



NIRB Application for Screening #126478

ICENAV

Application Type: New

Project Type: Scientific Research

Application Date: Tuesday, July 21, 2026

Period of operation: from 2026-08-20 to 2028-08-30

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DETAILS

Non-technical project proposal description

- English: IceNAV is a government-led research project to improve the efficiency and safety of maritime navigation in ice-covered waters and to reduce the reliance on manned helicopter flights for ice reconnaissance. IceNAV is being conducted for the Royal Canadian Navy and Canadian Coast Guard through and is supported by various government departments. IceNAV research is being conducted from the CCGS Henry Larsen icebreaker as part of the normal Arctic resupply and icebreaking program during the late summer and early fall. The science team includes researchers from Defence Research and Development Canada (DRDC), the National Research Council of Canada (NRC), Environment and Climate Change Canada (ECCC), the Canadian Ice Service (CIS), NASA's Surface Water and Ocean Topography (SWOT) satellite program, and NATO's Centre for Maritime and Experimentation (CMRE) with support from the Canadian Coast Guard (CCG). The planned research focuses on measuring and understanding the properties of floating sea and glacial ice using sensors mounted on a ship, on a drone launched and recovered from the ship, on satellites, and on a small underwater autonomous vehicle. Sensors are used to passively measure the ice conditions around the vessel during transit operations. Additionally, the science team will disembark from the ship onto sea ice floes to manually retrieve and measure sea ice characteristics. Manual measurements include extracting sea ice cores, collecting samples of sea ice for mechanical testing, performing temperature and salinity measurements of the water near and under the targeted ice floes, and measuring ice thickness profiles using specialized sensors and subsea acoustics. The manual measurements are used to calibrate the data gathered by sensors. The research will take place in the regions surrounding the Northwest Passage intersection, including Lancaster Sound, Parry Channel, Peel Sound, M'Clintock Channel and Prince Regent Inlet, between August 20 and August 30. The science team will specifically target large, stable ice floes for manual measurements and will passively record all sea ice conditions along the voyage route. The ship may venture outside of this region to find suitable ice depending on local conditions at the time of sailing. The research will focus on drifting pack ice in navigable waterways.
- French: IceNAV est un projet de recherche dirigé par le gouvernement visant à améliorer l'efficacité et la sécurité de la navigation maritime dans les eaux couvertes de glace, tout en réduisant la dépendance aux vols de reconnaissance des glaces effectués par hélicoptères avec équipage. Le projet est mené au bénéfice de la Marine royale canadienne et de la Garde côtière canadienne, avec l'appui de plusieurs ministères et organismes gouvernementaux. Les travaux de recherche sont réalisés à bord du brise-glace NGCC Henry Larsen dans le cadre des opérations régulières de ravitaillement de l'Arctique et de déglacage menées à la fin de l'été et au début de l'automne. L'équipe scientifique regroupe des chercheurs de Recherche et développement pour la défense Canada (RDDC), du Conseil national de recherches du Canada (CNRC), d'Environnement et Changement climatique Canada (ECCC), du Service canadien des glaces (SCG), du programme satellitaire Surface Water and Ocean Topography (SWOT) de la NASA, ainsi que du Centre de recherche et d'expérimentation maritimes (CMRE) de l'OTAN, avec le soutien de la Garde côtière canadienne (GCC). Les activités de recherche prévues portent sur la mesure et la caractérisation des propriétés de la glace de mer et de la glace d'origine glaciaire flottantes au moyen de capteurs installés à bord d'un navire, sur un drone déployé et récupéré depuis le navire, sur des satellites, ainsi que sur un petit véhicule sous-marin autonome. Ces capteurs sont utilisés pour effectuer des observations passives des conditions de glace autour du navire pendant les opérations de transit. En complément, l'équipe scientifique débarquera sur des floes de glace de mer afin de réaliser des mesures in situ et de recueillir des données de référence sur les caractéristiques de la glace. Les mesures manuelles comprendront le prélèvement de carottes de glace de mer, la collecte d'échantillons destinés à des essais mécaniques, la mesure de la température et de la salinité de l'eau à proximité et sous les floes ciblés, ainsi que la détermination des profils d'épaisseur de glace au moyen de capteurs spécialisés et de techniques acoustiques sous-marines. Ces mesures de terrain serviront à l'étalonnage et à la validation des données acquises par les différents capteurs. Les travaux de recherche se dérouleront dans les régions entourant le carrefour du passage du Nord-Ouest, notamment dans le détroit de Lancaster, le chenal Parry, le détroit de Peel, le chenal M'Clintock et l'inlet du Prince-Régent, entre le 20 août et le 30 août. L'équipe scientifique ciblera principalement de grands floes stables pour la réalisation des mesures manuelles et enregistrera de façon passive les conditions de glace de mer rencontrées le long de l'itinéraire du navire. Selon les conditions locales observées au moment de la mission, le navire pourrait s'écarter de cette zone afin de repérer des

