SCIENTIFIC RESEARCH LICENCE APPLICATION
LAND, FRESHWATER & MARINE BASED RESEARCH

NRI strongly recommends that applicants review the following documents prior to submitting an application: *Scientific Research Licencing Guidelines* and *Negotiating Research Relationships in Inuit Communities: A Guide for Researchers.*
For more information about the Nunavut Research Institute (NRI) please visit our web site www.nri.nu.ca

IMPORTANT
This application fulfills the requirements for the NIRB environmental screening.
Please be advised that your application will not be processed until the application form, project summary, and maps are received.

SECTION 1: APPLICANT INFORMATION

1a. Project Title Cretaceous High Arctic paleoenvironmental and paleoclimate change

1b. Project Number

Please indicate if applicant has submitted any previous application(s) to NRI related to this project proposal?	Yes	No X
If yes, please indicate the previous NRI licence number:		
Please indicate if applicant has submitted any previous application(s) to NIRB related to this project proposal?	Yes	No X
If yes, please indicate the previous NIRB project number(s):		

2. Applicant's full name and mailing address:

Claudia Schröder-Adams	Phone:	613 520-2600 ext. 1852
Dept. of Earth Sciences, Carleton University	Fax:	613 520-5613
Ottawa, Ontario, K1S 5B6	Email:	Claudia.schroderadams@carleton.ca

3. Field Supervisor's name and mailing address:

See above	Phone:	
	Fax:	
	Email:	

4. Other Personnel list (name, position, affiliation)

Jens Herrle, Professor University of Frankfurt, Germany
Alex Quesnel, M.Sc. student Carleton University
Keenan Lindell, Government of Nunavut and film maker

SECTION 2: AUTHORIZATION NEEDED

1. Indicate <u>all</u> authorizations associated with the project proposal:

	Regional Inuit Association (RIA)
x	Nunavut Water Board (NWB)
	Nunavut Planning Commission (NPC)
	Department of Indian And Northern Development (DIAND)
	Department of Fisheries and Oceans (DFO)
	Community Government & Services (CG&S)
X	Nunavut Research Institute (NRI/GN)
	Department of Culture, Language, Elders, and Youth (CLEY/GN)
	Canadian Launch Safety (CLS)
	Environment Canada (EC)
	Department of Environment (GN)
	Department of National Defense (DND)
	Hamlet
	Parks Canada (PC)
	Canadian Wildlife Service (CWS)
	Other (please specify): ___Government of Nunavut__Palaeontology permit_____

2. List the <u>active</u> permits, licences, or other rights related to the project proposal and their expiry date:

All three applications including this one are now submitted

3. Have you applied for all authorizations required to conduct the project proposal activities?

xYES ☐ **NO**

SECTION 3: PROJECT PROPOSAL DESCRIPTION

1. Indicate the activities related to the project proposal:

x	Temporary camp (to be removed at end of field season)
	Permanent camp (to remain for life of authorization)
	Construction of recreational or safety cabin
x	Temporary fuel storage (to be removed at end of field season)
	Permanent fuel storage (to remain for life of authorization)
	Placement of structures for life of permit (other than camp or cabin – i.e. scientific instruments)
	Placement of permanent structures (other than camp or cabin – i.e. scientific instruments)
	Air surveys (i.e. geophysical, wildlife)
x	Use of aircraft/watercraft/land vehicle for personnel drop-off and pick-up to project location
	Use of on-site mechanized vehicles (i.e. atv, snowmobile, truck, zodiac)
	Sewage or grey water disposal via sump
	Hazardous waste storage or disposal
	Solid waste disposal
	Chemical storage
	Explosives storage
	Soil testing
	Soil disposal/ soil storage
	Incineration of combustible wastes and removal of non-combustible wastes
	River/ stream/ lake crossing or work/ bridge
	Drainage alteration
	Geoscientific sampling by diamond drilling
	Geoscientific sampling by soil sampling
	Geoscientific sampling by trenching
	Geoscientific sampling by borehole core
	Blasting
	Channeling
	Excavation
	Hydrological testing
	Abandonment and restoration
	Site restoration (fertilization/ grubbing/ scarification/ spraying/ recontouring)
x	Research
	Ecological survey
	Harvesting
	Removal of vegetation for scientific purposes
x	Other: sediment sampling

2. Personnel

Total No. of personnel on 4 Total No. of days on-site 24

site = (A)4 _____ = (B)24 _____ **Total No. of Person days (A) × (B) =**

_____**96**_____

3. Timing

Period of operation: **July 2, 2014** *to* **July 26, 2014**

Proposed term of authorization: _____ *to* _____

Please outline the phases of the proposed project (construction/ operation/ decommissioning) including the timing and scheduling of each phase.
Localities below list the camp localities from where we will work in a radius of about a km.

