serviront à comparer et améliorer les modèles tectoniques régionaux existants, peuvent être corrélés avec des éléments structuraux et des assemblages métamorphiques similaires précédemment documentés dans l'île de Baffin et dans la péninsule d'Ungava, dans le nord du Québec.

ABOUT THE MAP

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This map is part of the Geo-mapping for Energy and Minerals (GEM) Program on Baffin Island led by the Geological Survey of Canada (GSC) in collaboration with the Canada-Nunavut Geoscience Office, Aboriginal Affairs and Northern Development Canada, Nunavut Arctic College, the University of Ottawa, and Carleton University.

Logistical support provided by the Polar Continental Shelf Program as part of its mandate to promote scientific research in the Canadian North. PCSP 31014

Map projection Universal Transverse Mercator, zone 19.
North American Datum 1983

Base map at the scale of 1:250 000 from Natural Resources Canada, with modifications.
Elevations in metres above mean sea level

Mean magnetic declination 2015, 27º15'W, decreasing 21.9' annually.
Readings vary from 26º49'W in the SW corner to 27º39'W in the NE corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Rocky canyon north-east of Pritzler Harbour and leading into York Sound, Meta Incognita Peninsula, Baffin Island, Nunavut. Canyon follows the trace of a normal fault (northwest side down) interpreted to be Paleocene in age. View to the southwest. Depth of canyon is 240 metres.
Photograph by M.R. St-Onge. 2014-226

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map.
See documentation accompanying the data.

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Preliminary publications in this series have not been scientifically edited.

Map Viewing Files

The published map is distributed as a Portable Document File (PDF), and may contain a subset of the overall geological data for legibility reasons at the publication scale.

ABOUT THE GEOLOGY

Descriptive Notes

HOW TO READ THE GEOLOGICAL MAP

The objective of mapping Meta Incognita Peninsula (Baffin Island) during the summer of 2014 was to improve the geological knowledge and document the economic potential of the greater Iqaluit area. Geological maps show the distribution of geological features, including different kinds of rocks and faults. Although the geology of every area is different, all geological maps have several features in common: coloured areas and letter symbols to represent the kind of rock unit at the surface in any given area, lines to show the type and location of contacts and faults, strike and dip symbols to show which way layers are tilted, and a map legend that explains the colours and symbols utilized.

The most striking features of geological maps are its colours. Each colour represents a different geological unit. A geological unit is a volume of a certain kind of rock of a given age range. Geological units are named and defined by the geologists who made the geological map, based on their observations of the kinds of rocks and their investigations of the age of the rocks. In addition to colour, each geological unit is assigned a set of letters to symbolize it on the map. Usually the symbol is the combination of an initial capital letter followed by one or more capital or lowercase letters. The first capital letter represents the age of the geological unit. Geologists have divided the history of the Earth into Eons. All letter symbols begin with a capital letter representing an Eon: for example Ᵽ (Paleoproterozoic - 2500 to 1600 million years ago), N (Neoproterozoic - 1000 to 541 million years ago), or Q (Quaternary – 2.58 million years ago until today). The following capital letters indicate the name of the unit, if it has one. Lowercase letters indicate the type of rock, if the unit has no name. The named rock units on Baffin Island are the “Narsajuaq arc”, named after similar igneous rocks in northern Quebec and near Kimmirut. Sedimentary rocks, also near Kimmirut, are named the Lake Harbour group. So ᵽLHq on the map would be the symbol for the Lake Harbour quartzite (deposited in the Paleoproterozoic), while Nd would be the symbol for an unnamed unit of diabase formed in the Neoproterozoic. You can see examples of the different rock types found on Meta Incognita Peninsula in the photos associated with this map.

The place where two different geological units are found next to each other is called a contact, and that is represented by different kinds of lines on the geological map. When different geological units have been moved next to one another after they were formed, the contact is a fault contact. Another kind of line shown on most geologic maps is a fold axis. In addition to being moved by faults, geological units can also be bent and warped into folds. A line that follows the crest or trough of the fold is called the fold axis. Often contacts are obscured by soil, vegetation, or lakes. Those places where the contact line is precisely located, it is shown as a solid line, but where it is uncertain it is shown as dashed. The lines on the map may also be modified by other symbols on the line (triangles, small tick marks, arrows, and more) which give more information about the line. For example, faults with triangles on them show that the side with the triangles has been moved up and over the side without the triangles. All the different symbols on the lines are explained in the map legend. Tilted layers are shown on a geological map with a strike and dip symbol. The symbol consists of three parts: a long line, a short line, and a number. The long line is called the strike line, and shows the direction in the layer that is still horizontal. Any tilted surface has a direction that is horizontal (think about walking on the side of a hill, there is always a way to go that is neither up nor down, but is level). The strike line shows that horizontal direction in the layers. The short line is called the dip line, and shows which way the layer is tilted. The number is called the dip, and shows how much the layer is tilted, in degrees, from flat. The higher the number, the steeper the tilting of the layer. Strike and dip symbols can be modified to give more information about the tilted layers just like lines can be, and these modifications are explained in the map legend.

