



Natural Resources  
Canada

Ressources naturelles  
Canada

**GEOLOGICAL SURVEY OF CANADA**  
**CANADIAN GEOSCIENCE MAP 270**  
**CANADA-NUNAVUT GEOSCIENCE OFFICE**  
**OPEN FILE MAP 2016-09**  
**GEOLOGY**  
**CHIDLIAK BAY (NORTH)**

Baffin Island, Nunavut  
NTS 26-B (north)



**Map Information  
Document**

**Preliminary**

**Geological Survey of Canada  
Canadian Geoscience Maps**

**2016**

**Canada**

## PUBLICATION



CANADA-NUNAVUT  
GEOSCIENCE OFFICE

ᑲᑲᑕᑎᑲᑦ ᑲᑲᑲᑦ ᑲᑲᑲᑦ  
ᑲᑲᑲᑦ ᑲᑲᑲᑦ ᑲᑲᑲᑦ ᑲᑲᑲᑦ

BUREAU GÉOSCIENTIFIQUE  
CANADA-NUNAVUT

KANATAMI-NUNAVUMI  
GEOSCIENCE TITIGAKVIIT

### Map Number

Natural Resources Canada, Geological Survey of Canada  
Canadian Geoscience Map 270 (Preliminary)

Canada-Nunavut Geoscience Office  
Open File Map 2016-09

### Title

Geology, Chidliak Bay (north), Baffin Island, Nunavut, NTS 26-B (north)

### Scale

1:100 000

### Catalogue Information

Catalogue No. M183-1/270-2015E-PDF  
ISBN 978-0-660-03856-8  
doi:10.4095/297354

### Copyright

© Her Majesty the Queen in Right of Canada,  
as represented by the Minister of Natural Resources, 2016

Information contained in this publication or product may be reproduced, in part or in whole, and by any means, for personal or public non-commercial purposes, without charge or further permission, unless otherwise specified.

You are asked to:

- exercise due diligence in ensuring the accuracy of the materials reproduced;
- indicate the complete title of the materials reproduced, and the name of the author organization; and
- indicate that the reproduction is a copy of an official work that is published by Natural Resources Canada (NRCan) and that the reproduction has not been produced in affiliation with, or with the endorsement of, NRCan.

Commercial reproduction and distribution is prohibited except with written permission from NRCan. For more information, contact NRCan at [rncan.copyrightdroitdauteur.rncan@canada.ca](mailto:rncan.copyrightdroitdauteur.rncan@canada.ca).

### **Recommended Citation**

Steenkamp, H.M., Gilbert, C., and St-Onge, M.R., 2016. Geology, Chidliak Bay (north), Baffin Island, Nunavut, NTS 26-B (north); Geological Survey of Canada, Canadian Geoscience Map 270 (preliminary); Canada-Nunavut Geoscience Office, Open File Map 2016-09, scale 1:100 000. doi:10.4095/297354

### **ABSTRACT**

The Hall Peninsula Integrated Geoscience Program was led by the Canada-Nunavut Geoscience Office, and was designed to increase the geoscience knowledge and assess the economic potential of the area. Eastern Hall Peninsula is dominantly underlain by Archean tonalite to quartz diorite orthogneiss, while Paleoproterozoic supracrustal and intrusive rocks are exposed to the west. The supracrustal rocks are dominated by pelitic, psammitic, amphibolite and calc-silicate units, are interpreted as correlative with the Lake Harbour Group, and are cut by granulite-grade monzogranite to diorite intrusions. Hall Peninsula records three phases of metamorphism and deformation associated with the Trans-Hudson Orogen that have produced thick-skinned, east-verging fold and thrust structures and amphibolite to granulite facies mineral assemblages. Hall Peninsula hosts a highly prospective diamond kimberlite field, as well as mafic and carbonate supracrustal rocks, and ultramafic intrusions that may contain base and/or precious metal, semi-precious gemstone and carving stone resource potential.

### **RÉSUMÉ**

Le Programme géoscientifique intégré de la péninsule Hall, mené par le Bureau géoscientifique Canada-Nunavut, a été conçu pour accroître les connaissances géoscientifiques et évaluer le potentiel économique de la région. La partie est de la péninsule Hall contient principalement des orthogneiss tonalitiques à quartzodioritiques de l'Archéen, tandis que des roches supracrustales et intrusives du Paléoprotérozoïque affleurent à l'ouest. Les roches supracrustales sont dominées par des unités pélitiques, psammitiques, amphibolitiques et calcosilicatées et seraient corrélatives du Groupe de Lake Harbour. Elles sont recoupées par des intrusions de composition monzogranitique à dioritique du faciès des granulites. La péninsule Hall a conservé les traces de trois phases de métamorphisme et de déformation associées à l'orogène trans-hudsonien, qui ont donné lieu à une tectonique de socle caractérisée par la formation de structures de plissement et de chevauchement à vergence est, et à la création d'associations de minéraux du faciès des amphibolites au faciès des granulites. La péninsule Hall renferme un champ de kimberlites très prometteur pour le diamant, ainsi que des roches supracrustales mafiques et carbonatées et des intrusions ultramafiques susceptibles de contenir des ressources en métaux usuels ou précieux, en pierres semi-précieuses et en pierres à sculpter.

## **ABOUT THE MAP**

### **General Information**

Authors: H.M. Steenkamp, C. Gilbert, and M.R. St-Onge

Geology by H.M. Steenkamp, G. Machado, M.D. Young, M.R. St-Onge, N.M. Rayner, D.R. Skipton, R.E. From, C.B. MacKay, Z.M. Braden, C. Bilodeau, C.G. Creason, B.J. Dyck, E.R. Bros, K. Martin, R. Takpanie, P. Peyton, C. Sudlovenick, R. Hinanik, K. Napayok, C. Gilbert, P. Budkewitsch, A. Bigio, M. Senkow, M. Beauregard, D.J. Mate, and J. Leblanc-Dumas, 2012–2014; R.G. Blackadar, 1965.

Geological interpretation and notes by H.M. Steenkamp, 2015

Geology conforms to Bedrock Data Model v. 2.2

Geomatics by H.M. Steenkamp and C. Gilbert

Cartography by C. Gilbert

Initiative of the Canada-Nunavut Geoscience Office, conducted under the auspices of the Hall Peninsula Integrated Geoscience Project, supported by CanNor's Strategic Investment for Northern Economic Development (SINED) program.

Logistical support provided by the Polar Continental Shelf Program as part of its mandate to promote scientific research in the Canadian North. PCSP 30113

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

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.  
Elevations in metres above mean sea level

Shaded relief image derived from the digital elevation model supplied by the Canada-Nunavut Geoscience Office. Illumination: azimuth 315°, altitude 45°, vertical factor 1x

Mean magnetic declination 2016, 29°33'W, decreasing 25.6' annually. Readings vary from 29°06'W in the SW corner to 29°57'W in the NE corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Archean biotite monzogranite (grey) thrust over Paleoproterozoic supracrustal rocks in the core of an east-verging, synform exposed in Ptarmigan Fiord, northern Hall Peninsula, Baffin Island, Nunavut. Field of view is approximately 200 m;

looking north. Photograph by D.R. Skipton. 2015-066

The Geological Survey of Canada and the Canada-Nunavut Geoscience Office welcome corrections or additional information from users.

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

This publication is available for free download through GEOSCAN (<http://geoscan.nrcan.gc.ca/>) and the Canada-Nunavut Geoscience Office (<http://cngo.ca/>).

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.

### **Cartographic Representations Used on Map**

Black point symbols indicate an actual station location. Grey symbols are secondary measurements from a station that have been offset for display purposes only. Not all measurements are displayed. Additional measurements can be found in the digital geodatabase accompanying this release.

## **ABOUT THE GEOLOGY**

### **Descriptive Notes**

#### **INTRODUCTION**

The Hall Peninsula Integrated Geoscience Program (HPIGP) was led by the Canada-Nunavut Geoscience Office in collaboration with federal and territorial government offices and scientists, as well as researchers and students from several Canadian universities and colleges. The program aimed to produce regional, framework bedrock and surficial geological maps (1:100 000 scale), complemented by thematic studies that were designed to provide new fundamental geoscience information for Hall Peninsula.

