



## **NIRB Uuktuutinga Ihivriughikhamut #125790**

### **Geological Mapping of Boundary Structures**

**Uuktuutinga Qanurittuq:** New

**Havaap Qanurittunia:** Scientific Research

**Uuktuutinga Ublua:** 4/6/2023 1:43:07 PM

**Period of operation:** from 0001-01-01 to 0001-01-01

**Piumayaat Angirutinga:** from 0001-01-01 to 0001-01-01

**Havauhikhaq Ikayuqtinga:** Daniele Regis  
Geological Survey of Canada  
601 Booth Street  
Ottawa Ontario K1A 0E8  
Canada  
Hivayautit Nampanga:: 6134133720, Kayumiktukkut Nampanga::

# QANURITTUT

## Tukihinnaqtunik havaariyauyumayumik uqauhiuyun

**Qablunaatitut:** Metamorphic rocks are a common occurrence in Canada's North and form when a rock is exposed to high temperature and/or high pressure geological processes. Exposure to such conditions is often recorded as distinct modifications to the rock's minerals, structure and/or changes in major and trace element chemistry. Quantifying trace element and precious metal concentrations and understanding how these elements and metals move during metamorphism and deformation, is paramount to understanding ore-forming processes in Canada's North. This project will apply innovative laboratory-based techniques to samples collected during targeted fieldwork north of Rankin Inlet (NU) to study these processes. Within this region that forms the ancient core of North America, preliminary observations and data indicate the presence a new major structure – the Raptor shear zone – which is associated with known mineralization but could have significant mineral potential west of current exploration activity. In order to study the relationship between the metamorphic rocks and fluids, and ore formation, we propose an in-depth investigation of the evolution of this structure and its spatial and genetic relationship to mineralization and rocks in the region. A team of 5 researchers will conduct sampling for two and a half weeks in July 2023. The crew will be set out by helicopter from Rankin Inlet and will conduct daily short hikes along the structure to collect fist-sized rock samples, take photos, and measurements. The research undertaken will result in the creation of detailed geological maps of the bedrock exposed across the area. We are planning on hiring one summer field assistant during fieldwork in 2023 and aim to recruit a Northern student where possible. In addition to creating maps, our research will contribute to the development of geological models for the formation of ore systems in metamorphic rocks, and more in general it will contribute to an understanding of the geological history of the region, and how it relates to other parts of Nunavut. Findings from 2023 fieldwork will be communicated back to the communities impacted (Rankin Inlet and Chesterfield Inlet).