All geological maps come with a table called a map legend. In the legend, all the colours and symbols are shown and explained. The map legend starts with a list showing the colour and letter symbol of every geological unit, starting at the top with the youngest or most recently formed units, along with the name of the unit (if it has one) and a short description of the kinds of rocks in that unit and their age. After the list of geologic units, all the different types of lines on the map are explained, and then all the different strike and dip symbols. The map legend will also include explanations of any other kinds of geologic symbols used on a map (locations where fossils were found, locations of deposits of precious metals, location of faults known to be active, and any other geological feature that might be important in the area shown by the geological map). Because the geology in every area is different, the map legend is vital to understanding the geological map.

Fieldwork and geological mapping on Meta Incognita Peninsula (Baffin Island) established the distribution of sedimentary rocks (Lake Harbour group; map units PLHq, PLHc, PLHs, PLHp) that can be correlated with rock formations in the vicinity of Kimmirut. A suite of magmatic sheets (sills) was documented and will be the focus of further study (map units PLHu, PLHm, PLHd). These are of potential economic importance as they contain metallic minerals (sulphides), and their occurrence could indicate the presence of economic metal concentrations. Four rock deformation and two thermal events were recognized. Such events can be correlated with similar ones that took place 1800 million years ago and have been previously documented both elsewhere on Baffin Island and on the Ungava Peninsula of northern Quebec. These results will be used to compare and improve models showing the ancient geological evolution of Nunavut.

DESCRIPTIVE NOTES

INTRODUCTION

The Geo-mapping for Energy and Minerals (GEM) program targeted the eastern Meta Incognita Peninsula in 2014 (Figure 1) to help complete the regional bedrock-mapping coverage for the southern half of Baffin Island. Fieldwork on the peninsula (parts of NTS 25-G, I, J, K, N, O) was led by the Geological Survey of Canada (GSC) in collaboration with the Canada-Nunavut Geoscience Office (CNGO). Regional and targeted bedrock mapping also involved participants from Aboriginal Affairs and Northern Development Canada, Nunavut Arctic College, University of Ottawa and Carleton University. This map presents a synthesis of the regional bedrock geology, the principal tectonostratigraphic units, and the main structural elements identified for the Pritzler Harbour area during fieldwork in 2014, supplemented by archival observations collected during the GSC's Operation Amadjuak in 1965 (Blackadar, 1967) and the South Baffin Project in 1995-97 (St-Onge et al., 1999a–g).

The metasedimentary and metaplutonic units on Meta Incognita Peninsula are part of the northeastern (Quebec–Baffin) segment of the Trans-Hudson Orogen, a collisional orogenic belt that extends in a broad arcuate shape from northeastern to south-central North America (Hoffman 1988; Lewry and Collerson, 1990), and which comprises tectonostratigraphic assemblages accumulated on, or accreted to, the northern margin of the lower-plate Archean Superior Province during the middle Paleoproterozoic (St-Onge et al., 2006, 2009). Northern Quebec and southern Baffin Island are characterized by three orogen-scale stacked tectonic elements (Figure 2; St-Onge et al., 2002), which include the following tectonostratigraphic units (from lowest to highest structural level):

- level 1 — Archean tonalitic orthogneiss interpreted as the northern continuation of the Superior craton and middle Paleoproterozoic supracrustal cover correlated with the Povungnituk Group, Ungava Peninsula (St-Onge et al., 1996);
- level 2 — dominantly monzogranitic and granodioritic middle Paleoproterozoic gneiss interpreted as the northern extent of the Narsajuaq arc (Scott, 1997; St-Onge et al., 2009), or alternatively as Narsajuaq-age intrusions emplaced within level 3 (Corrigan et al., 2009); and
- level 3 — the tectonostratigraphic units of the Lake Harbour Group (Jackson and Taylor, 1972) and a number of metaplutonic gneissic units interpreted as the cover sequence and crystalline basement of a middle Paleoproterozoic accreted terrane termed the 'Meta Incognita microcontinent' by St-Onge et al. (2000). Various plutonic phases of the Cumberland Batholith (Whalen et al., 2010) intrude all units in level 3.