Regional bedrock mapping was conducted over a total of 14 weeks during the summers of 2012 to 2014. Digital photographs, geological measurements, GPS coordinates, visual observations, and rock samples were collected from 2027 field stations. To interpret the bedrock geology (Figure 1; Machado et al., 2013a), the data has been combined with previously published information, including aeromagnetic survey data, archival reconnaissance-scale geological maps, scientific literature, and assessment reports from the mineral exploration industry. Surficial geological mapping was conducted over a total of 12 weeks during the summers of 2012 and 2013, with initial results published in field reports (Tremblay et al., 2013, 2014b, 2015a; Leblanc-Dumas et al., 2013) and maps (Tremblay et al., 2014a, 2015b).

## PREVIOUS WORK INTEGRATED INTO MAP INTERPRETATION

Reconnaissance-scale bedrock mapping was conducted in the mid-1960's by the Geological Survey of Canada during Operation Amadjuak (Blackadar, 1967). The resulting maps and field documentation from that campaign have since been digitized and optimized for integration into modern mapping projects, providing a wealth of observational field data. Regional airborne geophysical surveys were flown in 1996–1997 with 800 m flight-line spacing over southwestern Baffin Island (Pilkington and Oneschuk, 2007), and in 2010 with 400 m flight-line spacing over most of Hall Peninsula (Dumont and Dostaler, 2010a-g). Full airborne geophysical survey coverage of Hall Peninsula was achieved in 2015 with the completion of the McKeand River survey (Kiss and Tschirhart, 2015), which was flown with 400 m flight-line spacing. The compiled survey data (Figure 2; Geological Survey of Canada, 2015), paired with high-resolution satellite imagery and field observations, was used to extrapolate geological boundaries and structures between visited field stations.

Detailed geology mapping on Hall Peninsula was conducted by Scott (1996) along a 90 km-long corridor located east of Iqaluit. This work provided some of the first U-Pb zircon crystallization and detrital ages for the Hall Peninsula area (Scott, 1999; Scott et al., 2002). In the mid-2000's, the mineral exploration company Peregrine Diamonds Inc. identified kimberlite indicator minerals in glacial till samples, and eventually diamond-bearing kimberlite deposits on eastern Hall Peninsula. This discovery has prompted industry-led, airborne and ground geophysical surveys (Pell and Neilson, 2010, 2011), thematic research projects focused on kimberlite emplacement (Pell et al., 2013; Zhang and Pell, 2013) and diamond genesis (Nichols et al., 2013; Nichols, 2014), and detailed bedrock and surficial geology mapping within the Chidliak diamond district (Ansdell et al., 2015). The above resources have provided information that was helpful for bedrock mapping interpretation, and adds valuable data to the maps.

## MAP UNITS

The eastern half of Hall Peninsula is dominantly underlain by an Archean orthogneiss complex comprising felsic to intermediate phases. The phases all have internal compositional layering, and display complicated crosscutting relationships.

Map unit **At** is the most abundant and compositionally variable orthogneiss unit. It is dominated by biotite±hornblende tonalite to granodiorite that weathers dull grey (Figure 3). Overall, this unit is medium to coarse grained with biotite, and locally hornblende, defining a mineral foliation. Pods, enclaves, and rafts of diorite, quartz diorite, and minor gabbro are locally found in this unit, and have well-defined lithological boundaries and a well-developed internal compositional fabric (gneissosity).

Areas with voluminous biotite±hornblende granodiorite are mapped as unit **Ag**. Local compositional variation to monzogranite has been documented within this unit. In general, unit **Ag** is coarse grained and contains less than 5% mafic minerals.

Map unit **Amk** represents coarse-grained biotite monzogranite (Figure 3) to quartz monzonite with distinctive 1–5 cm wide K-feldspar phenocrysts and an average of 2% mafic mineral content. Areas with a greater abundance of mafic minerals (up to 10%) or a more granodioritic composition were observed within this unit. This unit weathers buff pink, and is locally injected with discontinuous granitic pegmatite veins that are less than 1.5 m wide.

Magnetite-biotite monzogranite is represented by map unit Amm. This unit is typically coarse grained, and contains abundant (1–2%) anhedral magnetite crystals. The unit corresponds to areas with a high magnetic anomaly signature in the aeromagnetic survey data. Additionally, this unit is crosscut by granitic to syenogranitic pegmatite dykes that also contain magnetite megacrysts. Both fresh and weathered surfaces are pale to light pink.

Supracrustal metasedimentary rocks were documented across Hall Peninsula, and were found to disconformably overlie the Archean orthogneiss complex (Figure 3). A basal quartzite (unit PLHq) is locally found directly in contact with the orthogneiss, or within the first few metres of metasedimentary strata. The quartzite is blueish-grey and translucent, contains heavy mineral bands that may indicate original bedding, and occurs as laterally discontinuous beds that are 1 to 25 m thick. Rare metamorphic garnet, sillimanite, biotite, and magnetite have been documented within the quartzite and along bedding planes.

Unit PLHs is found in the lower part of the metasedimentary sequence and can be up to 250 m in thickness. This unit comprises (in order of abundance) interbedded semipelite, pelite, psammite, quartzite, and minor diorite, amphibolite, metaironstone, marble, and calc-silicate. The semipelitic and pelitic lithologies typically contain metamorphic garnet, sillimanite, biotite, and rare muscovite porphyroblasts. The quartzite (Figure 4) is 20–50 cm thick, ranges from gray and translucent to white and opaque, and commonly has heavy mineral bands. The diorite and amphibolite layers (Figure 5) are fine to medium grained and locally contain metamorphic garnet (unit PLHa, resolved on map where thick enough). Metaironstone layers are less than 1.5 m thick, and have internal compositional segregation of garnet, quartz, and grunerite layers that are 1–5 cm thick. The marble and calc-silicate layers recessively weather (Figure 5), and typically contain metamorphic diopside, clinohumite, phlogopite, and rare olivine, apatite, spinel, and graphite (unit PLHm, resolved on map where thick enough). The PLHs unit also contains 1–4 m wide dykes and sills of medium- to coarse-grained leucogranite with metamorphic garnet, biotite, and local muscovite.

Stratigraphically above unit PLHs, the metasedimentary rocks represented by unit PLHp are dominated by pelite and psammite that contain garnet, biotite and minor sillimanite. This unit also has seams and layers of leucogranite which increase in abundance toward the west. The leucogranite is interpreted as recrystallized melt that was generated during regional metamorphism through muscovite- and biotite-dehydration reactions in the pelitic to psammitic metasedimentary rocks (Dyck and St-Onge, 2014). Therefore, the pelitic and psammitic rocks of unit PLHp are interpreted as having restitic compositions following partial melting and recrystallization of the leucogranitic melt into distinct dykes, sills and layers.

The top of unit PLHp becomes increasingly dominated by leucogranitic material, to the point where rafts of restitic pelite and psammite are floating in the leucogranite. Unit PLHw represents the areas where the volume of leucogranite exceeds that of the remnant pelite or psammite. The leucogranite is fine to medium grained, weathers bright white, and contains abundant lilac garnet porphyroblasts and minor biotite (Figure 6). Rare metamorphic cordierite was documented in the leucogranite on the southwestern coast of Hall Peninsula.



Paleoproterozoic igneous phases were documented across Hall Peninsula. Unit Pu (resolved on map where thick enough) represents mafic-ultramafic sills in the metasedimentary sequence (Figure 7), and plugs and sills in the Archean tonalite to granodiorite orthogneiss (unit At). Unit Pu includes metaperidotite, metapyroxenite, and metadunite lithologies which typically contain orthopyroxene, hornblende, phlogopite, tremolite, actinolite, and rare serpentinite. The presence of hydrous phases (i.e. serpentinite or phlogopite), which are commonly found at the boundary of the mafic-ultramafic intrusion and the host rock, implies localized hydrothermal alteration at some point after emplacement of the sills and/or plugs. Two relatively unaltered, large-scale (up to 350 m thick and 7 km long) and layered mafic-ultramafic sills were documented within unit PLHp (Figure 7; Steenkamp et al., 2014).

