



OREGON STATE UNIVERSITY

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**Project Title: Variability and Forcing of Fluxes through Nares Strait**

**Project Description:**

Our science goal is to determine how much seawater and ice flow south through Nares Strait and how that flow varies over a three-year period. We will use satellite information, models and ocean observations to do this. Ocean studies will begin from the USCG Icebreaker Healy in late-July to mid-August, 2003. We will examine water properties, take water samples and place instruments on the seafloor in Baffin Bay, Kane Basin and Kennedy Channel. The instruments will measure currents, sea level, temperature and salt content and are designed and placed to avoid damage from deep iceberg keels. We intend to retrieve and redeploy the equipment using helicopter and Twin Otter in April 2005. We would retrieve the equipment in April 2007. Aircraft based work would be conducted from camps lasting about 6 weeks and made of temporary structures. These camps will be located on the Greenland side of Kennedy Channel.

We are also proposing to study past flow conditions in two ways. Clams lay down their shells in distinct annual layers and can live to be 40 years old. We will test the idea that the chemistry of clamshell layers can teach us about how the flow changed over past decades. For this purpose, divers will collect about 100 clams and water samples at about 8 locations distributed along the Canadian and Greenland sides of Nares Strait. To study past flow changes over hundreds and thousands of years, we will collect 4 sediment cores from the seafloor in Northern Baffin Bay. Provided the ship's unique mapping system is working well, we will collect detailed maps of the seafloor over the regions that we travel and make this data available.

We hope both to learn from the Nunavut community and engage Nunavut participation in several aspects of our project.



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**SCIENTIFIC RESEARCH LICENCE APPLICATION  
 (Land, Freshwater & Marine Based Research)**

**SECTION 1: APPLICANT INFORMATION**

1. Applicant Information	
Applicant's full name, title, and mailing address:	Dr. Kelly Kenison Falkner 104 Ocean Admin. Bldg. College of Oceanic & Atmospheric Science Oregon State University Corvallis, OR 97331-5503 USA
Fax:	541-737-2064
Phone:	541-737-3625
Email:	kfalkner@coas.oregonstate.edu
2. Supervisor Information	
Field Supervisor (address, if different from above)	Dr. Kelly Kenison Falkner
Phone: (radio or otherwise)	-
3. Other Personnel	
List name and position:	Can send electronic copy of cruise roster
Total # of personnel:	-
Total # of person days:	-

**SECTION 2: AUTHORIZATION NEEDED**

#### 4. Authorization Contacts

List the organizations you will contact for necessary authorizations associated with the project:	Licensing Officer, DFO, Iqaluit
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#### 5. Authorization

List the active permits, licences, or rights related to the project and their expiry date:	-
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### SECTION 3: PROJECT PROPOSAL DESCRIPTION

#### 6. Project Duration:

Period of operation:	21Jul03 - 16Aug03
Proposed term of permit:	21Jul03 - 16Aug03
Project Title:	Variability and Forcing of Fluxes through Nares Strait and Jones Sound

#### 7. Location(s) of data collection:

Location Name	Region	Latitude	Longitude	NTS Map	Land Status
Nares St.	ocean (will fax map)	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

### NON-TECHNICAL PROJECT PROPOSAL SUMMARY

#### 8. Non-Technical Project Proposal Summary

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### SECTION 4: MATERIAL USE

#### 9. List equipment (including drills, pumps, aircrafts, etc.)

Equipment Type and Number	Size-dimensions	Proposed Use
HH-65 helicopter	-	ice reconnaissance; possibly for clam retrieval
Arctic Survey Boat	15 ft	shallow water mooring deployment; clam retrieval

CTD-rosette	-	water sampling device
swath mapping system	-	detailed seafloor mapping where feasible
moorings	various	to be deployed on seafloor
-	-	-

#### 10. Detail fuel and hazardous materials use

Fuels	Number of Containers	Capacity (gal/litres)
Diesel	-	-
Gasoline	-	-
Aviation Fuel	-	-
Propane	-	-
Other	-	-
Hazardous Materials	Number of Containers	Capacity (gal/litres)
-	-	-
-	-	-
-	-	-
<b>Describe method of fuel transfer</b>	All fuel transfer to helicopters takes place on board vessel	

#### 11. Spill Contingency Plan

Describe any procedures and materials in place to handle accidental spills. Please fax or mail your spill contingency plan and other appropriate information about the hazardous materials associated with the proposed project.	The USCGC Healy is fully equipped for accidental spill containment.
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### SECTION 5: WASTE DISPOSAL AND TREATMENT FACILITIES

#### 12. Describe amount and methods of disposal:

Type of Waste	Projected Amount Generated	Method of Disposal	Additional Treatment Procedures
Grey Water	-	discharged periodically	-
Garbage	-	incinerated on board or held	-

Garbage	-	incinerated on board or held	-
Overburden	none	-	-
Hazardous Waste	-	held	-
Other	-	-	-

## SECTION 6: RESTORATION AND ABANDONMENT PLANS

13. Site Restoration	
Describe the proposed procedure for site restoration upon abandonment of any area associated with the project.	-

## SECTION 7. ENVIRONMENTAL IMPACT

14.			
Indicate and describe the components of the environment that are near the project area, as applicable. Fax or mail any relevant maps or information.			
Type of Species		Important Habitat Area	Critical Time Periods
Fish:	-	-	-
Caribou:	-	-	-
Muskox:	-	-	-
Raptor:	-	-	-
Migratory Birds:	X	All present in the Northwater Polynya area and in parts of Nares St.	-
Waterfowl:	X	-	-
Seals:	X	-	-
Whales:	X	-	-
Narwhals:	X	-	-
Canid Family:	-	-	-
Bears:	polar	present on ice in Nares St.	-
Eskers::	-	-	-
Communities:	-	-	-
Sites:	-	-	-
15.			
Indicate and describe other known uses of the	Some hunting occurs on ice in region. Research projects by other investigators are staged in the region but primarily on land and		

area such as local development, traditional use (hunting/fishing/spiritual), outfitting, tourism, mineral development, research, etc.	adjacent glaciers,
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**16.**

Describe the impact of the proposed project activity on the environmental components and uses, in the area listed above.	Impact on hunting will be minimal since we are entering Nares St. just after the break up of the ice bridge at Smith Sound. Hunters would probably not want to be on the moving ice in that dangerous period.
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**17.**

What are some suggested mitigation measures for these impacts?	We can limit helicopter reconnaissance flights to over the Strait so as not to disturb land-based hunting parties.
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**SECTION 8: COMMUNITY INVOLVEMENT AND REGIONAL BENEFITS**

**18. Community Representatives**

List the community representatives that you have contacted about this proposed project.

Community	Name	Organization	Date contacted	Means	Telephone	Fax
Grise Fjord	L. Audlaluk	-	14Feb03	letter	-	-
Grise Fjord	Mayor	-	14Feb03	letter	-	-
Grise Fjord	Principal	-	14Feb03	letter	-	-
Government of Nunavut	Gordon MacKay	Dept. Sustainable Development	4Feb03	e-mail	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

**10. Local Involvement**

Describe the level of involvement that the residents of Nunant have had with respect to the proposed	
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project. Elaborate on local employment opportunity, local benefits, training programs (if applicable)	
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**11. Community Support**

Describe, and fax or mail documentation regarding community concerns or support for the proposed project.	
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**12. Traditional Knowledge**

Is there a Traditional Knowledge (TK) component to this research project?	
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