TECTONOSTRATIGRAPHIC UNITS

Monzogranite gneiss and monzogranite-granodiorite-tonalite gneiss (units ⱣNm–ⱣNd)

Several types of compositionally layered metaplutonic rocks, including monzogranite gneiss and orthopyroxene-bearing monzogranite-granodiorite-tonalite gneiss (unit ⱣNm), hornblende anorthosite (unit ⱣNa) and hornblende-clinopyroxene quartz diorite (unit ⱣNd), occur at the lowest structural levels exposed along the western portion of the project area (Figure 1). The orthogneisses are in physical continuity with, and/or are lithologically similar to, plutonic rocks north and northeast of Kimmirut that have been correlated by Scott (1997), Wodicka and Scott (1997), Thériault et al. (2001) and St-Onge et al. (2002) with metaplutonic units of the middle Paleoproterozoic Narsajuaq arc in northern Quebec (Figure 2; St-Onge et al., 1992; Dunphy and Ludden, 1998). Targeted geochronological studies are planned to test this correlation.

Monzogranite–diorite gneiss (unit Ᵽmdg)

Buff- to pink-weathering, well layered orthopyroxene-biotite±hornblende monzogranite orthogneiss (unit Pmdg) underlies large areas between Pritzler Harbour, Newell Sound and York Sound (Figure 1). In most outcrops examined, the monzogranite gneiss is interlayered with subordinate, boudinaged, and discontinuous layers of hornblende-orthopyroxene-clinopyroxene diorite to quartz diorite (Figure 3). The distribution of the orthogneiss, its spatial association with the supracrustal rocks of the Lake Harbour Group (described below), and the relative overall strain contrast between gneissic and supracrustal units might suggest the orthogneiss represents the stratigraphic basement to the Lake Harbour Group. However, this is difficult to determine in the field as all observed contacts between orthogneiss and supracrustal units are tectonic and characterized by coplanar metamorphic fabrics, indicating at the very least some degree of reworking. It is anticipated that strategic geochronological analyses will help address this issue.

All components of the gneiss are crosscut by veins of white to pink biotite monzogranite and syenogranite that range from well foliated to relatively massive, and from a few centimetres to over a decametre in thickness (Figure 3). Similarities in rock type, mineral assemblage and amount of deformation suggest that the monzogranite and syenogranite veins are related to, and possibly comagmatic with, plutons of the Cumberland Batholith (see below) that intrude this unit in the study area.

Lake Harbour Group (units PLHq–PLHw)

The quartzite, marble, psammite, and semipelite mapped on the eastern Meta Incognita Peninsula are lithologically similar to the metasedimentary strata of the contiguous Lake Harbour Group in its type locality (St-Onge et al., 1996, 1998; Scott et al., 1997). In the Pritzler Harbour map area, the Lake Harbour Group is composed of quartzite (unit PLHq) structurally overlain by laterally continuous to boudinaged bands of pale grey to white marble and calcsilicate rocks (unit PLHc) in turn overlain by garnetiferous psammite (unit PLHp), and minor semipelite and pelite (unit PLHs).

Quartzite occurs as discrete, well-layered panels (Figure 4) several metres to several hundred metres thick. It is notably abundant along a broad band crossing the peninsula at the longitude of Newell Sound and the Middle Savage Islands (Figure 1). Quartzite layers compositionally range from orthoquartzite to feldspathic quartzite, commonly contain graphite±garnet±sillimanite and are strongly recrystallized. Primary sedimentary features such as crossbedding or graded bedding were not observed. Compositional layers within the psammite range from centimetres to tens of centimetres in thickness and can be traced for up to tens of metres along strike. They are defined by variations in the modal abundance of quartz, plagioclase, biotite, lilac garnet, sillimanite, rare cordierite and granitic melt (Figure 5). Garnet-sillimanite pelite typically occurs as thin layers within garnet-biotite semipelite, the latter subordinate within the psammite. The psammite and semipelite are generally rusty weathering, and characterized by trace amounts of disseminated graphite, pyrite and chalcopyrite. White leucogranite (unit PLHw), rich in lilac garnet and sillimanite, is a ubiquitous constituent within the siliciclastic package, occurring as concordant layers or pods less than 0.5 m thick (Figure 6). Locally, the leucogranite outcrops as large discrete tabular bodies several tens of metres thick.