Other Paleoproterozoic igneous phases on Hall Peninsula are generally felsic, yet typically contain orthopyroxene suggesting crystallization at high temperatures. Unit Pgo represents orthopyroxene-hornblende-biotite±magnetite granodiorite that is typically medium (Figure 8) to coarse grained. The relative abundance of mafic minerals in this unit ranges from 2% to 5%. Orthopyroxene is locally megacrystic, and hornblende and biotite define a weak to moderate mineral foliation. Magnetite is fine to very-fine grained and typically found adjacent to other mafic phases. Fresh rock surfaces are a distinctive pale green with a greasy lustre (Figure 8), while weathered surfaces are dark orange to brown.

Unit Pmo represents orthopyroxene-biotite±magnetite monzogranite that is generally very-coarse grained, and locally contains megacrystic K-feldspar up to 4 cm wide. Garnet was observed at a few locations within a few metres of a contact zone with the PLHW unit. Quartz is characteristically blueish-grey, and occurs in discontinuous ribbons that are 1–2 cm thick and define a weak foliation fabric.

Biotite-garnet±orthopyroxene monzogranite containing small rafts, pods, and lenses of metasedimentary rock was identified on the western side of Hall Peninsula and is represented by unit Pmg. This lithology is coarse grained and equigranular. The abundance of garnet increases and the grain size becomes more inequigranular with proximity to included bodies of metasedimentary rock.

All Archean and Paleoproterozoic rock units are cut by NW-SE trending gabbroic diabase dykes (unit Nd) presumed to be associated with the Neoproterozoic Franklin swarm event documented elsewhere across the Canadian Arctic (Heaman et al., 1992; Denyszyn et al., 2009). The dykes are fine to medium grained, homogeneous, weather brown, and are about 100 m wide and laterally continuous for hundreds of kilometres.

## INTERPRETED GEOLOGICAL HISTORY

Hall Peninsula is contained within the northeastern (Quebec-Baffin) segment of the Trans-Hudson Orogen (THO), a Paleoproterozoic collisional orogenic belt that extends from northeastern to south-central North America in a broad arcuate shape (Hoffman, 1988; Lewry and Collerson, 1990). The THO marks the collision between the upper-plate collage of Archean crustal blocks (Churchill plate) and the lower-plate Superior craton. The southern Baffin Island region in particular records the southward migration of the Churchill plate and its terminal collision with the Superior craton at ca. 1.82–1.80 Ga (St-Onge et al., 2009). This was the last major deformational event that the Hall Peninsula area endured, and it therefore contains lithological, structural, metamorphic,



and textural evidence to attest to the timing and conditions of the associated orogenic processes.

The orthogneiss complex exposed on the eastern part of Hall Peninsula has been studied in detail to identify the ages of the various lithological components. At one locality the orthogneiss complex was documented to comprise at least seven distinct lithologies within a few hundred metres based on crosscutting relationships (From et al., 2013, 2014). Uranium-lead isotopic geochronology conducted on a variety of orthogneiss compositions collected across the complex reveal crystallization ages scattered between about 2976 to 2608 Ma (Scott, 1999; Rayner, 2014, 2015; From et al., 2015). Furthermore, a group of ages determined from chemically distinct zircon rim domains range from about 2740 to 2680 Ma and are interpreted to represent an Archean metamorphic and/or deformational event (From et al., 2015). Further geochemical and isotopic analyses are expected to constrain the ages of the different compositional phases that make up the orthogneiss complex, and provide insight into potential genetic relationships between Archean rocks on Hall Peninsula and other nearby Archean cratons, such as those in northern Quebec and Labrador, or southwestern Greenland.

Based on stratigraphy, and the rock types and their abundance, the supracrustal metasedimentary rocks on Hall Peninsula are interpreted as correlative with the Paleoproterozoic Lake Harbour Group, which has been described and documented to the southwest on Meta Incognita and Foxe peninsulas (St-Onge et al., 1996; Sanborn-Barrie et al., 2008; St-Onge et al., 2015). The lower part of the sequence (eastern Hall Peninsula) is marked by a blue basal quartzite overlain by dominantly pelitic to semipelitic lithologies, with limited mafic, ultramafic, and carbonate components. The upper part of the sequence (western Hall Peninsula) contains mostly pelitic to psammitic, restitic metasedimentary rocks and large amounts of leucogranite derived from partial melting of the metasedimentary units. The transition from the lithologically varied units in the east to dominantly pelitic to psammitic units in the west is interpreted to represent a change in the paleo-depositional environment from a proximal shallow-marine setting with input of mafic materials, possibly from a local rifting environment, to a more distal continental-shelf and slope-rise setting (MacKay et al., 2013; Machado et al., 2013b; Steenkamp and St-Onge, 2014).

Uranium-lead detrital zircon geochronology of rock units from different stratigraphic positions in the metasedimentary sequence help constrain the maximum age of sediment deposition and the provenance of detrital materials. Zircon from the blue basal quartzite (unit PLHq) yields provenance profiles with exclusively Archean ages (primarily 2.95–2.65 Ga), similar to crystallization ages from the Archean orthogneiss complex, suggesting a local sediment source (Rayner, 2014, 2015). Quartzite, psammite and semipelite layers from unit PLHs contain detrital zircon with a wide range of ages (3.8–1.9 Ga; Rayner, 2014, 2015), including known Archean orthogneiss ages, as well as detrital ages that have not yet been identified on Hall Peninsula. A psammitic layer from Beekman Peninsula yields a maximum depositional age of  $1959 \pm 12$  Ma, the youngest from the PLHs unit (Rayner, 2014). Despite the increasing effects of metamorphic overprinting on detrital zircon grains, two samples collected from western Hall Peninsula constrain the maximum depositional age of unit PLHp to about 1906 Ma.

Mafic rocks within units PLHa and PLHs have lost all primary mineral compositions and proportions, and igneous/depositional textures due to the intense metamorphic and deformational conditions of the THO. Therefore, it is difficult to determine if the mafic rocks are derived from intrusive and/or extrusive protoliths. Samples of mafic rocks within the metasedimentary sequence, and ultramafic rocks found as sills and plugs in both the metasedimentary sequence and Archean orthogneiss complex, can be classified as alkaline, calc-alkaline, transitional or tholeiitic based on their whole-rock geochemistry (MacKay and Ansdell, 2014). Further investigation of the major and minor element concentrations in these rocks suggest their genesis was related to partial melting of a subduction-modified mantle source that was upwelled possibly during plume-initiated rifting of the North Atlantic Craton (MacKay, 2014).

The orthopyroxene-bearing monzogranitic to granodioritic intrusive rocks occur as laterally continuous panels that cut the psammitic upper units of the supracrustal sequence. The panels are ubiquitous in the central and western parts of Hall Peninsula, and range in width from 100 m to several kilometres. Weak to moderate foliation fabrics were observed in these rocks, typically defined by the preferential growth-orientation of biotite and elongate concentrations (ribbons) of blueish-grey quartz. Uranium-lead zircon crystallization ages have been determined from two samples as  $1892 \pm 7$  Ma (Rayner, 2014) and  $1872 \pm 5$  Ma (Rayner, 2015). The presence of orthopyroxene documented in the majority of these plutonic phases suggests crystallization at high temperatures. Therefore, these rocks are thought to represent plutonism that preceded the terminal collision of the THO.