July 2 to 10: work from Glacier Fiord Camp, July 10: camp move to Lost Hammer Diapir, July 10 to 16: work at that locality, July 16: camp move to Slidre Fiord, July 16 to 24: work at that locality. July 24: move back to Eureka to be flown back to Resolute.

4. Location(s) of data collection:

Location Name	**Region** North Baffin, South Baffin, Kivalliq, Kitikmeot	**Co-ordinates** Lat (degree / minute), Long (degree / minute)	**NTS Map Sheet #**	**Land Status** Crown, Commissioners', Inuit Owned
Glacier Fiord	**Qikiqtani**	78°37'51.47"N, 89°51'31.64"W	**59E**	**Crown**
Lost Hammer Diapir	**Qikiqtani**	79° 0'34.48"N, 90°17'18.43"W	**59E**	**Crown**
Slidre Fiord	**Qikiqtani**	79°51'57.66"N, 85°19'37.38"W	**49G**	**Crown**

If the project proposal includes a **camp**, please provide the coordinates of the camp location
Lat (degree/minute) See above Long (degree/minute) _____
NTS Map Sheet # (if different from above) _____

The Nunavut Impact Review Board may require additional location information in a subsequent Project Specific Information Requirement (PSIR) submission. This may take the form of a digital Geographic Information Systems (GIS) file.

SECTION 4: NON-TECHNICAL PROJECT PROPOSAL DESCRIPTION

Please attach a non-technical description of the project proposal, no more than 500 words, in English and Inuktitut (+Inuinnaqtun, if in the Kitikmeot). The project description should outline the following:

- Project Title
- Researcher's Name and Affiliation
- Project Location
- Timeframe

- Project Description
  - purpose
  - goals & objectives
  - method of transportation
  - any structures that will be erected (permanent / temporary)
  - restoration / abandonment plans

- Methodology
  - collection protocol
  - collection mechanisms
  - indicate why specific communities or individuals were selected for your research

- Data
  - short term & long term use of data
  - other uses of data

- Reporting
  - How will the research results be communicated to the individual participants, communities, regional and Nunavut organizations?
  - Will the research result in a publication?
  -

Cretaceous High Arctic paleoenvironmental and paleoclimate change

Claudia Schröder-Adams
Dept. of Earth Sciences
Carleton University
Ottawa, Ontario K1S 5B6

Project Location: Glacier Fiord and Lost Hammer Diapir, Axel Heiberg Island
Slidre Fiord, Ellesmere Island

Timeframe: Field work: July 2 to July 24, 2014 followed by at least 2 years of laboratory based work.

Project Description:
Exceptional sediments exposures of Cretaceous (144 – 66 Million years) age on the central to southern part of Axel Heiberg Island and Ellesmere Island (Slidre Fiord) provide a unique window on the Cretaceous Arctic paleoenvironment and climate history of the past. Cretaceous temperatures ranged from relatively cool conditions of the early Cretaceous into the peak warmth about 94 Million years ago, one of the warmest periods in Earth history. These temperatures of the geological past are well understood for low latitude regions, but only few paleontological, paleobotanical and organic geochemistry data are known from the Arctic.

Purpose
The purpose of our study is: a) to develop a biostratigraphic scheme using small marine microfossils and correlate their occurrences with a framework based on chemical parameters such as carbon isotopes measured on sediments; b) to understand ancient marine passage ways that connected the Sverdrup Basin during Cretaceous time and with that revise existing paleogeographic maps, and c) try to understand phases when large amounts of CO_2 was buried in sediments and how such phases in the past affected ecosystems at that time. An improved understanding of the past will allow us to project how the present Arctic Ocean might change as the earth continues to warm.

Goals & objectives: We would like to answer the following questions:
1. How did Arctic environments react to the massive volcanic eruptions and their gas emissions that took place during the Cretaceous in the High Arctic, called the High Arctic Large Igneous Province?

2. How warm was the Arctic region during the Cretaceous and how small was the temperature gradient between low and high latitudes during that time?
3. How did the Cretaceous polar marine ecosystem react to climate changes, weathering patterns and associated runoff into the ocean? For example, how was marine plankton affected by those changes?

Method of transportation:
July 2: Flight by Twin Otter from Resolute to Sherwood Head, Axel Heiberg
Continue with helicopter from Sherwood Head to Head of Glacier Fiord (1. Field locality)
July 10: Camp move from Glacier Fiord to Lost Hammer Diapir by helicopter (2. Field locality)
July 16: Camp move from Lost Hammer Diapir to Slidre Fiord by helicopter (3. Field locality)
July 24: Pick-up at Slidre Fiord, back to Eureka by helicopter and then back to Resolute by Twin Otter

Any structures that will be erected (permanent / temporary): No permanent structures will be erected. Our camp will consist of 4 small personal tents and one cook tent, which all will be taken down at camp move.