In the Pritzler Harbour map area, most of the calcareous rocks are medium to coarse grained and are locally characterized by compositional layering defined by varied modal proportions of calcite, forsterite, humite, diopside, tremolite, phlogopite, spinel, apatite and rarely wollastonite. Individual layers range from centimetres to metres in thickness and can be traced for tens of metres along strike. Calcsilicate rocks are commonly interlayered with siliciclastic rocks and generally associated with marble. Locally, the calcareous strata include layers of calcareous grit characterized by abundant 1–2 mm detrital quartz grains (Figure 7). Thicknesses of individual calcareous rock sequences typically range from several decametres to less than 200 m. Individual marble units can be traced several kilometres along strike. No primary bedding structures were observed in the calcareous rocks.

Generally concordant sheets of medium- to coarse-grained mafic to ultramafic rocks (units PLHu, PLHm, PLHd) occur within the Lake Harbour Group of the western Pritzler Harbour map area. Individual bodies are typically 10–20 m thick, although some reach a few hundred metres in thickness and extend up to several kilometres along strike. Metagabbroic textures and compositional layering at the centimetre- to metre-scale defined by variations in modal abundance of clinopyroxene, orthopyroxene, hornblende and plagioclase are commonly preserved in the mafic bodies (Figure 8). The concordant nature, tabular shape and sharp contacts of these bodies suggest that they are sills. Several ultramafic bodies, either clinopyroxene-orthopyroxene±hornblende metapyroxenite or olivine-clinopyroxene-orthopyroxene metaperidotite, were observed. In numerous localities, the ultramafic rocks are compositionally layered with many bodies containing disseminated sulphide, some associated with a ferricrete, which consists of medium to coarse clastic sediment cemented by an iron oxyhydroxide. A full field description of the mafic and ultramafic rocks on Meta Incognita Peninsula is given in St-Onge et al. (2015).

Monzogranite to syenogranite plutons (units Pmo–Psb)

The principal plutonic rock types mapped on the eastern Meta Incognita Peninsula include tan- to pink-weathering orthopyroxene-biotite±magnetite monzogranite (unit Pmo), biotite-hornblende±magnetite±orthopyroxene monzogranite (unit Pmh), biotite-garnet±orthopyroxene monzogranite (unit Pmg) and biotite monzogranite to syenogranite (units Pmb, Psb). A number of the plutonic bodies are distinctively K-feldspar megacrystic (Figure 9), whereas others (units Pmg, Pms) contain abundant enclaves of siliciclastic and calcareous rock types, interpreted to be derived from the Lake Harbour Group. In a number of well-exposed localities, the granitic units truncate the monzogranite–diorite orthogneiss and associated Lake Harbour Group strata, suggesting that intrusion followed the early deformation of the orthogneiss and supracrustal units (see below). The coarse- to medium-grained, massive to foliated metaplutonic rocks occur along strike from, and are continuous with, extensive regions underlain by the Cumberland Batholith on the Meta Incognita and western Hall peninsulas (Figure 2; St-Onge et al., 1999a-g; Machado et al., 2013a, b; Steenkamp and St-Onge, 2014). The continuity of the plutonic rocks suggests that many of those in the Pritzler Harbour map area are also part of the 1.86–1.85 Ga batholith (Jackson et al., 1990; Wodicka and Scott, 1997; Scott and Wodicka, 1998; Scott, 1999; Whalen et al., 2010). Geochronological samples of all major plutonic rock types were acquired during the course of the fieldwork to test this correlation.

Diorite to leucodiorite (unit Pd)

Sheets of hornblende-orthopyroxene-clinopyroxene diorite to leucodiorite (unit Pd), 10–200 m wide and up to several kilometres long (Figure 10), are broadly coplanar with the dominant foliation in the surrounding orthopyroxene-biotite±magnetite monzogranite or host Lake Harbour Group siliciclastic strata. Unlike the mafic sills described above, the dioritic sheets are not layered, nor are they associated with ultramafic rocks. The diorite bodies are locally extensive enough to usefully highlight fold interference geometries.

Quaternary (unit Q)

Quaternary deposits (unit Q) comprise till, except for outwash along north or south-flowing river valleys. The till is a clast-supported silty sand; clasts are granule to large boulder size, entirely of Precambrian lithologies except for Paleozoic carbonate below the marine limit on Hudson Strait shores. Outwash is sand and minor silt and gravel, derived from till during late stages of deglaciation. Kettle fluvial terraces are several metres thick, locally thicker where coalesced with eskers or deltaic gravel.