Hall Peninsula preserves evidence of three distinct phases of deformation and metamorphism related to the THO:

- D<sub>1</sub>: Initial east-west shortening (pre-thermal metamorphic peak) that produced isoclinal folds (F<sub>1a</sub>) and a metamorphic foliation (S<sub>1a</sub>) axial planar to F<sub>1a</sub>. These early events are interpreted from micro-fabric analysis of inclusion trails in porphyroblastic phases (Braden, 2013). Continued deformation around the time of peak thermal metamorphism produced isoclinal folds (F<sub>1b</sub>; Figure 4) of S<sub>1a</sub> and development of a new metamorphic mineral foliation (S<sub>1b</sub>) axial planar to F<sub>1b</sub>. This event coincides with the partial melting of metasedimentary units that produced muscovite-bearing leucogranite sills and dykes on the eastern part of the peninsula, and voluminous garnet-bearing leucogranite on the western part of the peninsula (Skipton et al., 2013; Dyck and St-Onge, 2014; Skipton and St-Onge, 2014).
- D<sub>2</sub>: Intensified east-west shortening continued following the thermal metamorphic peak, and resulted in the development of large-scale, east-verging, thick-skinned recumbent folds (F<sub>2</sub>) and thrusts (T<sub>2</sub>; Figure 3). Mylonite zones, and ductile stretching and mineral-growth lineations (L<sub>2</sub>) expressed as rodded quartz or amphibole, oriented sillimanite, and aligned orthopyroxene (Dyck and St-Onge, 2014) were recognized in the hanging and footwalls of thrust planes. Altered ultramafic intrusions (unit Pu) were locally identified as plugs and sills along thrust surfaces in the Archean orthogneiss, as well as boudinaged sills in the supracrustal sequence (Figure 7). Based on field relationships and deformation

of the ultramafic bodies, it is believed that their emplacement either preceded or was synchronous with this deformational stage (Steenkamp et al., 2014).

- D<sub>3</sub>: Late north-south shortening produced broad, open folds (F<sub>3</sub>), and a crenulation cleavage (S<sub>3</sub>) defined by muscovite, biotite, and faserkiesel sillimanite reoriented axial planar to F<sub>3</sub>. The F<sub>3</sub> folds locally deflect the strike of older fabrics, and the interference of F<sub>3</sub> on F<sub>2</sub> folds creates doubly-plunging and bulls-eye map patterns.

The metamorphic mineral assemblages documented across Hall Peninsula in pelitic to semi-pelitic rocks reflect a gradual increase in peak metamorphic grade from amphibolite-facies conditions (~740°C; garnet+biotite+sillimanite+K-feldspar±muscovite) in the east to granulite-facies conditions (>850°C; garnet+biotite+K-feldspar+melt±sillimanite) in the west (Skipton et al., 2013; Skipton and St-Onge, 2014). Chemically distinct rim domains on zircon identified in Archean orthogneiss, and Paleoproterozoic supracrustal and plutonic rocks are interpreted to represent zircon growth during metamorphism (Rayner, 2014, 2015; From et al., 2015). Ages interpreted as metamorphic include 1855 ± 13 Ma from tonalite orthogneiss (unit At; Rayner, 2015), 1856–1832 Ma from K-feldspar megacrystic granite (unit Amk; Rayner, 2014), 1861 ± 25 Ma from quartzite (unit PLHq), 1886–1832 Ma from psammite (unit PLHp), and 1828 ± 3 Ma from orthopyroxene-biotite monzogranite (Rayner, 2014).

Following the terminal collision of the THO, the rocks underlying Hall Peninsula experienced a very slow, protracted cooling history beginning in the latest Paleoproterozoic and continuing through the Phanerozoic. Muscovite extracted from pelitic supracrustal rocks on eastern Hall Peninsula were analyzed by <sup>40</sup>Ar/<sup>39</sup>Ar step-heating and UV-laser spot dating to determine the cooling history of the area. The step-heating ages range from 1690 ± 3 to 1657 ± 3 Ma, while the spot dating on three muscovite grains show a 20–30 m.y. age decrease from core to rim analyses (Skipton et al., 2015). This implies that the rocks on Hall Peninsula took at least 140 m.y. to cool from peak thermal metamorphic conditions through approximately 420–450°C, the nominal closure temperature for radiogenic Ar in muscovite.

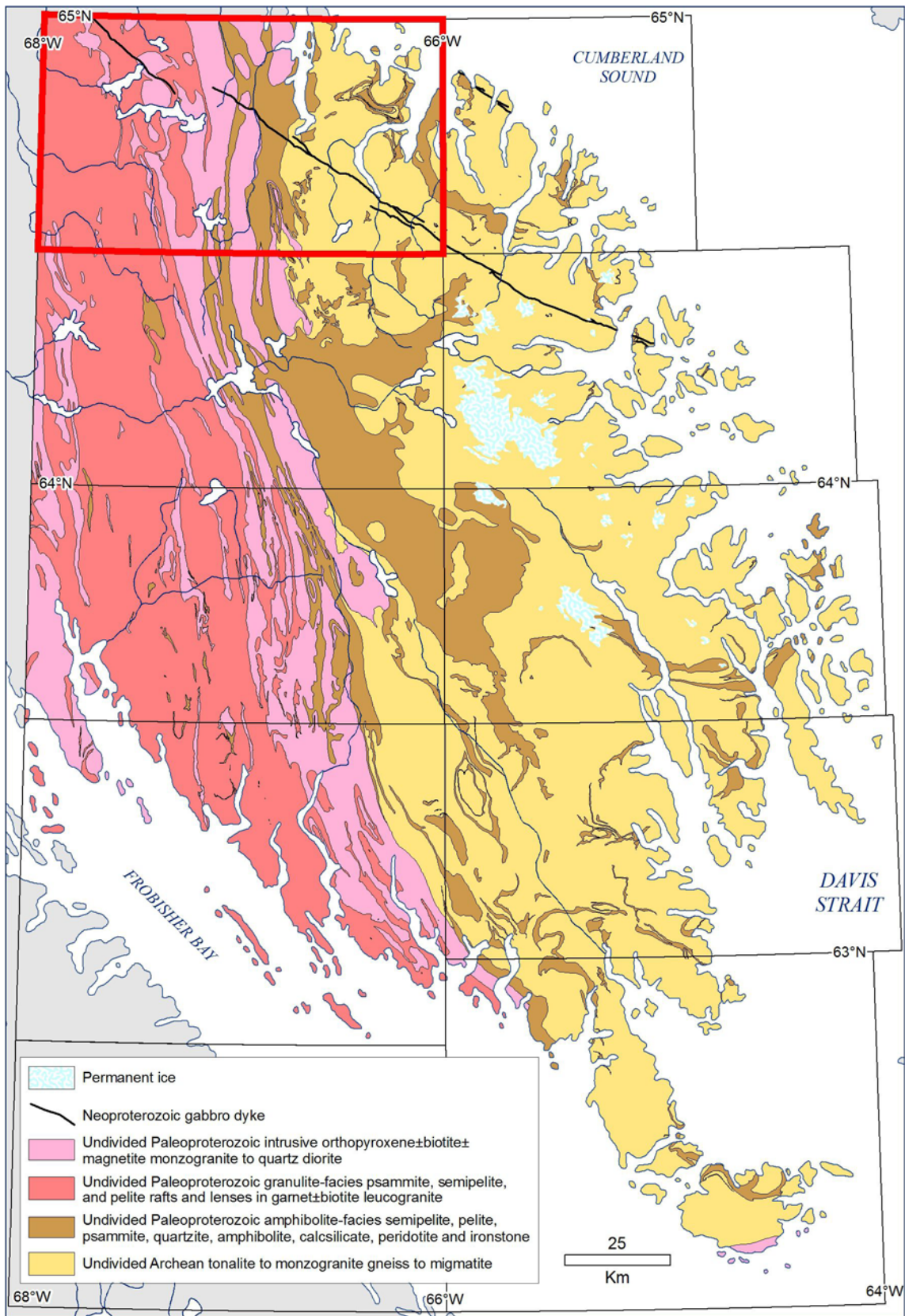
Further cooling and exhumation of Hall Peninsula during the Phanerozoic has been constrained with apatite and zircon (U-Th)/He low-temperature thermochronology (Creason and Gosse, 2014) which has been used as input parameters in the HeFTy and PECUBE thermal modelling programs (Creason, 2015). The thermal modelling results support an exhumation scenario with an extremely slow exhumation rate (8–10 m/m.y.) during the Phanerozoic. Furthermore, variations in the models isotherm outputs between about 340 to 400 Ma are coincident with post-Ordovician fault block movements in the Eastern Canadian Arctic (e.g. Sanford, 1987), and may indicate disturbances of the footwall isotherms due to fault motion in Cumberland Sound (Creason, 2015).

