26 March 2026

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References:

CIRNAC Land Use Licence	N2021N0007	NPC File No.	150823, 150837, 150841
NWB Water Use Licence	8WLC-NWT2526	NIRB File No.	08DN056, 22DA050
NTI Research Licence	2 044 24R-M NRI	QIA Certificate	QX-2436

Dear Representative,

Re: DRDC 2025 Annual Report for Northern Watch Technology Demonstration Operations at Nunavut

This letter report is being submitted on behalf of Defence Research and Development Canada (DRDC) and presents the activities completed in 2025 as part of DRDC's Northern Watch Technology Demonstration Project (Project).

This letter report summarizes the land-use, water-use, and/or research activities completed in 2025 as part of the Project, as required by the applicable land, water, and/or research licences referenced above. It also provides an outline of planned activities for the Project in 2026.

This letter report is organized into the following sections:

- Background
- Summary of 2025 Activities
- Site Photolog
- Summary of Wildlife Monitoring Activities
- Summary of Planned 2026 Activities

Background

The DRDC Northern Watch Technology Demonstration Project is underway to demonstrate and improve Arctic maritime surveillance capabilities to the Department of National Defence (DND) and other concerned federal departments.

This multi-year undertaking began in 2008 and is based out of the Gascoyne Inlet Camp (GIC). Annual research and logistical (maintenance and supply) activities include collection of directional underwater ambient noise; testing of acoustic (sound) communications; deployment of autonomous (unpiloted), semi-autonomous, or remotely-piloted surveillance systems; studies relating to behavioral impacts from use of SONAR, and ongoing maintenance, testing, and improvements to the equipment at the GIC. Some activities under this permit are also conducted from Royal Canadian Navy (RCN) ships as a separate operation embedded within annual operations organised in the North by the Canadian Armed Forces (CAF).

Summary of 2025 Activities

The following Project activities were attempted and/or completed in 2025:

- Gascoyne Inlet Camp and Northern Array Activities
- Canadian Coast Guard Bathymetry Survey
- Recovery of Northern Watch Array
- Sonobuoys Deployments and Experiments
- Acoustic Project Tow
- Arctic Acoustic Recorders (AAR) Trial
- Removal and Reinstallation of an off-Site Automated Temporary Weather Station

A summary of each Project activity completed in 2025 is provided in the following section.

Gascoyne Inlet Camp Activities

Activities at the GIC ran from 1 August to 4 September 2025. There were up to 24 persons at the GIC at one time. A map of the GIC and nearby points of interest including the local airstrip, observed fuel caches (unrelated to camp activities), and other activities is presented in Figure 1 below:

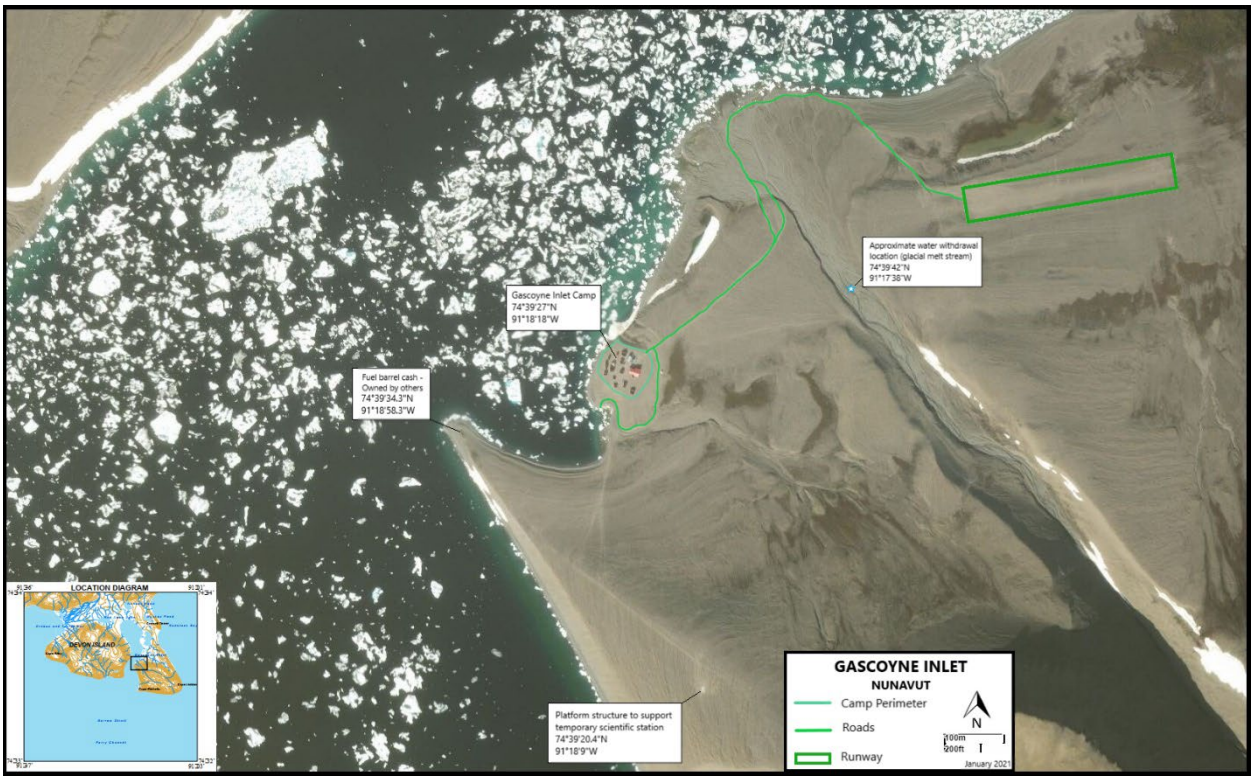

Figure 1 - Location of Gascoyne Inlet Camp and nearby points of interest

Personnel who stayed at the camp included DRDC staff, participants from CanmetENERGY (Natural Resources Canada), Canadian Forces Engineering Support Unit (1ESU), Geological Survey Canada (GSC), international guests, and contracted cooks (Jebeaux Catering).

Non-overnighting visitors included personnel from 1ESU, the Northern Operation Support Hub (NOSH), Canadian Hydrographic Services (CHS), and pilots from Ken Borek Ltd.

Five consultants (Stantec/WSP) were scheduled to visit the site to investigate the future removal of the G4 and G5 structures, and construction of a new bunkhouse, but were unable to achieve camp due to the weather.

Additional logistics support for the camp was coordinated through the Polar Continental Shelf Project (PCSP) based out of Resolute and was not directly retained by DRDC. The pickup of an observer (Gatherers & Hunters Association) from Arctic Bay failed as the contracted at-sea transport was canceled due to ship availability. No other local hires and/or initiatives were completed as part of the Project in 2025.

Logistical activities included:

- Opening and inspection of the camp following a year's inactivity;
- Repair, maintenance, and outfitting of the camp's buildings, equipment, and utilities;
- Installation of a new bear fence;
- Installation of a reverse-osmosis (RO) desalination unit in the wash hut;
- Performance of a safety inspection including water testing; and
- Closing of the camp.

Research activities support or completed included:

- Replacement and maintenance of the wind turbine;
- Maintenance of the methanol fuel cell; and
- Installation of a second remote weather station under Qikiqtani Inuit Association (QIA) Certificate QX-2436.

No significant erosion was observed at the GIC or along most access roads from the delta to the camp. The perimeter road remains unusable as noted in the prior activity report from 2024.