DEFORMATION AND METAMORPHISM

D_1 deformation and M_1 metamorphism

The Paleoproterozoic tectonostratigraphic units described above are generally characterized by the development of a pervasive millimetre- to centimetre-scale compositional foliation (S_1) that is shallow to steeply dipping, and invariably parallel to lithological contacts between supracrustal and plutonic units. In metasedimentary strata, S_1 is defined by layers of aligned M_1 biotite, sillimanite, garnet and locally cordierite, alternating with layers of dominantly plagioclase, K-feldspar and quartz. The garnet can be several millimetres in size and appear poikiloblastic. In the metasedimentary units, S_1 is interpreted as a metamorphic enhancement of primary bedding (S_0). In foliated mafic and felsic plutonic units, S_1 is defined by the alternating distribution of dominantly ferromagnesian-rich layers comprising granoblastic, millimetre-scale M_1 orthopyroxene, biotite, magnetite, clinopyroxene, hornblende and/or garnet, and layers consisting of dominantly plagioclase and quartz±K-feldspar. The alignment of the orthopyroxene, biotite, clinopyroxene and hornblende highlights the S_1 foliation in metaplutonic units when present.

Prograde granulite-facies M_1 metamorphism of the Lake Harbour Group in the western Meta Incognita Peninsula is constrained at ca. 1.84 Ga by St-Onge et al. (2007). Geochronological and petrological studies will be undertaken to test whether the same metamorphic event can be documented in the eastern portion of the peninsula.

D_2 deformation and M_2 metamorphism

In the Pritzler Harbour map area, zones of subsequent deformation within psammitic and pelitic units of the Lake Harbour Group are marked by the pervasive growth of amphibolite-facies (M_2) biotite-sillimanite-quartz±garnet assemblages at the expense of the thermal peak (granulite facies) M_1 garnet±cordierite assemblages described above. The abundant, fine M_2 biotite and sillimanite laths define a distinct, penetrative, schistose (finely layered), retrograde S_2 foliation. To the west, the presence of repetitions and truncations of distinct tectonostratigraphic units and the overall ramp-flat fault geometry of the D_2 structures (Scott et al., 1997; St-Onge et al., 2001, 2002) suggest that juxtaposition of units occurred along a system of southwest-verging thrust faults. The D_2 faults are typically associated with the development of retrograde S_2 fabrics in zones ranging in thickness from tens to locally hundreds of metres. The D_2 deformation was also accompanied by outcrop- to map-scale recumbent folding of the older D_1–M_1 fabric (St-Onge et al., 2002).

At a broader scale, the D_2 deformational event defined by St-Onge et al. (2002) is the oldest compressional deformation event that affects all three orogen-scale stacked tectonic levels of southern Baffin Island (Figure 2). It involves 1) accretion of the Lake Harbour Group supracrustal strata, monzogranite–diorite gneiss and Cumberland Batholith assemblage to the structurally underlying monzogranite-granodiorite-tonalite gneiss; 2) accretion of the Narsajuaq arc package (level 2) to the structurally underlying northern margin of the Superior craton (level 1); and 3) imbrication of Paleoproterozoic cover and Archean basement units in the lower structural level.

New growth and recrystallization of zircon and monazite in metasedimentary units from the western peninsula indicate that M_2 retrograde metamorphism occurred at ca. 1820±1–1813±2 Ma (Wodicka and Scott, 1997; Scott et al., 2002; St-Onge et al., 2007). Geochronological and petrological studies will help constrain the extent of D_2–M_2 reworking on the eastern Meta Incognita Peninsula.

D_3 deformation

The D_1 and D_2 structures and fabrics are reoriented by a set of regional north- to northwest-trending D_3 folds. The D_3 folds range from metre scale to map scale and display a consistent west- to southwest-verging asymmetry. No mesoscopic fabric development associated with D_3 has been documented.

In northern Quebec, crustal-scale D_3 folding of structural levels 1 and 2 is constrained at ca. 1.76 Ga (Lucas and St-Onge, 1992). Lucas and Byrne (1992) proposed that the orogen-parallel folds resulted from continued horizontal compression during postcollisional intracontinental shortening in the northeastern segment of the Trans-Hudson Orogen.

D_4 deformation

Upright refolding of all older structural elements about east- to northeast-trending D_4 fold axes has generated the fold interference, dome-and-basin map pattern most evident in the southern and eastern portions of the peninsula (Figure 1). The interference of D_3 and D_4 folds generated sufficient structural relief to allow for the study of the crustal architecture of southern Baffin Island and the Meta Incognita Peninsula, including the three principal structural levels exposed at the present-day erosion surface. The D_4 folding in northern Quebec is constrained between 1.76 and 1.74 Ga (Lucas and St-Onge, 1992).