## ECONOMIC CONSIDERATIONS

Hall Peninsula hosts a variety of geological features and occurrences with potential for economic deposits. Mafic-ultramafic dykes and layered sills (Figure 7) bear resemblance to the lithologies in the Cape Smith belt of northern Quebec which hosts the Raglan Ni-Cu-platinum group element deposit (St-Onge and Lucas, 1993; Leshner, 2007; Steenkamp and St-Onge, 2014). Ultramafic rock bodies that have hydrothermally

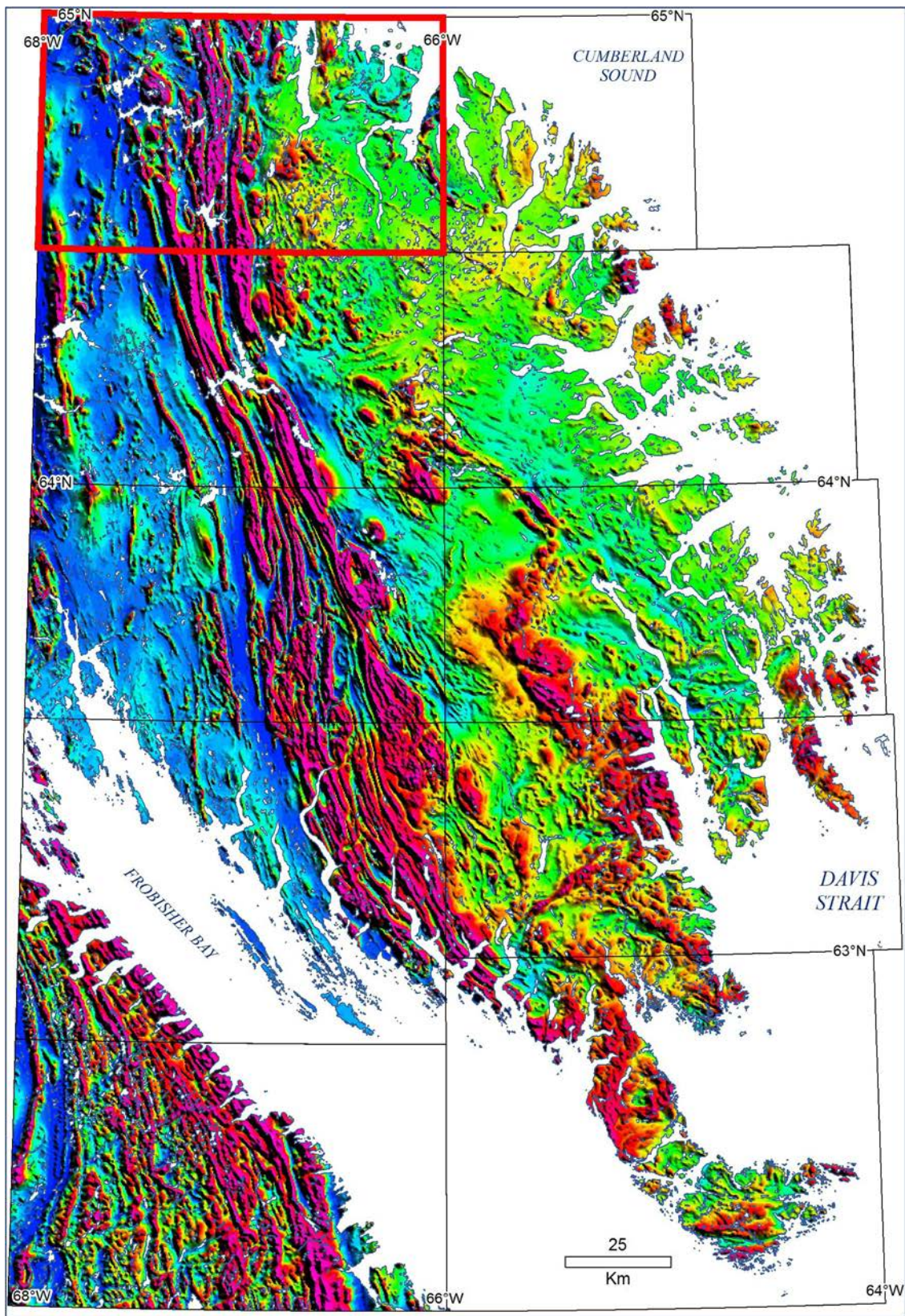
altered mineral assemblages have also been evaluated as potential carving stone resources for local Inuit artists (Senkow, 2013; Beauregard and Ell, 2015).

The supracrustal sequence contains abundant granitic pegmatites that may bear rare-earth elements (Bigio et al., 2015), and metamorphosed carbonate units with euhedral pale-purple spinel and light-blue apatite, which can both be used as semi-precious gemstones. Mafic metasedimentary rocks, metaironstones, and pyrite- and pyrrhotite-bearing silicified gossanous layers also have potential to contain base and/or precious metal concentrations (Steenkamp, 2014).



**Figure 1.** Simplified bedrock geology of the Hall Peninsula, Baffin Island, Nunavut, compiled from regional and targeted mapping conducted in 2012, 2013, and 2014, and supplemented by archival observations collected during the Geological Survey of Canada's Operation Amadjuak in 1965 (Blackadar, 1967), regional aeromagnetic data, scientific literature, and assessment report data from the mineral exploration industry. The Chidliak Bay (north) map sheet is outlined in red.





**Figure 2.** Aeromagnetic anomaly map of Hall Peninsula, Baffin Island, Nunavut, showing the residual total field data (Geological Survey of Canada, 2015), compiled from regional airborne geophysical survey data collected in 1996–1997 (800 m flight-line spacing; Pilkington and Oneschuk, 2007), 2010 (400 m flight-line spacing; Dumont and Dostaler, 2010a–g), and 2015 (400 m flight-line spacing; Kiss and Tschirhart, 2015). The Chidliak Bay (north) map sheet is outlined in red.





**Figure 3.** Grey biotite tonalite orthogneiss (right; unit *At*) underlies  $F_2$  folded, rusty- and black-weathering Paleoproterozoic metasedimentary rocks (unit *PLHs*), which are in turn over-thrust ( $T_2$ ) by deformed biotite monzogranite (grey rocks in the core of fold; unit *Amk*) in Ptarmigan Fiord, Hall Peninsula, Baffin Island, Nunavut. View looking north, shoreline is approximately 2.3 km long. Photograph by D.R. Skipton. 2015-067