**Uiviititut:** N/A

**Inuktitut:** D b y a d c d c j o r c d r d j s b r l d c d a e f d b c b e c d c d p d s b c s b j s m d b e a d s o s j c d c j o r c d r d j s b n c d r l d c. c d c j o r c n n g l d r l e s l c d r d j s b c d r l s o s m d b y a d c m e l f m e s b d r s b c, d e s d r s b c d r d j s b c d r l d c n b d r l d c d l d r l s o s c d c j o r c b e s b n c r e b c. d m s o r c d b y a d c d p d j c n l d m e s b y d s o s m d c j p r a e s b c n b a c c d s o s m b y a s j s b r l s o s d r d j s b c d r l s o s m d c, j p r a e s b c l c y a b y d s o s y i p c c d r s o s m b b e c d c d p d s b c s b j s m d. c l m a c n d j r s b j s l c d r d s b a c n d j c d s o s b d r y s a s b n b n l d r l d c m e a d b l d r l d c n b m e l f c b o r e s f m e s b c b d r y l d s d i n b. d a d s o p e c d c s b s c d d c m c d r s o s m d c d l d r l d c, c d c j o r c d l n n g l c d c d s o s m b m c g b d r l d c a c s b r l a c s b c b c b c - g d c m e d c d c s d b y b c p d s b m e a p m e d s o s - s b d r l d c d s o s d r l s o s b d b y s b s o s r c d p d j c s b c l c a c s b r l d c d s o s i p s l b y d c s s b c. s b d r y s d s o s d e l s o s m b a c n d j s o s d b y a d c d l d l d l s b s, y a b y s b n c d c c d s o s m d c d p d s b d r l s o s m e d c d c s, d r l c d s b r l d c s b d r y p l d c a c a c c d s o s m c c d d b y a d c m e d c d c s d r l s o s d e s b s o s m e s b d r l d c d b y s j s b c c d s o s r c p e c f. s b d r y s n d s d s b c 5 s j s d l c d b y s b s b m d s o s m b s b d r y s d i n b a e d p r l l p b l p b e c s o s m d d e d 2023. H a c b c d c d s o s m b s b c b o r e s f m d c c l c d d s o s r c g b d r y n b d r l r l d r l d c e c j c b n s b d d n b d r l d c d s o s b d b y s, d r c d n e l d n b d b j s b c s n l d d r l s o s m b. s b d r y s s b y i p n c d s l c m e s j d s b m e d c d c s d b y a d c d s o s m b m e l f. d r l d c d e s b p l d c d d b l f d b l s b n b y g b m e l f s b d r y s f 2023-f d l d m d c m e s o s m d e s d s b j l g b d r l s o s r c. d e b s b r l d s o s m e s j d c d s o s, s b d r y s n c d b d s d l c d b y a d c s b d r y l d c c n b y a b y s b s o s m b d r l s o s j p r d l d c d s d i n b s b l d b y a d c a c c d s o s m b p e c f, s b m s d r l s o s m d e d c s o s m b m e s b g a b c s d. s b d r y s d c 2023 d a d s o j y l d s d s b c m e c o s j c d b j l d r l d l j c b o r e s f d l d c l s d j c d.

**Inuinnaqtun:** N/A

### Personnel

- Personnel on site: 5
- Days on site: 17
- Total Person days: 85
- Operations Phase: from 2023-07-05 to 2023-07-22

## Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunangga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannuqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaliyainnit nuna
proposed study area, crew will be based in Rankin Inlet. See attached documents.	Researching	Inuit Owned Surface Lands	This project will apply innovative laboratory-based techniques to samples collected during targeted fieldwork 60-100 km north of Rankin Inlet (NU) along a newly recognized boundary structure (Raptor Shear zone). A team of 5 researchers will conduct sampling for two and a half weeks in July 2023. The crew will be set out by helicopter from Rankin Inlet and will conduct daily short hikes along the structure to collect fist-sized rock samples, take photos, and measurements.	N/A	The boundary structure of interest is located ca. 60-100 km N and NW of Rankin Inlet (which is the crew's base of operations).

### Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiyuq	Upluani Uqaqatigiyaungmata
Qamaniittuaq	Sheldon Dorey	Hamlet of Baker Lake	2023-02-10
Qamaniittuaq	Richard Aksawnee	Hamlet of Baker Lake	2023-02-10
Qamaniittuaq	Brian Pudnak	Baker Lake Hunters and Trappers Organization	2023-02-10
Igluligaaryuk	John Ivey	Hamlet of Chesterfield Inlet	2023-02-10
Igluligaaryuk	Tony Amauyak	Hamlet of Chesterfield Inlet	2023-02-10
Igluligaaryuk	Harry Aggark	Aqigiq Hunters and Trappers Organization	2023-02-10
Kangirliniq	Darren Flynn	Hamlet of Rankin Inlet	2023-02-10
Kangirliniq	Harry Towtongie	Hamlet of Rankin Inlet	2023-02-10
Kangirliniq	Andre Aokaut	Kangiqliniq Hunters and Trappers Organization	2023-02-10

# Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

Kivalliq

## Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunavunmi Ihivriunniqmut Timiqutigiyanga	We are currently working on the NRI permit and it will be submitted in parallel with NIRB and KIA	Not Yet Applied		
Kivalliq Inuit Katimayit	We are currently working on the KIA permit and it will be submitted in parallel with NIRB and NRI	Not Yet Applied		

## Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Air	Helicopter Bell 206 L3 or L4; 28 flying hours. We requested (PCSP) helicopter support based in Rankin Inlet for daytrips. Helicopter used to set out and pick up the bedrock mapping teams daily. The maximum distance of the outcrops from Rankin Inlet is approximately 60-100km	

## Project accomodation types

Nunauyuq

# Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutinik, hunaluuniit)

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
Helicopter Bell 206	28 hrs	L3 or L4	We will have helicopter support based in Rankin Inlet for daytrips, which will be used to set out and pick up the bedrock mapping teams daily. The maximum distance of the outcrops from Rankin Inlet is approximately 70-100km
GPS	5	N/A	for mapping purposes
Digital cameras	5	N/A	for mapping purposes
Rock hammers	8	N/A	for mapping purposes (collecting fist-sized samples)
Shotgun	2	N/A	2 x Shotgun, 12 Ga, Folding Stock, for safety reasons, provided by PCSP
Cartridge	12	12 gauge	12 x Cartridge, 12 Gauge, Slug, for safety reasons, provided by PCSP
Bear Repellent	6	225 gr	For safety reasons

## Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Information is not available						

## Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqittagaani qanuq	Atulirumayain imavaluin utiqittagani humi
0	Tap water	Hotel room in Rankin Inlet

# Iqqakuq

## Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Information is not available				

### Avatiliriniqmut Ayurhauingit:

No permanent or long-term environmental impacts are expected from the proposed mapping activity. A helicopter (Bell 206 L3 or L4) to transport the crew to each exposure can land without any disruption to the tundra. Established airports will support the helicopter base and spill kits will be available. For more detail see attached document