ECONOMIC CONSIDERATIONS

A number of lithological associations and occurrences with potential economic implications were identified during the 2014 systematic and targeted mapping campaign on eastern Meta Incognita Peninsula. The layered mafic-ultramafic sills emplaced in sulphidic siliciclastic strata have a lithological context similar to that hosting Ni–Cu–platinum-group element mineralization elsewhere in the Trans-Hudson Orogen (e.g., Raglan deposit in the eastern Cape Smith Belt of northern Quebec; St-Onge and Lucas, 1994; Lesher, 2007). The field characteristics of the sills are described in more detail in St-Onge et al. (2015). Serpentinized ultramafic rocks have been identified at a number of localities in the map area, some of which may provide material suitable as carving stone. Abundant granitic pegmatite dykes and veins on the peninsula containing muscovite, biotite and locally tourmaline were sampled for further analysis into their rare-earth element mineralization potential.

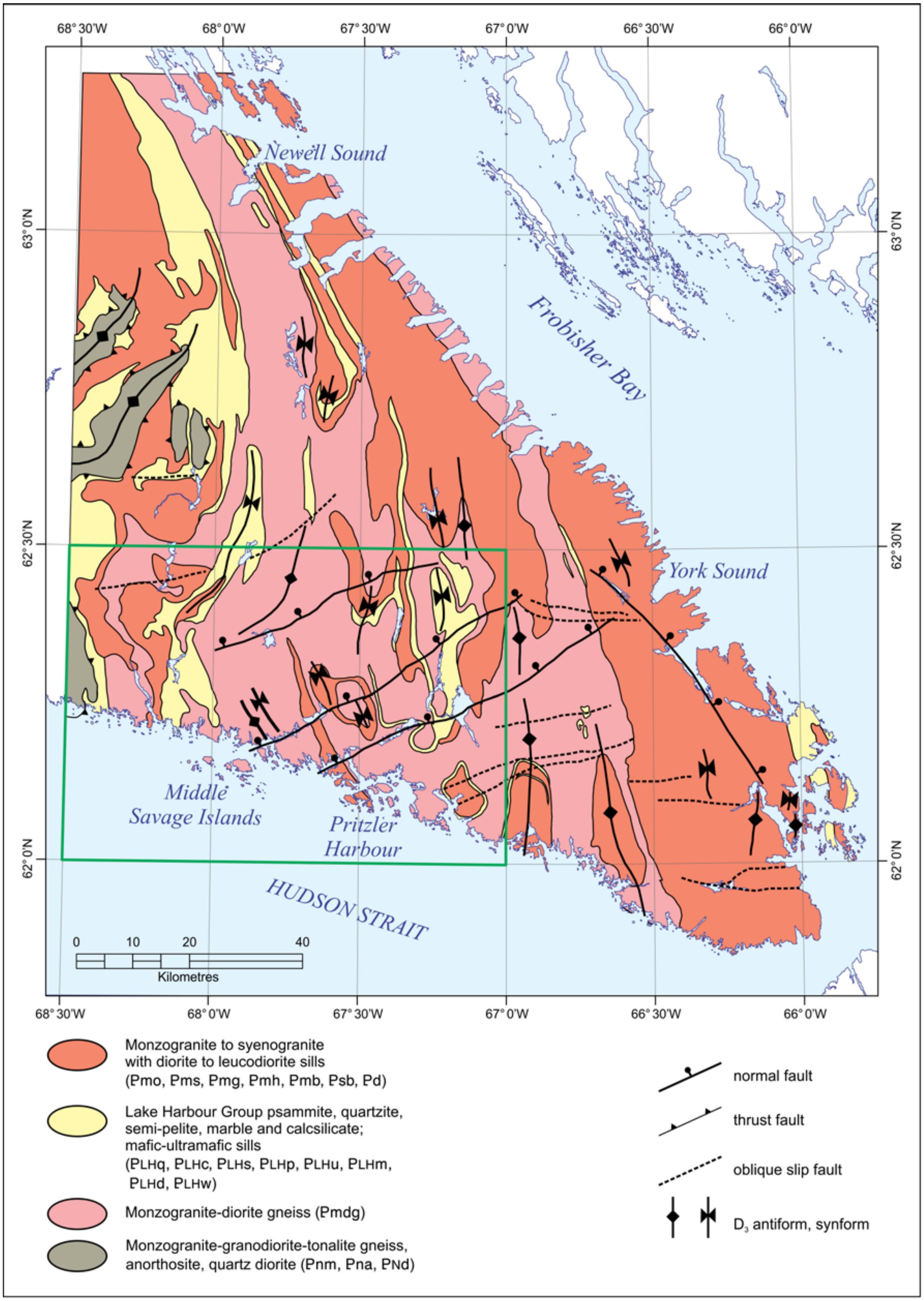

Figure 1. Simplified bedrock geology of the eastern Meta Incognita Peninsula, Baffin Island, Nunavut, based on 2014 regional and targeted mapping, supplemented by archival observations collected during the GSC's Operation Amadmuak in 1965 (Blackadar, 1967) and the South Baffin Project in 1995–97 (St-Onge et al., 1999a–g). The Pritzler Harbour map area is outlined in green.