Restoration / abandonment plans: not applicable, we will attempt to leave next to no footprint on the land.

Methodology: In the field we measure sedimentary section and record all observations such as lithological changes, macrofossil occurrences, colour changes, grainsize changes, and sedimentary structures such as ripples marks. Then every 5 to 10 m we are collecting a sediment sample, which we take with a pick-ax and put into a labelled bag. Each sample bag will be labelled with a number. Each section will have a location (Latitudes and Longitudes) for its start and end point.
Samples will be shipped to laboratories at Carleton University in Ottawa and the University in Frankfurt (Germany), where material will be broken down for microfossil content and analyzed geochemically.

Community consultation: Consultations are ongoing with Resolute Bay and Grise Fiord. Resolute Bay is contacted in order to find a participant who would like to accept a summer job as a field assistant or wildlife officer. Grise Fiord is contacted because the 3. locality at Slidre Fiord is on Ellesmere Island.

Short term & long term use of data: This project is part of a multi-year approach investigating the Cretaceous Canadian Arctic as exposed in the Sverdrup Basin. I have participated in field seasons on Ellef Ringnes Island (2010), Axel Heiberg Island (2012) and Mackenzie Delta region (2012). Results are in various stages of publication and become with that available for all interested parties.

Reporting: A report on field work and preliminary findings will be submitted to the License Offices in due time. Results will also be prepared for publication in scientific journals of which copies will be made available. An follow-up article will be written for the First Air Journal Above and Beyond; I provided one for the May issue of 2012. I would also like to prepare some material to be used in schools in Arctic communities.

Note (not translated below): Due to lack of response from Resolute I have made contact with a filmmaker from Iqaluit, Keenan Lindell, who I have now hired to be our fourth team member. I am still awaiting a response from the Hamlet of Grise Fiord.

Research Proposal translation by Gloria Putumiraqtuq

135-63 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐃᓄᖕᒐᐅᑏᑦ ᐊᕙᑎᓕᕆᓂᖅ ᐊᒻᒪᓗ ᐃᓄᖕᒐᐅᑏᑦ ᓯᓚᐅᑉ ᐊᓯᙳᕐᓂᖕᒥᑦ

ᒃᓚᑎᐊ ᔅᑰᑐ-ᐋᑕᒻᔅ
ᒐᕙᒪᒃᑯᑦ ᐱᓕᕆᕝᕕᐊᑦ ᓯᓚᕐᔪᐊᑉ ᓯᓚᕐᔪᐊᑉ ᓱᓇᒃᑯᑖᖑᕆᓐᓂᒃ ᖃᐅᔨᓴᕐᓂᖅ
ᑲᓇᑕᓐ ᓯᓚᑦᑐᖅᓴᕐᕕᒡᔪᐊᖅ
ᐋᑕᕚ, ᐋᓐᑎᐅᕆᔫ K1S 5B6

ᐱᓕᕆᐊᒃᓴᖅ ᓇᒦᓂᖓ: ᓯᕐᒥᐅᑉ ᑲᖏᖅᓯᐊ (Glacier Fiord) ᐊᒻᒪᓗ ᐊᐅᓯᐃᑦᑐᕐᒥᐅᑦ ᕿᑭᖅᑕᖓᑦ

ᖃᑯᑎᒃᑯ: ᖃᐅᔨᓴᕆᐊᖅᓯᒪᓂᖅ ᐱᓕᕆᐊᒃᓴᖅ: ᔪᓚᐃ 2 - ᔪᓚᐃ 24, 2014 ᒪᓕᒃᑐᒍ ᒪᕐᕉᖕᓂᒃ ᐅᑭᐅᓂᒃ ᖃᐅᔨᓴᕐᓂᖅ ᐱᓕᕆᕝᕕᐅᔪᒥ ᐱᓕᕆᐊᒃᓴᑦ.