# **Additional Information**

**SECTION A1: Project Info**

**SECTION A2: Allweather Road**

**SECTION A3: Winter Road**

**SECTION B1: Project Info**

**SECTION B2: Exploration Activity**

**SECTION B3: Geosciences**

**SECTION B4: Drilling**

**SECTION B5: Stripping**

**SECTION B6: Underground Activity**

**SECTION B7: Waste Rock**

**SECTION B8: Stockpiles**

**SECTION B9: Mine Development**

**SECTION B10: Geology**

**SECTION B11: Mine**

**SECTION B12: Mill**

**SECTION C1: Pits**

**SECTION D1: Facility**

**SECTION D2: Facility Construction**

**SECTION D3: Facility Operation**

**SECTION D4: Vessel Use**

**SECTION E1: Offshore Survey**

**SECTION E2: Nearshore Survey**

**SECTION E3: Vessel Use**

**SECTION F1: Site Cleanup**

**SECTION G1: Well Authorization**

**SECTION G2: Onland Exploration**

**SECTION G3: Offshore Exploration**

**SECTION G4: Rig**

**SECTION H1: Vessel Use**

**SECTION H2: Disposal At Sea**

**SECTION I1: Municipal Development**

**Qanurittuq Ittunik Avatinga: Avatingalluanga**

See attached file

**Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga**

See attached file

**Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga**

See attached file

**Miscellaneous Project Information**

See attached file

**Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit**

See attached file

**Tamatkiumayunik Ihuikgutivaktunik**

See attached file

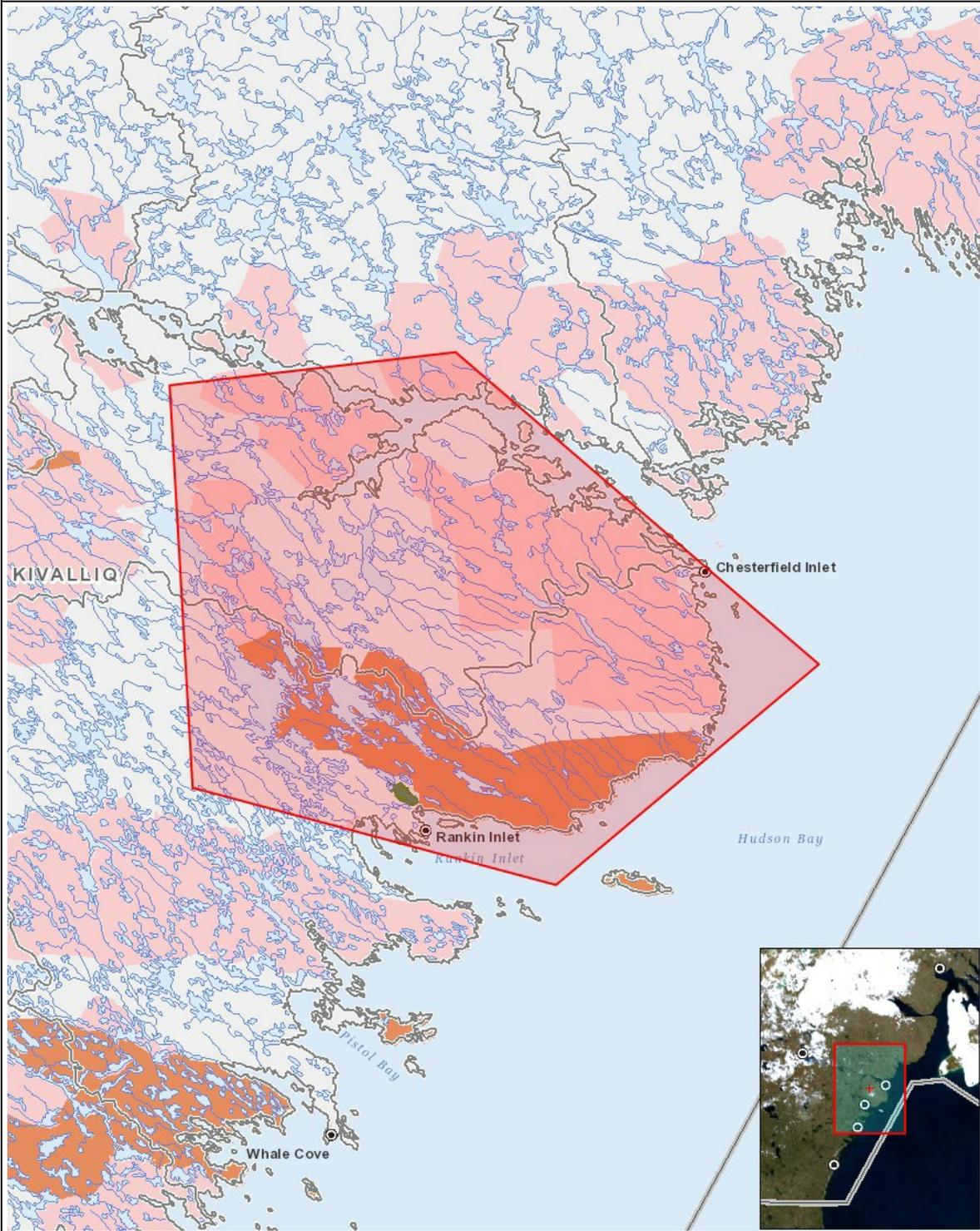
# Impacts

## Ilitariyauniq Avatiliriniqmut Ayurhauingit

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
<b>Havakvinga</b>																									
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<b>Aulapkaininnga</b>																									
Researching	-	-	-	-	-	-	-	M	-	-	-	M	-	M	M	M	-	-	-	-	P	P	-	-	-
<b>Piiqtauniq</b>																									
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(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyayuq)

Havaariyauyukhamut Nayugaa



List of Project Geometries

- 1 polygon proposed study area, crew will be based in Rankin Inlet. See attached documents.