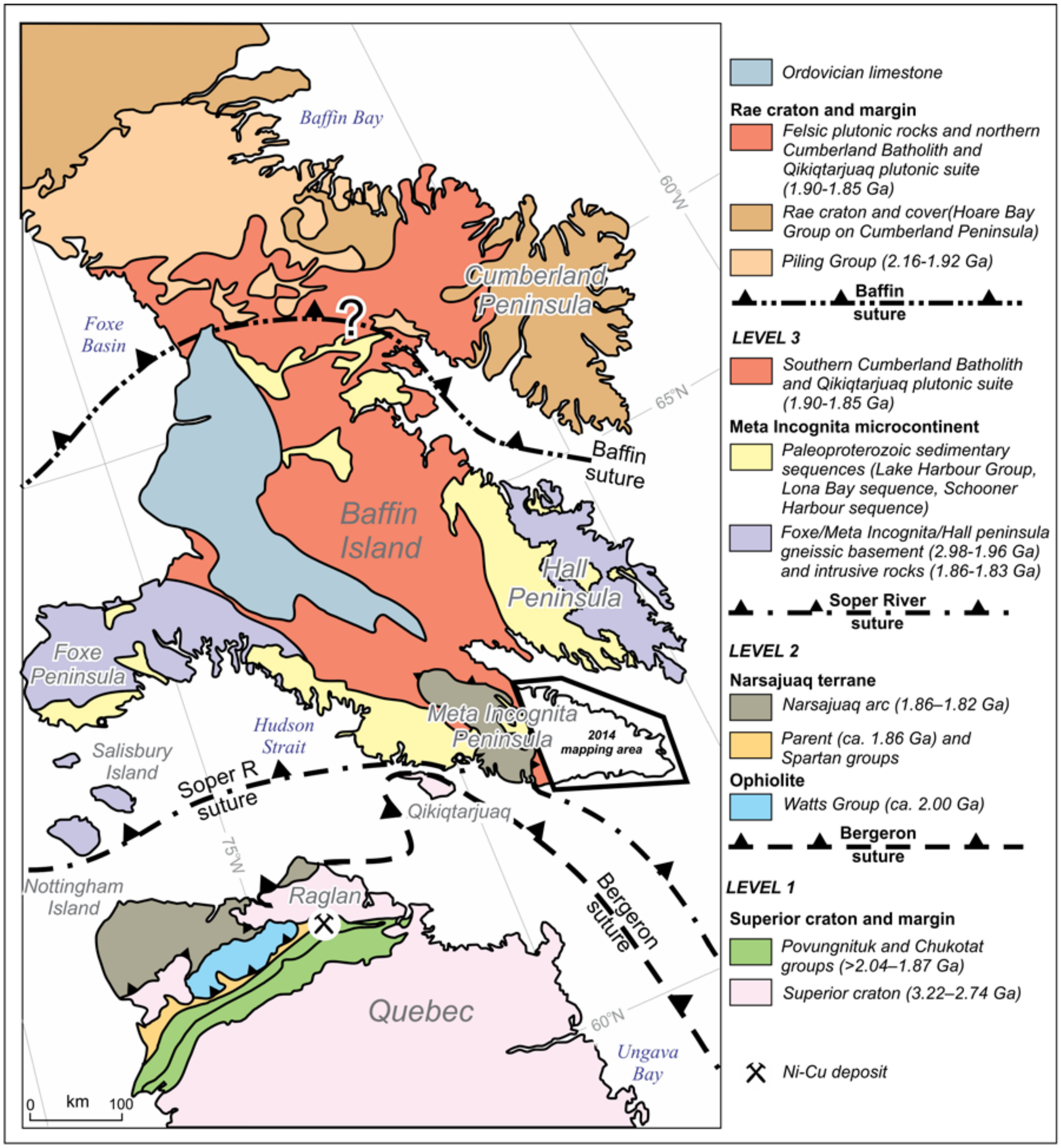

Figure 2. Simplified geological terrane map of the Quebec–Baffin segment of the Trans-Hudson Orogen (*modified from* St-Onge et al., 2007), providing a regional tectonic context for the eastern Meta Incognita field area (outlined with the black polygon and shown in greater detail in Figure 1).