ᐱᓕᕆᐊᒃᓴᖅ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᓂᖅ:
ᖃᐅᔨᒪᔭᐅᑦᑎᐊᙳᕆᑦᑐᑦ ᓴᐅᔭᐅᓂᑯᑦ ᕿᓂᖅᑕᐃᑦ (144-66 ᒥᓕᐊᓐ) ᐅᑭᐅᓖᑦ ᕿᑎᐊᓂᑦ ᓯᕿᓐᓂᐊᒍᑦ Axel Heiberg Island ᐊᒻᒪᓗ ᐊᐅᓯᐃᑦᑐᕐᒥᐅᑦ ᕿᑭᖅᑕᖓᓄᑦ (Slidre fiord) ᐱᔾᔪᑎᖃᕐᓂᐊᕐᓗᒍ ᐱᐅᔪᒥᒃ ᑕᑯᔫᑕᐅᔪᓐᓇᖅᑐᒥᒃ ᐃᒐᓛᓕᒃᑯᑦ 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐃᓄᖕᒐᐅᑏᑦ ᐊᕙᑎᓕᕆᓂᖅ ᐊᒻᒪᓗ ᐃᓄᖕᒐᐅᑏᑦ ᓯᓚᐅᑉ ᐊᓯᙳᕐᓂᖕᒥᑦ ᑭᖑᓂᑦᑎᓐᓂ. 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐃᓄᖕᒐᐅᑏᑦ ᐊᕙᑎᖓ ᐃᒃᑮᕐᓇᕐᓂᖓ ᐃᒃᑮᓇᓗᐊᙱᑦᑐᓂ ᑕᐃᔅᓯᒪᓂ ᐆᓇᖅᓯᕚᓪᓕᐊᓕᖅᑎᓪᓗᒍ 94 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᖄᙱᖅᓯᒪᓕᖅᑐᑦ, ᐆᓇᕐᓂᖅᐸᖑᓚᐅᖅᓯᒪᔪᖅ ᑕᐃᔅᓯᒪᓂᐅᑎᓪᓗᒍ ᓯᓚᕐᔪᐊᕐᒥ. ᓯᓚᐅᓂᖕᒥᑦ ᑖᒃᑯᐊ ᑐᑭᓯᔭᐅᑦᑎᐊᖅᑐᑦ ᐊᑦᑎᓐᓂᐊᑕ ᓄᓇᕆᔭᐅᔫᑉ ᒥᑭᓐᓂᖅᐹᖅ ᑐᑭᓕᕇᖕᓂᐊᑕ ᓯᓚᕐᔪᐊᑉ, ᑭᓯᐊᓂ ᐊᒥᔫᙱᑦᑐᑦ ᐅᔭᕋᖕᓂᖕᒫᖅᑐᒥᓃᑦ, ᐱᑐᖅᓯᐊᒥᓃᑦ ᐊᒻᒪᓗ ᐱᕈᕐᓇᖅᑐᓕᒫᓂᑦ ᖃᐅᔨᓴᕐᓗᓂ ᐃᓚᒋᐊᖅᓯᒪᔪᓂᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ.

ᑐᕌᔾᔪᓯᐊᖓ
ᑐᕌᖅᓯᒪᔪᖅ ᑕᒪᓐᓇ ᖃᐅᔨᓴᕐᓂᖅ: a) ᐱᕚᓪᓕᐊᕐᑰᓪᓗᒍ ᖃᓄᖅ ᐅᖓᓯᑏᓐᓂᖕᒥᑦ ᐊᒻᒪᓗ ᖃᖓᐅᓂᖕᒥᑦ ᐅᒪᕐᒥᐅᑕᓂᒃ ᐅᔭᕋᖕᓂᖕᓕᖅᑐᓂᒃ ᐊᒻᒪᓗ ᖃᓄᖅ ᐃᓚᑏᔪᓐᓇᕐᓂᖕᒥᑦ ᓄᐃᑕᓂᖕᒥᑦ ᐃᓚᒋᔭᐅᓯᒪᔾᔪᑎᓂᒃ ᖃᐅᔨᓴᕈᑎᓂᒃ ᐊᑐᕐᓗᓂ ᐆᑦᑑᑎᒋᓗᒍ ᐸᐅᖅ ᐅᕐᑯᒪᐃᓐᓂᖕᒋᓐᓄᑦ ᖃᐅᔨᓴᕈᑏᑦ; b) ᑐᑭᓯᓂᖅ ᐃᒪᕐᒥᐅᑕᓂᒃ ᐃᖅᓴᕐᓂᑕᕐᓂᑦ ᓇᐅᒃᑰᖅᑲᑦᑕᕐᓂᖕᒥᑦ ᑕᐃᑉᓯᒪᓂ ᓄᐊᕕᒋᓐ ᕿᒥᕈᐊᖅᑎᓪᓗᒍ (Sverdup Basin) ᖃᐅᔨᓴᖅᑎᓪᓗᒋᑦ 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐃᓄᖕᒐᐅᑏᑦ ᐊᕙᑎᓕᕆᓂᖅ ᐊᒻᒪᓗ ᐃᓄᖕᒐᐅᑏᑦ ᓯᓚᐅᑉ ᐊᓯᙳᕐᓂᖕᒥᑦ ᑭᖑᓂᑦᑎᓐᓂ ᑕᐃᑉᓯᒪᓂ ᐊᒻᒪᓗ ᑖᒃᑯᐊ ᐊᑐᕐᓗᒋᑦ ᐋᖅᑭᒋᐊᕐᓗᒋᑦ ᐃᖕᓴᕐᓂᑕᒥᓃᑦ ᐅᔭᕋᖕᓂᐊᕐᓃᑦ ᓄᓇᕆᔭᖕᒋᑦ ᓇᒦᓚᐅᕐᓂᖕᒋᓐᓂᑦ; c) ᑐᑭᓯᒐᓱᐊᕐᓂᖅ ᖃᓄᖅ ᐊᖏᓂᖕᒋᑦ/ᐊᔾᔨᒌᖕᓂᖕᒋᑦ ᑕᑯᓐᓇᙱᑦᑐᓂᒃ ᓇᐃᒪᓐᓇᖕᒋᑦᑐᓂᒃ ᐅᖅᓯᖕᓂᑦ ᐃᓗᐊᓃᓚᐅᖅᓯᒪᔪᓂᒃ ᐅᔭᕋᖕᓂᐊᕐᓃᑦᑐᓂᒃ ᐊᒻᒪᓗ ᖃᓄᑎᒋ ᐃᓚᒋᔭᒃᑲᕐᓂᖕᒋᑦ ᐱᕈᖅᓯᐊᑦ, ᓂᕐᔪᑏᑦ, ᐃᒪᐃᑦ ᐊᒻᒪᓗ ᓄᓇᐃᑦ ᑕᐃᑉᓯᒪᓂᐅᑎᓪᓗᒍ. ᑐᑭᓯᕆᐊᑦᑎᐊᕐᓂᖅ ᑕᐃᑉᓯᒪᓂᐅᑎᓪᓗᒍ ᐱᓕᕆᐊᒃᓴᐅᔪᓐᓇᖅᑐᑦ ᐅᓪᓗᒥᐅᓕᖅᑐᒧᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐃᒪᕐᔪᐊᑉ ᐊᓯᙳᖅᐸᓪᓕᐊᓂᖓ ᓯᓚᕐᔪᐊᖅ ᐆᓇᖅᓯᕚᓪᓕᐊᑎᓪᓗᒍ.