Canadian Coast Guard Bathymetry Survey

DRDC performed a bathymetric survey (mapping of the seafloor shape and depth) of the mouth of the Gascoyne Inlet using multi-beam echo sounding techniques. The seabed survey was completed over a period of 15 days by CHS. CHS used side scan sonar and collected passive magnetic measurements of the seafloor and provided the data to DRDC at the conclusion of the survey**.** Approximate bounding coordinates where the activity took place included (latitude and longitude): 74.39876, -91.19441 and 74.39250,-91.20497. The location of the survey is provided in Figure 2 below:

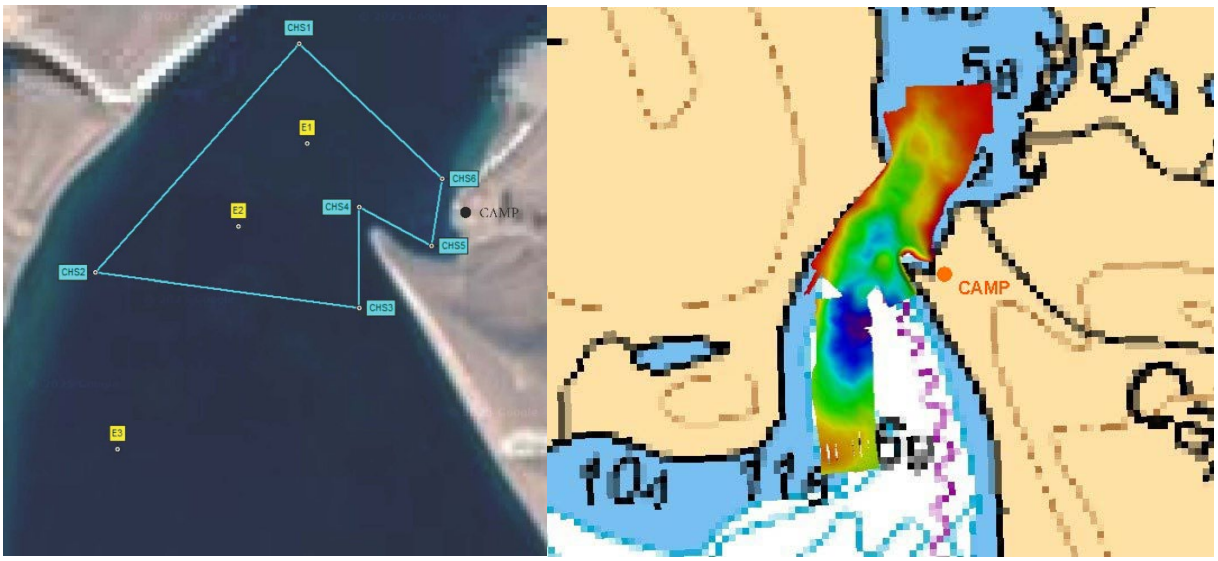

Figure 2 – Planned bounding area of bathymetry survey (left) with actual area (right)

Recovery of the Northern Watch Array

DRDC recovered one (1) of two (2) acoustic arrays located on the seabed just outside of Gascoyne Inlet. A partial recovery of the shore cable and "retermination" in support of a future sensor installation was also completed. The recovery was supported by the Canada Coast Guard Ship (CCGS) *Pierre Radisson* using a remotely-operated vehicle (ROV). Approximate bounding coordinates where the activity took place were (latitude and longitude): 74.580278, -86.966389; 74.580278, -88.196667; 74.702222, -86.966389; and 74.702222, -88.196667.

Sonobuoys Deployments and Experiments

DRDC deployed a series of active and passive sonobuoys along with a passive reflector called the Passive Acoustic Target System (PATS). The deployment was supported by the CCGS *Pierre Radisson* using an ROV. Approximate bounding coordinates where the activity took place included (latitude and longitude): 74.580278, -86.966389; 74.580278, -88.196667; 74.702222, -86.966389; and 74.702222, -88.196667.

Acoustic Project Tow

DRDC tested the output response of an acoustic projector (i.e., a loudspeaker designed to be used underwater) to produce a range of individual tones within the 10 Hertz (Hz; cycles per second) to 3000 Hz (or 3 kiloHertz [KHz]) range. The projector was towed by the CCGS Pierre Radisson at depths ranging from 60 to 400 m. The exact location cannot be provided due to the project's security classification.