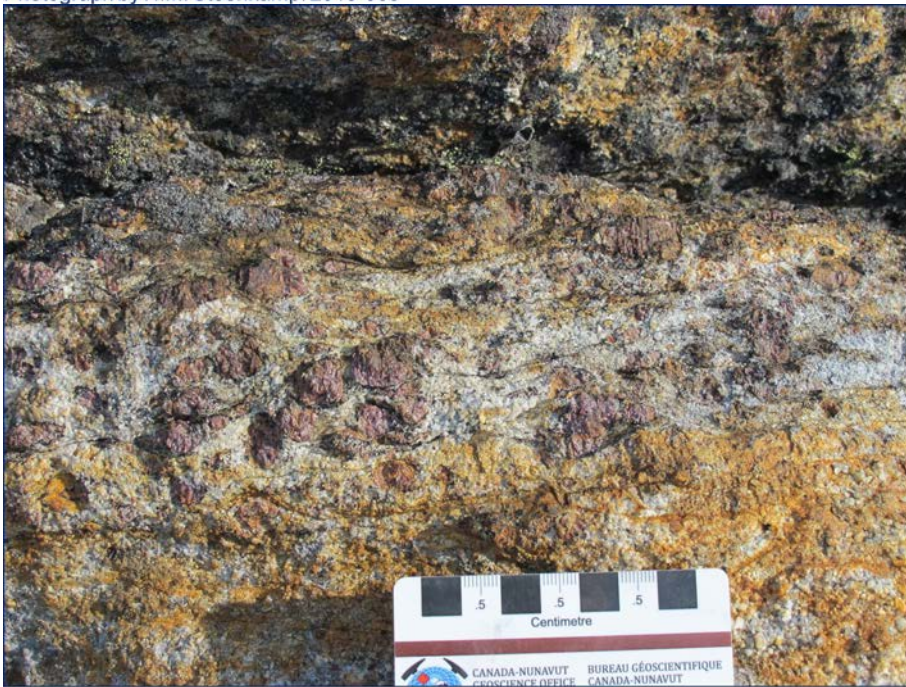


**Figure 4.** Folded intercalated quartzite and semipelite near the base of unit *PLHs* on the southern limb of a large synform ( $F_2$ ) southeast of Ptarmigan Fiord, Hall Peninsula, Baffin Island, Nunavut. Hammer for scale is 30 cm long, view to the northwest. Photograph by H.M. Steenkamp. 2015-068





**Figure 5.** Impure marble and calc-silicate layers (unit PLHm) in contact with rusty-weathering amphibolite (unit PLHs) in the metasedimentary rocks found east of Ptarmigan Fiord, Hall Peninsula, Baffin Island, Nunavut. Hammer for scale is 30 cm long, view to the northeast. Photograph by H.M. Steenkamp. 2015-069

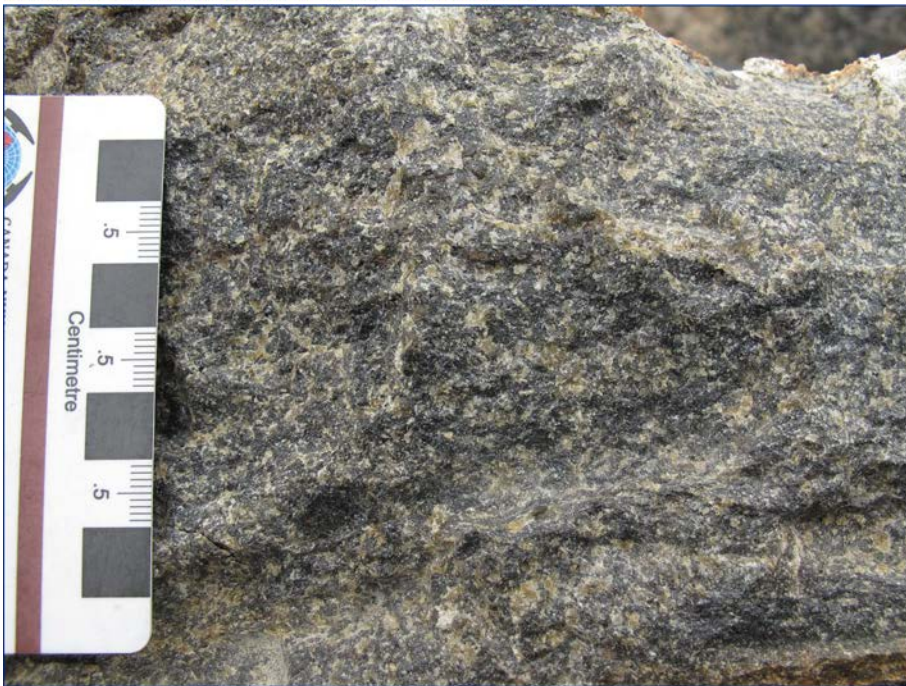


**Figure 6.** Large, lilac garnet porphyroblasts in leucogranite (unit PLHw) on northwestern Hall Peninsula, Baffin Island, Nunavut. Photograph by D.R. Skipton. 2015-071





**Figure 7.** A large mafic-ultramafic sill (unit Pu) hosted in psammitic metasedimentary rocks (unit PLHp) contains an internal magmatic compositional layering with clinopyroxenite at the base, peridotite through the center, and gabbro at the top. The body is approximately 1.3 km long, view to the southeast. Photograph by H.M. Steenkamp. 2015-070



**Figure 8.** Greasy-green fresh surface of orthopyroxene-hornblende-biotite granodiorite (unit Pgo) on northern Hall Peninsula, Baffin Island, Nunavut. Photograph by M.D. Young. 2015-072

## Acknowledgments

The authors thank all those who participated in the Hall Peninsula Integrated Geoscience Program: G. Machado, C. Bilodeau, R. Takpanie and D.J. Mate, all formerly with the Canada-Nunavut Geoscience Office; N.M. Rayner from the Geological Survey of Canada; M. Senkow, P. Budkewitsch and A. Bigio from Aboriginal Affairs and Northern Development Canada; M. Beauregard from the Government of Nunavut, Department of Economic Development and Transportation; M.D. Young, C.G. Creason, Z.M. Braden and E.R. Bros from Dalhousie University; D.R. Skipton and K. Martin from the University of Ottawa; R.E. From of the University of Manitoba; C.B. MacKay from the University of Saskatchewan; B.J. Dyck from Oxford University; J. Leblanc-Dumas from Université Laval; and P. Peyton, C. Sudlovenick, R. Hinanik and K. Napayok from the Nunavut Arctic College.

A. Camacho (University of Manitoba), K. Ansdell (University of Saskatchewan), D. Schneider (University of Ottawa), and D. Lentz (University of New Brunswick) are thanked for the lively discussions in the field, and their scientific contributions. Expert air support was provided by Universal Helicopters and organized by the Polar Continental Shelf Program. Exceptional cook and first aid services were provided by 1984 Group of Companies with assistant cooks from the Nunavut Arctic College Camp Cook Program. Special thanks are given to the many locally owned and operated businesses in Iqaluit and Pangnirtung that provided logistics, grocery, and camp services and support. Peregrine Diamonds Ltd. is thanked for their co-operation in sharing logistics, camp facilities, and geology information that aided in making this map. A thorough and thoughtful review of this map by N. Wodicka is greatly appreciated.

## References

- Ansdell, K.M., Hunchak, A., and Pell, J., 2015. Geology, geochemistry and geochronology of basement rocks around the Discovery camp, Chidliak diamond project, northern Hall Peninsula, southern Baffin Island, Nunavut; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 45–56.
- Beauregard, M.A. and Ell, J., 2015. Nunavut Carving Stone Deposit Evaluation Program: 2013 and 2014 fieldwork in the Kitikmeot Region, Belcher Islands, Hall Peninsula, and Repulse Bay, Nunavut; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 163–174.
- Bigio, A., Budkewitsch, P., and Lentz, D., 2015. Location and characterization of pegmatites in the southern Baffin Island region, Nunavut: field and satellite observations; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 1–10.
- Blackadar, R.G., 1967. Geological reconnaissance, southern Baffin Island, District of Franklin; Geological Survey of Canada, Paper 66–47.
- Braden, Z.M., 2013. Paleoproterozoic pressure-temperature-deformation path in the Newton Fiord region, eastern Baffin Island, Nunavut; B.Sc. thesis, Dalhousie University, Halifax, Nova Scotia, 95 p.
- Creason, C.G., 2015. Phanerozoic Exhumation History of Hall Peninsula, Baffin Island: Insights from Apatite and Zircon (U-Th-Sm)/He Thermochronology and 3D Thermokinematic Modeling; M.Sc. thesis, Dalhousie University, Halifax, Nova Scotia, 150 p.