ᑐᕌᓇᔭᐅᔪᑦ ᐊᒻᒪᓗ ᑐᕌᒐᒃᓴᐃᑦ: ᐅᑯᐊ ᐊᐱᖅᑯᑏᑦ ᑭᐅᔪᒪᔭᕋᓗᐊᕗᑦ:
1) ᖃᓄᖅ ᐅᑭᐅᖅᑕᑐᒥ ᐊᕙᑎᖓ ᐃᓕᐅᕐᓂᖅᐸ ᐅᑯᔪᐊᓗᕐᑲᖅᑎᓪᓗᒍ ᐊᒻᒪᓗ ᐅᖅᓯᐊᓗᖕᒋᑦ ᓇᐅᒃᑰᕐᓂᖕᒋᑦ/ᓇᒨᕐᓂᖕᒋᑦ ᑕᐃᑉᓯᒪᓂ 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐅᑭᐅᖅᑕᖅᑐᒥ, ᐊᑎᖓ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᖏᔪᖅ ᐃᑯᒪᓂᐅᑉ ᓄᓈ? (Large Igneous Province)
2) ᖃᓄᑎᒋ ᐆᓇᕐᓂᖅᐸ ᐅᑭᐅᖅᑕᖅᑐᖅ ᑕᐃᑉᓯᒪᓂ 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐊᒻᒪᓗ ᖃᓄᖅ ᒥᑭᓂᕐᑲᕐᓂᖅᐸ ᐆᓇᕐᓂᖓ ᐊᖏᓂᖅᓴᕐᓗ ᒥᑭᓂᖅᓴᕐᓗ ᓯᕿᓐᓂᕐᒥᑦ ᐊᒻᒪᓗ ᑐᑭᓕᕇᓐᓂᖓ ᓯᓚᕐᔪᐊᒥᑦ ᑕᐃᑉᓯᒪᓂᐅᑎᓪᓗᒍ?
3) ᖃᓄᐃᓕᐅᕐᓂᖅᐸᑦ 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᓛᓂ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐃᒪᕐᒥᐅᑕᐃᑦ ᐊᓯᙳᖅᐸᓪᓕᐊᑎᓪᓗᒍ ᓯᓚ ᐊᒻᒪᓗ ᐃᓚᒋᔭᖏᓐᓄᑦ ᖃᓄᐃᓕᐅᕐᓂᖕᒋᑦ ᐃᒪᕐᒥ? ᐆᑦᑐᑎ, ᐃᒪᕐᒥᐅᑕᐃᑦ ᓅᒍᓐᓇᙱᑦᑐᑦ ᓄᙳᔾᔮᙱᑦᑐᑦ ᐃᒻᒥᓂᒃ ᐊᓯᙳᖅᑎᓪᓗᒍ ᑕᐃᑉᓯᒪᓂ?