Inuktitut:

Inuinnaqtun: Not available

Personnel on site: 13

Days on site: 10

Total Person days: 130

Operations Phase: from 2026-08-20 to 2028-08-30

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Sampling region I	Scientific/International Polar Year Research	Marine	Please refer to the technical description of the scientific program in the attached documents.	Please refer to the technical description of the scientific program in the attached documents.	Please refer to the technical description of the scientific program in the attached documents.
Sampling region II	Scientific/International Polar Year Research	Marine	Please refer to the technical description of the scientific program in the attached documents.	Please refer to the technical description of the scientific program in the attached documents.	Please refer to the technical description of the scientific program in the attached documents.

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Resolute Bay	Sandi Gillis	Qillaq Innovations	2025-05-20

Authorizations

Indicate the areas in which the project is located:

Kitikmeot
North Baffin

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Planning Commission	The NPC has completed its review of the above noted project proposal. It conforms to the North Baffin Regional Land Use Plan (NBRLUP). The proponent has undertaken to comply with the applicable conformity requirements of Appendic C, H and I. See NPC letter attached in project documents	Active	2026-06-11	

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	CCGS Helicopter for reconnaissance	
Water	CCGS Henry Larsen	

Project accommodation types

Other,

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
CCGS Henry Larsen	1	100x20x7 [m]	The ship will support Icenav's request for dedicated primary ship time in the Northwest Passage intersection, Parry Channel, Melville Sound and M'Clintock Channel
CCG Helicopter	1	12x10x3 [m]	Launched from CCGS Henry Larsen for ice-survey operations
FLIR Skyranger drone	1	.45x.8.1.35 [m]	Drone to be used in sea-ice survey
DJI Matrice 350	1	.8x.7x.4 [m]	Drone to be used in sea-ice survey

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Diesel	fuel	1	220	220	Cubic Meters	CCGS engines
Aviation fuel	fuel	1	1200	1200	Liters	CCG helicopter
Li-ion	hazardous	0	2.7	0	Kg	Drone batteries
Mix for Coring powerhead	fuel	0	4	0	Liters	Sea-ice coring powerhead

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0		

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Scientific/International Polar Year Research	Other, CCG waste disposal policy	N/A	Canadian Coast Guard vessels operating in the Arctic comply with the Arctic Waters Pollution Prevention Act, the Arctic Shipping Safety and Pollution Prevention Regulations, the Canada Shipping Act, 2001, and associated federal environmental management procedures. Under these authorities, ship-generated garbage, oily waste, hazardous waste, and most wastewater are retained, treated, or landed at approved facilities rather than discharged into Arctic waters.	The CCG has invested in advanced wastewater-treatment systems to reduce environmental impacts from ship operations. According to a 2023 Coast Guard announcement, residual waste from the new wastewater treatment systems is retained in onboard tanks and disposed of in environmentally responsible ways.

Environmental Impacts:

Risks: 1) Losing deployed drifters 2) Underwater noise from scientific acoustic sources 3) noise from drones on birds 4) Drone crashes Mitigation 1) Deploy drifters in large floes to ensure they can be tracked 2) The acoustic source to be used is low power and will have lower propagation distances than the CCGS Henry Larsen itself. Icebreaker noise is in the 210-220 dB range and contains low frequency noise which propagates very far in comparison to the scientific acoustic source. 3) Noise from drones on birds is well studied, very minor impacts in the worst case. Birds tend to avoid them. 4) The flights of the drones will be conducted under good atmospheric conditions and clear visibility. The RHIB (rescue boats) of the CCGS Henry Larsen will stand ready in case recovery is needed

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

please refer to technical scientific description of the project in the attached documents

SECTION H2: Disposal At Sea

Canadian Coast Guard vessels operating in the Arctic comply with the Arctic Waters Pollution Prevention Act, the Arctic Shipping Safety and Pollution Prevention Regulations, the Canada Shipping Act, 2001, and associated federal environmental management procedures. Under these authorities, ship-generated garbage, oily waste, hazardous waste, and most wastewater are retained, treated, or landed at approved facilities rather than discharged into Arctic waters.

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

please refer to technical scientific description of the project in the attached documents

Description of Existing Environment: Biological Environment

Description of Existing Environment: Socio-economic Environment

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

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Cumulative Effects

Impacts

Identification of Environmental Impacts

	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
Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation																									
Scientific/International Polar Year Research		-	-	-	-	-	-	-	-	-	-	-	-	N	-	-	-	M	-	-	-	P	-	P	-
Decommissioning																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

1	polyline	Sampling region I
2	polyline	Sampling region II