- Creason, C.G. and Gosse, J.C., 2014. Preliminary characterization of the Mesozoic-Cenozoic exhumation history of Hall Peninsula, Baffin Island, Nunavut, based on apatite and zircon (U-Th)/He thermochronology; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 93–100.
- Denyszyn, S.W., Halls, H.C., Davis, D.W., and Evans, D.A.D., 2009. Paleomagnetism and U-Pb geochronology of Franklin dykes in High Arctic Canada and Greenland: a revised age and paleomagnetic pole constraining block rotations in the Nares Strait region; *Canadian Journal of Earth Science*, v. 46, p. 689–705.
- Dumont, R. and Dostaler, F., 2010a. Geophysical Series, NTS 25-O/NE, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6419, scale 1:100 000. doi:10.4095/261663
- Dumont, R. and Dostaler, F., 2010b. Geophysical Series, NTS 25-O/NW, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6420, scale 1:100 000. doi:10.4095/261664
- Dumont, R. and Dostaler, F., 2010c. Geophysical Series, NTS 26A/SE, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6425, scale 1:100 000. doi:10.4095/261669
- Dumont, R. and Dostaler, F., 2010d. Geophysical Series, NTS 26 A/SW, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6426, scale 1:100 000. doi:10.4095/261670
- Dumont, R. and Dostaler, F., 2010e. Geophysical Series, NTS 26A/NW and part of 26 A/NE, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6427, scale 1:100 000. doi:10.4095/261671
- Dumont, R. and Dostaler, F., 2010f. Geophysical Series, NTS 26 B/SE, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6428, scale 1:100 000. doi:10.4095/261672
- Dumont, R. and Dostaler, F., 2010g. Geophysical Series, NTS 26 B/NE, Aeromagnetic Survey Hall Peninsula, Nunavut; Geological Survey of Canada, Open File 6429, scale 1:100 000. doi:10.4095/261673
- Dyck, B.J. and St-Onge, M.R., 2014. Dehydration-melting reactions, leucogranite emplacement and the Paleoproterozoic structural evolution of Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 73–84.
- From, R.E., Camacho, A.L., and St-Onge, M.R., 2013. Preliminary observations on the nature and origin of the eastern orthogneiss complex of southern Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2012, Canada-Nunavut Geoscience Office, p. 43–54.
- From, R.E., St-Onge, M.R., and Camacho, A.L., 2014. Preliminary characterization of the Archean orthogneiss complex of Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 53–62.
- From, R.E., Rayner, N.M., and Camacho, A.L., 2015. Archean magmatism and metamorphism of eastern Hall Peninsula, southern Baffin Island, Nunavut; in Summary of Activities 2015, Canada-Nunavut Geoscience Office. p. 73–88.
- Geological Survey of Canada, 2015. Canada-200m-MAG-Residual Total Field; Canadian Aeromagnetic Data Base, Geological Survey of Canada, Natural Resources Canada, <http://gdr.agg.nrcan.gc.ca>.
- Heaman, L.M., LeCheminant, A.N., and Rainbird, R.H. 1992. Nature and timing of Franklin igneous events, Canada: implications for a Late Proterozoic mantle plume

- and the breakup of Laurentia; *Earth and Planetary Science Letters*, v. 109, no. 1–2, p. 117–131.
- Hoffman, P.F., 1988. United Plates of America, the birth of a craton: Early Proterozoic assembly and growth of Laurentia: *Annual Review of Earth and Planetary Sciences*, v. 16, p. 543–603.
- Kiss, F. and Tschirhart, V., 2015. Residual Total Magnetic Field, Aeromagnetic Survey of the McKeand River Area, Part of NTS 26 B/North, Nunavut. Geological Survey of Canada Open File 7819, Canada-Nunavut Geoscience Office Open File Map 2015-05, scale 1:100 000. doi:10.4095/296382
- Leblanc-Dumas, J., Allard, M., and Tremblay, T., 2013. Quaternary geology and permafrost characteristics in central Hall Peninsula, Baffin Island, Nunavut; in *Summary of Activities 2012*, Canada-Nunavut Geoscience Office, p. 101–106.
- Leblanc-Dumas, J., Allard, M., and Tremblay, T., 2015. Characteristics of a preglacial or interglacial regolith preserved under nonerosive ice during the last glacial maximum in central Hall Peninsula, southern Baffin Island, Nunavut; in *Summary of Activities 2014*, Canada-Nunavut Geoscience Office, p. 69–78.
- Leshner, C.M., 2007. Ni-Cu-(PGE) deposits in the Raglan area, Cape Smith Belt, New Quebec; in *Mineral Deposits of Canada: a Synthesis of Major Deposit Types, District Metallogeny, the Evolution of Geological Provinces, and Exploration Methods*, W.D. Goodfellow (ed.), Geological Association of Canada, Special Publication, v. 5, p. 351–386.
- Lewry, J.F. and Collerson, K.D., 1990. The Trans-Hudson Orogen; extent, subdivisions, and problems; in *The Early Proterozoic Trans-Hudson Orogen of North America*, J.F. Lewry and M.R. Stauffer; Geological Association of Canada, Special Paper 37, p. 1–14.
- MacKay, C., 2014. Geology of the Qaqqanittuaq Area and mafic and ultramafic geochemistry of the Hall Peninsula, Baffin Island, Nunavut; M.Sc. thesis, University of Saskatchewan, Saskatoon, Saskatchewan, 171 p.
- MacKay, C.B. and Ansdell, K.M., 2014. Geochemical study of mafic and ultramafic rocks from southern Hall Peninsula, Baffin Island, Nunavut; in *Summary of Activities 2013*, Canada-Nunavut Geoscience Office, p. 85–92.
- MacKay, C.B., Ansdell, K.M., St-Onge, M.R., Machado, G., and Bilodeau, C., 2013. Geological relationships in the Qaqqanittuaq area, southern Hall Peninsula, Baffin Island, Nunavut; in *Summary of Activities 2012*, Canada-Nunavut Geoscience Office, p. 55–64.
- Machado, G., Bilodeau, C., and St-Onge, M.R., 2013a. Geology, southern part of Hall Peninsula, south Baffin Island, Nunavut; Geological Survey of Canada, Canadian Geoscience Map 135 (preliminary); Canada-Nunavut Geoscience Office, Open File Map 2013-1, scale 1:250 000. doi:10.4095/292443
- Machado, G., Bilodeau, C., Takpanie, R., St-Onge, M.R., Rayner, N.M., Skipton, D.R., From, R.E., MacKay, C.B., Creason, C.G., and Braden, Z.M., 2013b. Hall Peninsula regional bedrock mapping, Baffin Island, Nunavut: summary of fieldwork; in *Summary of Activities 2012*, Canada-Nunavut Geoscience Office, p. 13–22.
- Nichols, K.M.A., 2014. Diamond sources beneath the Hall Peninsula, Baffin Island, Nunavut: A preliminary assessment based on Chidliak diamonds. M.Sc. thesis, University of Alberta, Edmonton, Alberta, 161 p.
- Nichols, K.M.A., Stachel, T., Pell, J. A., and Mate, D.J., 2013. Diamond sources beneath the Hall Peninsula, Baffin Island, Nunavut: preliminary assessment based