ᐊᐅᓪᓚᕐᓂᖅ:

ᔪᓚᐃ 2: ᑎᒻᒥᓲᒃᑯᑦ ᖃᐅᓯᐃᑦᑐᒧᑦ Sherwood Head
ᑲᔪᓯᓗᑕ Hᐃᓕᖄᑉᑕᒃᑯᑦ SherWood-ᒥᑦ ᓱᕿᒥᐅᑉ ᑲᖏᖅᓯᐊ (Glacier Fiord) (1. ᖃᐅᔨᓴᕐᕕᐅᑉ ᐃᓂᑦᔭᖅ)
ᔪᓚᐃ 10: ᓘᓐᓗᑕ ᓱᕿᒥᐅᑉ ᖃᖏᖅᓯᐊᓂᑦ Lost Hammer Diapir Hᐃᓕᖄᑉᑕᒃᑯᑦ (2. ᖃᐅᔨᓴᕐᕕᐅᑉ ᐃᓂᑦᔭᖅ)
ᔪᓚᐃ 16: ᓘᓐᓗᑕ Lost Hammer Diapir–ᒥᑦ Slidre Fiord Hᐃᓕᖄᑉᑕᒃᑯᑦ (3. ᖃᐅᔨᓴᕐᕕᐅᑉ ᐃᓂᑦᔭᖅ)
ᔪᓚᐃ 24: ᐊᐃᒃᓯᖅᑕᐅᓗᑕ Slidre Fiord–ᒥᑦ, ᐅᑎᕐᓗᑕ Eureka–ᒧᑦ Hᐃᓕᖄᑉᑕᒃᑯᑦ ᐊᒻᒪᓗ ᖃᐅᓯᐃᑦᑐᒧᑦ ᑎᒻᒥᓲᒃᑯᑦ

ᓱᓇᑐᐃᓐᓇᐃᑦ ᐋᖅᑭᒃᑕᐅᓯᒪᓂᖓ ᓇᑉᐸᖅᑕᐅᔪᑦ (ᖃᖓᓗᒃᑖᖅ/ᓇᐃᑦᑐᒃᑯᑦ): ᖃᖓᓗᒃᑖᒃᑯᑦ ᓇᑉᐸᖅᓯᒪᔪᖃᓪᓚᖏᑦᑐᖅ. ᓯᓂᒃᑕᕐᕕᑦᔭᕗᑦ ᑎᓴᒪᑐᐃᓐᓇᕐᓂᒃ ᑐᐱᖃᕐᓂᐊᖅᑐᑦ ᐊᒻᒪᓗ ᐊᑕᐅᓯᕐᒥᒃ ᐃᒐᖃᕐᓗᓂ, ᐲᖅᑕᐅᓂᐊᖅᑐᓂ ᐊᐅᓪᓚᓇᐊᕈᑦᑕ.

ᐅᑎᖅᑎᑦᑎᓂᖅ/ᕿᒪᐃᓂᖅ ᐸᕐᓇᐅᑦ: ᐱᑕᖃᓇᐊᖃᙱᑦᑐᖅ, ᕿᒪᐃᔪᒪᙱᑦᑐᒍᑦ ᓱᓇᑐᐃᓐᓇᕐᓂᑦ ᓄᓇᒥ.

ᐱᐊᓂᒃᐸᓪᓕᐊᓂᖅ: ᖃᐅᔨᓴᕐᕕᒻᒥ ᖃᐅᔨᓴᕐᓂᐊᖅᑐᒍᑦ ᓴᐅᔭᐅᓂᑯᓂᒃ ᕿᓂᖅᑕᐃᑦ ᐃᓂᑦᔭᖏᑦ ᐊᒻᒪᓗ ᑎᑎᕋᕐᓗᒋᑦ ᐅᔾᔨᕆᔭᓗᒃᑖᕗᑦ ᐅᔭᕋᖓᓂᐊᕐᓂᕐᒧᑦ ᖃᐅᔨᓴᕐᓂᖅ, ᐊᖏᔫᑏᑦ ᐅᔭᕋᖓᓂᐊᕐᓂᖅ ᖃᐅᔨᓴᕐᓂᖅ, ᑲᓪᖏᑦ ᐊᓯᙵᕐᓂᖏᑦ, ᓯᐅᕋᐅᑉ ᐊᓯᙵᕐᓂᖏᑦ ᐊᒻᒪᓗ ᓴᐅᔭᐅᓐᓂᑯᓂᒃ ᕿᓂᖅᑕᕐᓂᖏᑦ