Arctic Acoustic Recorders (AAR) Trial

2024 report write-up of activity to be confirmed if implemented, and rewritten:

In 2024, two Arctic Acoustic Recorders (AARs) with a four-hydrophone array and an "autonomous multi-channel acoustic recorder" (AMAR) and Broadband Ocean Bottom Seismometers (BOBS) were deployed off the east coast of Baffin Island, or inside Greenlandic waters outside the Nunavut Settlement Area NSA.

In 2025, DRDC recovered one AAR moored to the seafloor from the offshore area near Clyde River, and redeployed two AARs (one moored, one bottomed) in two areas from the merchant vessel the *Mersey Venture*. The moored unit was installed at approximately 750 m in depth, while the bottomed unit was

installed at approximately 300 m in depth. The moored unit consisted of a set of four (4) hydrophones with recorder, acoustic release, float, and anchor weight, and 550 m of rope. The bottomed unit is a 1.5 m cube-like AMAR-type lander with four (4) hydrophones and an acoustic recorder, with an acoustic release.

A summary of coordinates is provided in Table 1 below.

Table 1 - AAR Deployments Status in 2025

Mooring	Date	Latitude ºN	Longitude ºW	Approximate Water Depth	Recovered
AAR1	05-Sep-2024	76.581717	70.968867	403 m	02-Sep-2025
AAR2	03-Sep-2024	71.117667	67.725667	750 m	30-Aug-2025
AMAR	05-Sep-2024	67.763483	62.272067	245 m	04-Sep-2025
BOBS	17-Sep-2024	76.592298	71.017562	mixed	Oct-2025
BOBS	Oct-2025	60.02	59.31	mixed	TBA
AAR1a	01-Sep-2025	75.8721	76.6504	274 m	TBA
AAR2	30-Sep-2025	71.1167	67.7233	741 m	TBA

Removal and Reinstallation of an Automated Temporary Weather Station (off-site)

DRDC mobilized along with CanmetENERGY personnel from the camp to an off-site hilltop location where a prior autonomous weather station, Weather Station No. 1, was installed under Qikiqtani Inuit Association (QIA) Land Access Authorization QX-2436. Weather Station No.1 was installed in August 2024 but suffered from equipment failures during its operational period, resulting in poor data collection. A request to install a second weather station (Weather Station No. 2) was approved by QIA in July 2025.

Weather Station No.2 is near identical to Weather Station No 1., with the addition of an additional relay comprised of a methanol fuel cell, solar power array, and battery. Weather Station No. 2 was transported from the camp via chartered helicopter to the hilltop, approximately 5 minutes walk from Weather Station No 1. Approximate coordinates where the activity took place were (latitude and longitude) 74.64873, -91.36504.

Site Photolog

Photos documenting the site conditions and/or activities involved as part of the 2025 Project activities are provided in the following section.

Photo 1 - Aerial view of Gascoyne Inlet Camp on day of exit.

Photo 2 – Water withdrawal location.

Photo 3 – Reverse-osmosis unit; saltwater pump and tank not pictured.

Photo 4 – Status of fuel storage onsite a day of exit.

Photo 5 – Water utility room expansion.

Photo 6 – Workshop workbench and lighting upgrades.