- on microdiamonds; in Summary of Activities 2012, Canada-Nunavut Geoscience Office, p. 113–120.
- Pell, J. and Neilson, S., 2010. 2009 assessment report on till sample and geochemistry, airborne geophysics, and diamond drilling on the Chidliak Project, Baffin Region, Nunavut. Aboriginal Affairs and Northern Development Canada, Nunavut Mining Recorder's Office, Iqaluit, Assessment Report 085552.
- Pell, J. and Neilson, S., 2011. Assessment report on till sample and geochemistry, airborne geophysics, and diamond drilling on the Chidliak Project in 2010 and 2011, Baffin Region, Nunavut. Aboriginal Affairs and Northern Development Canada, Nunavut Mining Recorder's Office, Iqaluit, Assessment Report 085721.
- Pell, J., Grütter, H., Neilson, S., Lockhart, G., Dempsey, S., and Grenon, H., 2013. Exploration and discovery of the Chidliak kimberlite province, Baffin Island, Nunavut: Canada's newest diamond district; in Proceedings of 10th International Kimberlite Conference, D.G. Pearson (ed.), Geological Society of India, Special Issue, v. 2, p. 209–227. doi:10.1007/978-81-322-1173-0-14
- Pilkington, M. and Oneschuk, D., 2007. Aeromagnetic and gravity; in Digital Geoscience Atlas of Baffin Island (south of 70°N and east of 80°W), Nunavut, Geological Survey of Canada, Open File 5116.
- Rayner, N.M., 2014. New U-Pb geochronological results from Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 39–52.
- Rayner, N.M., 2015. New (2013–2014) U-Pb geochronological results from northern Hall Peninsula, southern Baffin Island, Nunavut; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 31–44.
- Sanborn-Barrie, M., St-Onge, M.R., and Young, M., 2008. Bedrock geology of southwestern Baffin Island: Expanding the tectonostratigraphic framework with relevance to base metal mineralization, Geological Survey of Canada Paper 2008-6, 16p.
- Sanford, B.V., 1987. Paleozoic geology of the Hudson Platform; in Sedimentary Basins and Basin-Forming Mechanisms, C. Beaumont and A.J. Tankard; Canadian Society of Petroleum Geologists, Memoir 12, p. 483–505.
- Scott, D.J., 1996. Geology of the Hall Peninsula east of Iqaluit, southern Baffin Island; in Current Research 1996-C, Geological Survey of Canada, p. 83–91.
- Scott, D.J., 1999. U-Pb geochronology of the eastern Hall Peninsula, southern Baffin Island, Canada: a northern link between the Archean of West Greenland and the Paleoproterozoic Torngat Orogen of northern Labrador; Precambrian Research, v. 93, p. 5–26.
- Scott, D.J., Stern, R.A., St-Onge, M.R., and McMullen, S.M., 2002. U-Pb geochronology of detrital zircons in metasedimentary rocks from southern Baffin Island: implications for the Paleoproterozoic tectonic evolution of Northeastern Laurentia; Canadian Journal of Earth Science, v. 39, p. 611–623. doi:10.1139/E01-093
- Senkow, M.D., 2013. Characterization of ultramafic occurrences on southern Hall Peninsula, Baffin Island, Nunavut, and evaluation of their potential as a source of carving stone; in Summary of Activities 2012, Canada-Nunavut Geoscience Office, p. 163–168.
- Skipton, D.R. and St-Onge, M.R., 2014. Paleoproterozoic deformation and metamorphism in metasedimentary rocks west of Okalik Bay: a field template for



- the evolution of eastern Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 63–72.
- Skipton, D.R., Schneider, D. A., and St-Onge, M.R., 2013. Preliminary observations on Archean and Paleoproterozoic metamorphism and deformation of the southern Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2012, Canada-Nunavut Geoscience Office, p. 29–42.
- Skipton, D.R., Schneider, D.A., Kellett, D., and Joyce, N., 2015. New insights on the cooling history of Hall Peninsula, southern Baffin Island, Nunavut, using  $40\text{Ar}/39\text{Ar}$  thermochronology on muscovite; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 17–30.
- St-Onge, M.R. and Lucas, S.B., 1993. Controls on the regional distribution of iron-nickel-copper-platinum-group element sulfide mineralization in the eastern Cape Smith Belt, Quebec; *Canadian Journal of Earth Sciences*, v. 31, p. 206–218.
- St-Onge, M.R., Hanmer, S., and Scott, D.J., 1996. Geology of the Meta Incognita Peninsula, south Baffin Island: tectonostratigraphic units and regional correlations; in Geological Survey of Canada, Current Research 1996-C, p. 63–72.
- St-Onge, M.R., Van Goole, J.A.M., Garde, A.A., and Scott, D.J., 2009. Correlation of Archean and Palaeoproterozoic units between northeastern Canada and western Greenland: constraining the pre-collisional upper plate accretionary history of the Trans-Hudson Orogen; in *Earth Accretionary Systems in Space and Time*, P.A. Cawood and A. Kröner (ed.); The Geological Society, London, Special Publications, v. 318, p. 193–235.
- St-Onge, M.R., Rayner, N.M., Steenkamp, H.M., and Skipton, D.R., 2015. Bedrock mapping of eastern Meta Incognita Peninsula, southern Baffin Island, Nunavut; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 105–118.
- Steenkamp, H.M., 2014. Assay results from the 2012-2013 Hall Peninsula Integrated Geoscience Project; Canada-Nunavut Geoscience Office, Geoscience Data Series GDS2014-004, Microsoft® Excel® file.
- Steenkamp, H.M. and St-Onge, M.R., 2014. Overview of the 2013 regional bedrock mapping program on northern Hall Peninsula, Baffin Island, Nunavut: in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 27–38.
- Steenkamp, H.M., Bros, E.R., and St-Onge, M.R., 2014. Altered ultramafic and layered mafic-ultramafic intrusions: new economic and carving stone potential on northern Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 11–20.
- Tremblay, T., Leblanc-Dumas, J., Allard, M., Gosse, J.C., Creason, C.G., Peyton, P., Budkewitsch, P., and LeBlanc, A-M., 2013. Surficial geology of southern Hall Peninsula, Baffin Island, Nunavut: summary of the 2012 field season; in Summary of Activities 2012, Canada-Nunavut Geoscience Office, p. 93–100.
- Tremblay, T., Leblanc-Dumas, J., and Allard, M., 2014a. Surficial geology, Ward Inlet, Baffin Island, Nunavut, NTS 25-O; Geological Survey of Canada, Canadian Geoscience Map 205 (preliminary); Canada-Nunavut Geoscience Office, Open File Map 2014-01, scale 1:125 000. doi:10.4095/295510
- Tremblay, T., Leblanc-Dumas, J., Allard, M., Ross, M., and Johnson, C., 2014b. Surficial geology of central Hall Peninsula, Baffin Island, Nunavut: summary of the 2013 field season; in Summary of Activities 2013, Canada-Nunavut Geoscience Office, p. 109–120.



- Tremblay, T., Leblanc-Dumas, J., and Allard, M., 2015a. Geochemistry, mineralogy and sedimentology of surficial sediments, Hall Peninsula, southern Baffin Island, Nunavut; in Summary of Activities 2014, Canada-Nunavut Geoscience Office, p. 57–68.
- Tremblay, T., Leblanc-Dumas, J., and Allard, M., 2015b. Surficial geology, Chidliak Bay, Baffin Island, Nunavut, NTS 26-B; Geological Survey of Canada, Canadian Geoscience Map 222 (preliminary); Canada-Nunavut Geoscience Office, Open File Map 2015-01, scale 1:125 000. doi:10.4095/296407
- Zhang, S. and Pell, J., 2013. Study of sedimentary rock xenoliths from kimberlites on Hall Peninsula, Baffin Island, Nunavut; in Summary of Activities 2012, Canada-Nunavut Geoscience Office, p. 107–112.

### **Additional information**

The Additional Information folder of this product's digital download contains additional geological information not depicted on the PDF of the map, not included in this Map Information Document, or not included in any geodatabase. Additional information refers to an Excel® spreadsheet of the map legend.

### **Author Contact**

Questions, suggestions, and comments regarding the geological information contained in the data sets should be addressed to:

H.M. Steenkamp  
Canada-Nunavut Geoscience Office  
PO Box 2319, 1106 Inuksugait Plaza  
Iqaluit, NU  
X0A 0H0  
holly.steenkamp@canada.ca

### **Coordinate System**

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

### **Bounding Coordinates**

Western longitude: 68°00'00"W  
Eastern longitude: 66°00'00"W  
Northern latitude: 65°00'00"N  
Southern latitude: 64°30'00"N

### **Software Version**

Data has been originally compiled and formatted for use with ArcGIS™ desktop version 10.1 developed by ESRI®.

### **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.

### ***LICENCE AGREEMENT***

View the licence agreement at <http://open.canada.ca/en/open-government-licence-canada>

### ***ACCORD DE LICENCE***

Voir l'accord de licence à <http://ouvert.canada.ca/fr/licence-du-gouvernement-ouvert-canada>