ᐋᖅᑭᒃᑕᐅᓯᒪᓂᖏᑦ ᕿᒥᒐᕐᓂᖏᑦ. ᑖᓐᓇᒪᓂᑦ ᖁᓕᓄᑦ ᐆᑦᑐᑎᐅᑉ ᐅᖓᓯᓐᓂᖓᓂᒃ ᑲᑎᖅᓯᐃᓂᐊᖅᑐᒍᑦ ᓴᐅᓂᐊᖅᑕᑦᑎᓐᓂᒃ ᐅᔭᕋᖓᓂᐊᕐᓂᑦ, ᐅᓕᒪᐅᑎᒥᒃ ᐊᑐᕐᓗᑕ ᐊᒻᒪᓗ ᓇᓗᓇᐃᒃᑯᑕᕐᓗᒋᑦ ᐳᕐᓗᒋᓐᓗ. ᐊᑕᐅᓯᖅ ᐳᖅᓯᒪᔪᖅ ᓈᓴᐅᑎᖃᕐᓂᐊᖅᑐᑦ ᓇᒻᒥᓂᖅ. ᑕᒪᕐᒥᑦ ᓇᑭᙳᖅᓯᒪᓂᖏᑦ ᓇᓗᓇᐃᒃᑯᑕᖃᕐᓂᐊᖅᑐᑦ (latitude longitude) ᐱᒋᐊᕐᓂᖓᓂᑦ ᐊᒻᒪᓗ ᐱᐊᓂᒋᐊᕐᓂᖓᓄᑦ.
ᖃᐅᔨᓴᖅᑕᐅᔪᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᑦ Carleton ᓯᓚᑦᑐᖅᓴᕐᕕᐊᓛᖓᓂ ᐋᑕᕗᒥ ᐊᒻᒪᓗ Frankfurt ᓯᓚᑦᑐᖅᓴᕐᕕᐊᓛᖓᓂ (ᔩᒪᓂ Germany), ᐅᔭᕋᖓᓂᐊᕐᓃᑦ ᒥᑭᓪᓕᕆᐊᖅᑕᐅᓗᑎᒃ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᕐᓗᑎᒃ ᐅᔭᕋᖓᓂᐊᕐᓃᑦ ᐊᒻᒪᓗ ᐃᓚᒋᐊᖅᓯᒪᓂᖏᑦ ᐅᔭᕋᖓᓂᖖᖅᑐᒥᓃᑦ/ᐱᕈᖅᓯᐊᒥᖖᖅᑐᒥᓃᑦ.

ᓇᐃᓐᓂᖓ ᐊᒻᒪᓗ ᐊᑯᓂ ᐊᑐᕐᓂᐊᕐᓂᖓ ᖃᐅᔨᓴᕈᑦ: ᑖᓐᓇ ᐱᓕᕆᐊᒃᓴᖅ ᐊᒥᓱᓄᑦ–ᐅᑭᐅᓄᑦ ᑑᕋᖓᔪᖅ ᖃᐅᔨᓴᕐᓗᒍ 144-66 ᒥᓕᐊᓐ ᐅᑭᐅᑦ ᐅᖓᑖᓂ ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᐊᓂ ᐱᔭᐅᕙᓪᓕᐊᑎᓪᓗᒍ ᓄᐊᕕᕆᓐ ᕿᒥᕈᐊᖅᑎᓪᓗᒍ. ᐃᓚᐅᖃᑦᑕᖅᓯᒪᔪᖓ ᖃᐅᔨᓴᖅᑎᓪᓗᕆᑦ Ellef Ringnes Islands (2010), Axel Heiberg Island (2012) ᐊᒻᒪᓗ Mackenzie Delta-ᒥ (2012). ᐱᐊᓂᖕᓂᖏᑦ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐊᔾᔨᒌᙱᑦᑐᑦ ᓴᖅᑭᑎᑕᐅᑎᓪᓗᒋᑦ ᐊᒻᒪᓗ ᑭᒃᑯᓕᒫᓄᑦ ᖃᐅᔨᔪᒪᔪᓄᑦ ᐊᓪᓚᙳᖅᓯᒪᔪᑦ.

