

Il y a eu une augmentation des activités pétrolières et gazières offshore ainsi que des opérations de transport maritime dans les océans Atlantique Nord et Arctique. Par conséquent, il est urgent d'améliorer les technologies de pointe pour renforcer notre préparation en cas d'urgence. Les principaux objectifs de ce projet pluriannuel sont de développer et de tester une technologie sous-marine autonome pour améliorer la capacité de la robotique marine pour la réponse aux déversements d'hydrocarbures dans l'océan. Nous nous concentrons sur les questions de recherche : quel niveau d'intelligence artificielle est nécessaire sur les véhicules sous-marins autonomes (AUV) pour délimiter efficacement un déversement de pétrole ; et comment la détection et l'échantillonnage adaptatifs font-ils progresser la délimitation des déversements d'hydrocarbures ? Nous prévoyons une période d'environ 14 jours d'essais sur le terrain d'août à septembre 2023. Les essais sur le terrain seront effectués à partir d'un navire. Le site d'exploitation sera proche des suintements de pétrole naturels dans la baie de Baffin (à environ 50 km au large de Scott Inlet), comme illustré à la figure 1. L'AUV de classe d'enquête, Memorial Explorer (5,5 m) sera déployé et récupéré quotidiennement du navire, tandis qu'un planeur sous-marin (1,5 m) sera stationné en permanence au large pendant la période des essais. Les deux véhicules seront équipés d'une variété de capteurs

[illegible]

Personnel

Personnel on site: 10

Days on site: 14

Total Person days: 140

Operations Phase: from 2023-08-15 to 2023-09-16

Closure Phase: from 2024-08-20 to 2024-09-14

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Explorer AUV operation area (Depth range 0m-300m)	Marine Based Activities	Marine	N/A	N/A	The test area is 20 miles offshore and 60 nautical miles of North of Clyde River.

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Clyde River	Mr. Jerry Natanine	Municipality of Clyde Rover	2022-03-07
Clyde River	Ms. Shari Fox	Ittaq Heritage and Research Centre	2022-04-11

[illegible]

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Transboundary

North Baffin

[illegible]

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Project transportation types

Transportation Type	Transportation Mode	Length of Use
Water		

Project accomodation types

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[illegible][illegible]

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0	All water used will be from the ship.	The ship's water will be replenished from port supply locations and town water as needed.

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Marine Based Activities	ᐃᐱᑕᑦ ᐱᑕᑦ ᐱᑕᑦ	Ship operations for two weeks	The work will be done from a ship and will comply with the Arctic Waters Pollution Prevention Act AWPPA.	As above
Marine Based Activities	ᑲᑲᑕᑦ ᑕᑦ ᑕᑦ	10 people for two weeks	The work will be done from a ship and will comply with the Arctic Waters Pollution Prevention Act AWPPA.	As above.

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Underwater sound from the presence and operation of vessels generated from project operations may result in effects to fish and invertebrates. The sound produced by vessels, AUVs and other equipment during project activities can be carried through the water column and could disturb marine fish and mammals in the vicinity of the proposed project site. The effects may vary given the varying sensitivities of fish and invertebrates, and fish health (including changes to food availability and abundance). Responses include avoidance or attraction by individual fish, as well as possible physiological effects with continuously exposure to noise, which may in turn affect feeding, reproduction, and communication. The short-term, low-frequency sounds from vessel operations may elicit temporary avoidance due to startling effects and potentially longer-term avoidance with higher frequency or continuous emissions. These effects can be transient in nature and reversible once the sound source has been removed or reduced, decreasing the potential for long-term negative effects. Typically, most fish species are expected to avoid underwater sound at levels that are harmful to them. Therefore, physical harm associated with vessel sounds is unlikely, and the magnitude of potential effects is low.

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

We are working with several ship operators and have not yet finalized a choice of vessel.

SECTION H2: Disposal At Sea

Once we have selected the vessel we will be able to confirm the exact disposal plans for the particular vessel. Operations will conform to the Arctic Waters Pollution Prevention Act AWPPA.

SECTION 11: Municipal Development

[illegible]

The proposed area of activities is in Baffin bay (minimum of 5 miles from shore).

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Potentially migration routes of marine mammals. Existing fish stocks.

[illegible]

N/A

Miscellaneous Project Information

We are conducting a comprehensive risk analysis of the AUV operations to minimise loss of our AUVs which could lead to equipment being lost on site. No human health risks are expected.

$\Delta^{\text{fb}} \text{CD} \sigma^{\text{fb}} \Gamma^C \quad \Delta^{\text{fb}} \text{CD} \Gamma_L \Gamma^C \quad \Delta^{\text{fb}} \dot{\text{C}} \sigma^{\text{fb}} \Gamma^C \quad < \text{CD} \Gamma' \Gamma^{\text{fb}} \text{CD} \sigma^{\text{fb}} \Gamma^C$

The impacts are expected to be minimal consisting of ship operations and operation of our autonomous underwater vehicles. These vehicles will operate low battery powered sonars (Pingers/chirpers) during operation which will be for periods of upto 10hours/day during the period of trials. Ship operations will be done a reduced speeds to reduce ship based noise levels and disturbance to marine life.

Cumulative Effects

No cumulative effects are expected.

Impacts

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[illegible]
$$(P = \langle b \rangle \Delta \text{?} \cap \text{?}^a \text{?}^b \rangle^c, N = \langle b \rangle \text{?} \text{?}^b \text{?} \langle \text{?} \text{?}^a \text{?}^b \rangle^c \text{?} \langle \text{?} \text{?}^b \text{?} \text{?}^b \rangle^b \langle \text{?} \text{?}^a \text{?}^b \rangle^c \text{?}, M = \langle b \rangle \text{?} \text{?}^b \text{?} \langle \text{?} \text{?}^a \text{?}^b \rangle^c \text{?} \langle \text{?} \text{?}^b \text{?} \text{?}^b \rangle^b \langle \text{?} \text{?}^a \text{?}^b \rangle^c \text{?}, U = \text{?} b \text{?} \text{?}^a \text{?}^b \text{?}^b \rangle^b)$$

1 polygon Explorer AUV operation area (Depth range 0m-300m)