Figure 3. Layered monzogranite–diorite gneiss, crosscut by a vein of white monzogranite (in lower right corner of photograph), Meta Incognita Peninsula, Baffin Island, Nunavut; hammer is 35 cm long. 2014-223

Figure 4. Shallowly-dipping, well-layered, garnet-bearing orthoquartzite, Lake Harbour Group, Meta Incognita Peninsula, Baffin Island, Nunavut; geologist for scale is 2 m tall. 2014-217

Figure 5. Garnet-sillimanite-biotite-melt psammite, Lake Harbour Group, Meta Incognita Peninsula, Baffin Island, Nunavut. 2014-224

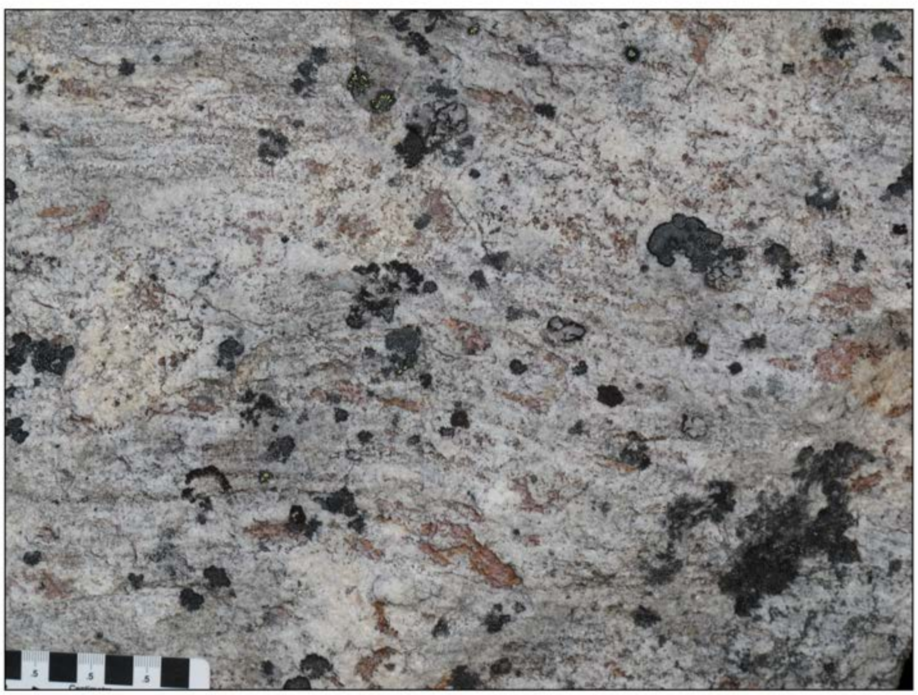

Figure 6. Close-up of a tabular body of garnet-sillimanite leucogranite emplaced in Lake Harbour Group psammite and feldspathic quartzite, Meta Incognita Peninsula, Baffin Island, Nunavut. 2014-218

Figure 7. Diopside-phlogopite-spinel-apatite-quartz calcareous grit, Lake Harbour Group, Meta Incognita Peninsula, Baffin Island, Nunavut. 2014-220

Figure 8. Layered metagabbro, Meta Incognita Peninsula, Baffin Island, Nunavut; hammer is 35 cm long. 2014-219

Figure 9. Foliated K-feldspar megacrystic monzogranite, Meta Incognita Peninsula, Baffin Island, Nunavut. 2014-222

Figure 10. Folded diorite sheet in background emplaced in orthopyroxene-biotite± magnetite monzogranite, Meta Incognita Peninsula, Baffin Island, Nunavut; width of field of view is 600 m. 2014-221

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Coordinate System

Projection: Universal Transverse Mercator
Units: metres
Zone: 19
Horizontal Datum: NAD83
Vertical Datum: mean sea level

Bounding Coordinates

Western longitude: 68°30’00” W
Eastern longitude: 67°00’00” W
Northern latitude: 62°30’00” N
Southern latitude: 62°00’00” N

Data Model Information

Geological Dataset accompanying this publication complies with the GSC’s Project Bedrock Schema (beta version 2.2). A short text describing the feature classes, tables and attributes is currently under review and will be made available for download shortly.

All attribute names and definitions are identical in the geodatabase (.gdb file), the shapefiles and the XML workspace file.

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ACCORD DE LICENCE