



Mosha Cote  
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March 13, 2023

Dear Mosha,

**Re: DRDC 2022 Annual Report for Northern Watch Technology Demonstration Operations at Gascoyne Inlet, Devon Island, NU Reference: Research Licence #: 02 049 22N-M**

The DRDC Northern Watch Technology Demonstration Project (TDP) – Canadian Arctic Underwater Sentinel Experimentation (CAUSE) will demonstrate an Arctic maritime surveillance capability to the Department of National Defence and other concerned federal departments.

The research activities for this permit are conducted from the Royal Canadian Navy ships, as a separate operation embedded within annual operations organised in the North by the Canadian Armed Forces (CAF). The surveillance demonstration system is unmanned, semi-autonomous, and remotely controlled through a satellite system connection from one of the DRDC centres.

Defence Construction Canada is providing the following annual report, which summarizes the activities in 2022 and outlines the planned activities for 2023. This information is being submitted on behalf of Defence Research and Development Canada (DRDC Atlantic).

**Summary of 2022 Activities:**

- 1) Towed Reelable Active Passive Sonar (TRAPS) Trial
  - a) This experiment was cancelled.
- 2) Marine Mammal Behavioural Response Study (BRS) Trial
  - a) This experiment was cancelled.
- 3) Arctic Acoustic Recorders Trial (AAR) Trial
  - a) An opportunity was available for Defence Research and Development Canada (DRDC) – Atlantic Research Centre to deploy three (3) Arctic Acoustic Recorders (AARs). These AARs were designed to measure directional ambient noise in the Canadian Arctic for one year. They were deployed during August–September 2022 from a Royal Canadian Navy (RCN) vessel, His Majesty's Canadian Ship (HMCS) Goose Bay, in areas near the East Coast of Baffin Island, outside of the Nunavut Settlement Area. The AARs were deployed at the coordinates provided in Table 1.
  - b) No wildlife sightings were noted during the deployment.

Table 1 – AAR Deployments 2022

Mooring	Date	Latitude °N	Longitude °W	Approximate Water Depth (m)
AAR1	28 August 2023	72.175367	72.822933	350
AAR2	29 August 2023	70.451450	65.746000	1,000
AAR3	31 August 2023	67.763483	62.272067	950

## Work Plan for 2023

### 1) Towed Reelable Active Passive Sonar (TRAPS) Trial

- Description: The aim of this trial is to evaluate a type of sonar technology that could be embarked on the RCN Arctic Offshore Patrol vessels (AOPV) (Harry DeWolf-class) and will involve a reverberation trial. Active sonar signals will be transmitted in an area without any whales present to listen to the echoes from the seafloor and/or ice.
- Location: The trial will occur in Baffin Bay in waters greater than 1,000m deep, within the following coordinates: 66N, 58W; 74.4N, 70W; 74.2N, 76.8W; 70.6N, 66.5W; 68.4N, 64.2W and 66N, 60.5W
- Duration: Estimated duration 4 days
- Support Platform: The trial will take place directly off a RCN AOPV
- Environmental Assessment: Completed in 2022 and being updated for 2023.
  - a) Compliance with Issued Permit Terms and Conditions: The Harry Dewolf-class vessels have a ship class Safety and Environmental Management System (SEMS), to ensure environmental impacts from the ship and its activities, including sonar operations, are kept to a minimum. In addition, the ship will be supplied with Environmental Support Instructions, which will include terms and conditions prescribed in the NIRB Screening Decision Report File No. 22DA050 not already covered by the SEMS.
  - b) Any additional mitigation measures identified in the environmental assessment will be included in the Environmental Support Instructions mentioned in the preceding paragraph.

### 2) Marine Mammal Behavioural Response Study (BRS) Trial

- Description: The Marine Mammal Behavioural Response Study (BRS) involves a Controlled Exposure Experiment (CEE) with the purpose of studying the response of whales to active sonar. Two types of whales will be included in the study – northern bottlenose whales (Davis-Strait-Baffin Bay-Labrador Sea population) and sperm whales, neither of which are listed in the Species at Risk Act.
- Location: The trial will occur in the deep offshore waters of Baffin Bay, within the following coordinates: 77°00N, 61°00W; 67°00N, 58°00W; 67°00N, 61°00W; 68°40N, 65°27W; 69°15N, 66°00W and 70°00N, 66°00W
- Duration: Estimated duration 3 days – 2 weeks
- Support Platform: The trial will take place using a RCN AOPV and a commercial vessel. If an RCN vessel is not available, two (2) commercial vessels will be used.

- Environmental Assessment: Completed in 2022 and being updated for 2023.
  - a) Compliance with Issued Permit Terms and Conditions: The ship will be supplied with Environmental Support Instructions which will include terms and conditions of the NIRB Screening Decision Report File No. 22DA050 not already covered by the SEMS.
  - b) Any additional mitigation measures identified in the environmental assessment will be included in the Environmental Support Instructions

### 3) Arctic Acoustic Recorders Trial (AAR) Trial

- Description: The purpose of the Arctic Acoustic Recorders (AAR) trial was to collect an underwater ambient noise record in the Eastern Arctic. This dataset will provide background information to support future plans for underwater navigation and communications for gliders, provide data for use in RCN marine mammal mitigation strategies, and provide input to ambient noise databases and verification and validation for ambient noise modelling.  
The trial involves the deployment of three (3) AARs into the ocean from HMCS Goose Bay (1 on the ocean bottom, 2 in the water column) for a period of one year.
- Location: The AARs will be deployed at the locations provided in Table 2.

Table 2 – Planned AAR Deployments 2023

Recorder	Latitude °N	Longitude °W
AAR 1	67.763483	62.27206
AAR 2	72.175367	72.822933
AAR 3	73.8	85.25
AAR3 Alternate	70.45145	65.746

- Duration: The deployment of each AAR will take approximately 1 day.
- Support Platform: The trial will take place directly off a RCN AOPV
- Environmental Assessment: Completed in 2022 and being updated for 2023.
  - a) Compliance with Issued Permit Terms and Conditions: The ship will be supplied with Environmental Support Instructions which included terms and conditions of the NIRB Screening Decision Report File No. 22DA050 not already covered by the SEMS.
  - b) Any additional mitigation measures identified in the environmental assessment will be included in the Environmental Support Instructions mentioned in the preceding paragraph

We trust the information provided is sufficient for your records. Please feel free to contact the undersigned if you have any questions or comments.

Sincerely,

**Abiodun Ashcroft, PMP**

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