ᐅᓂᒃᑳᓕᐊᕐᓂᖅ: ᐅᓂᒃᑳᓕᐊᕐᓂᖅ ᑖᓯᒧᖓ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐊᒻᒪᓗ ᓇᓂᓯᔭᑎᓐᓂᒃ ᑐᓂᔭᐅᓂᐊᖅᑐᑦ ᓚᐃᓴᓕᕆᔨᒃᑯᓐᓄᑦ ᓈᒻᒫᓂᐊᕐᓗᒍ ᑐᓂᓯᔾᔪᓯᐊᖓ ᖃᐅᔨᒃᑲᐃᓂᖅ. ᐅᓂᒃᑳᓕᐊᑦ ᐸᕐᓇᐅᑎᑦᔭᐅᓂᐊᖅᑐᑦ ᑭᒃᑯᓕᒫᓄᑦ ᖃᐅᔨᕐᑯᓐᓗᕆᑦ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᓱᓇᓕᒫᓄᑦ ᐊᔾᔨᓕᐅᕐᓂᐊᖅᑐᑦ. ᐊᔾᔨᓕᐅᕐᓂᐊᕐᒥᔪᑦ ᑎᒻᒥᓲᓕᕆᔨᒃᑯᓐᓄᑦ First Air ᐅᖃᓕᒫᕐᕕᒃᓴᓄᑦ; ᑐᓂᓯᓯᒫᓂᒃᑐᖓ ᐅᖃᓕᒫᕐᕕᒃᓴᐅᓂᐊᖅᑐᓄᑦ ᒪᐃᖑᓕᖅᐸᑦ
2012–ᖑᑎᓪᓗᒍ..ᐋᖅᑭᒃᓯᐃᔪᒪᕕᓗᐊᖅᑐᖓ ᐊᑐᖅᑕᐅᔪᓐᓇᕐᓂᐊᖅᑐᓄᑦ ᐃᓕᓐᓂᐊᕐᕕᓐᓄᑦ ᓄᓇᒋᔭᐅᔪᓄᑦ.

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SECTION 5: MATERIAL USE

1. List equipment (including drills, pumps, aircrafts, vehicles etc.):

Equipment type and number	Size – dimensions	Proposed use
Twin Otter		Drop off to Sherwood Head and pick up at Eureka
Helicopter	L-4	Delivery to camp sites and camp moves
Small generator	1000 W	Charging batteries
Hammer and pick axe	Hand held	Used for sampling
Camping gear	One cook tent and 4 sleep tents	
Radio plus antenna		Communication with Resolute PCSP

2. Detail fuel and hazardous material use:

Fuel	Number of Containers and Capacity of Containers	Total Amount of Fuel (in Litres)	Proposed Storage Methods
Diesel			
Gasoline	1	5 GAL	In plastic jerry can
Aviation fuel	2	200 litres	Drums stored at Sherwood Head
Propane			
Other			
Hazardous Materials and Chemicals	**none**	**Total Amount of Hazardous Materials and Chemicals (in Litres)**	

3. Detail daily water consumption rates

Daily amount (in Litres)	Proposed water retrieval methods	Proposed water retrieval location
20 litres	by hand with canister	At meltwater streams

4. Have you applied for a Class A License with the Nunavut Water Board?

☐ **YES** **xNO**

Applied for use of water or deposit of waste without a license following advice by the Board.

SECTION 6: WASTE DISPOSAL AND TREATMENT METHODS

1. List the types of waste:

Type of waste	Projected amount generated	Method of Disposal	Additional treatment procedures
Sewage (human waste)	Waste of 4 people	Burial according to regulations	
Greywater	10 litres	Burial according to regulations	
Combustible wastes	1 kg	To be flown out	All garbage is taken out with us back to Eureka and Resolute
Non-Combustible wastes	2 Kg	To be flown out	
Overburden (organic soil, waste material, tailings)	none		
Hazardous waste	none		
Other:			

2. Will you be incinerating combustible waste, removing all solid waste, and removing the ash generated from incineration?

☐ **YES** **xNO**

SECTION 7: COMMUNITY INVOLVEMENT & REGIONAL BENEFITS

1. List the community representatives that have been contacted and provide the minutes of the meetings if available:

Community	Name	Organization	Date Contacted
Resolute Bay	Aziz Kheraj		Jan. 25, 2014
Grise Fiord	Marty Kuluguqtuq	Hamlet	March 12, 2014
Iqaluit	Keenan Lindell	Government of Nunavut	Feb. 22, 2014

2. How will the proposed project benefit Nunavut?
This project provides a job for a northern resident. I hired Keenan Lindell from Iqaluit, who will film a documentary of our work in the field, staging interviews of all four team members etc. in Order to provide a science documentary for schools in Nunavut and Ontario.

4. Describe and attach documentation regarding community support or concerns for the proposed project:

Will be submitted as soon as received from Grise Fiord.

5. Is there a traditional knowledge component to this research project? If yes, please explain:

The planned documentary will also allow Keenan to bring in his traditional knowledge and share with us.

SECTION 8: GENERAL QUESTIONS

1. Do you give NRI permission to publish project information in the Nunavut Research Institute Annual Compendium of Research Undertaken in Nunavut?

xYES ☐ **NO**

3. In addition to the application form, applicants are required to submit additional information in an electronic format to the Manager, Research Liaison, cfilion@nac.nu.ca. Please check that the following have been submitted to NRI:

[x] **Project Summary** -in English and Inuktitut (+Inuinnaqtun, if in the Kitikmeot)
[x] **NTS Maps** of the project

Applicant:

Signature	Professor **Title**	March 24, 2014 **Date**

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