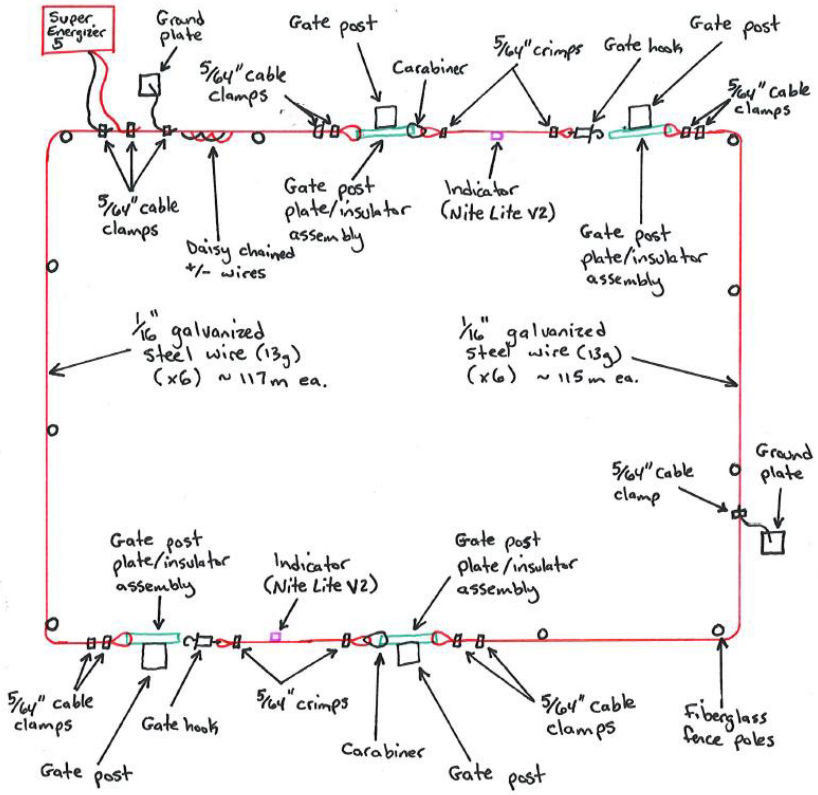

Photo 7 – Diagram showing bear fence installation details.

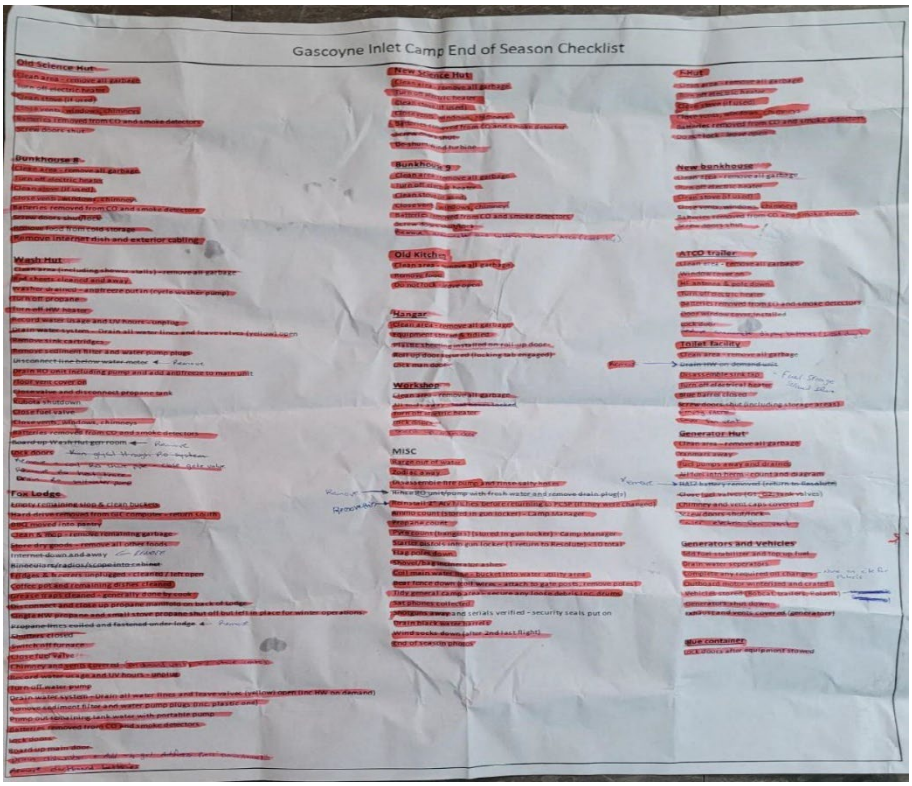

Photo 8 – Example of 2025 camp close out checklist.

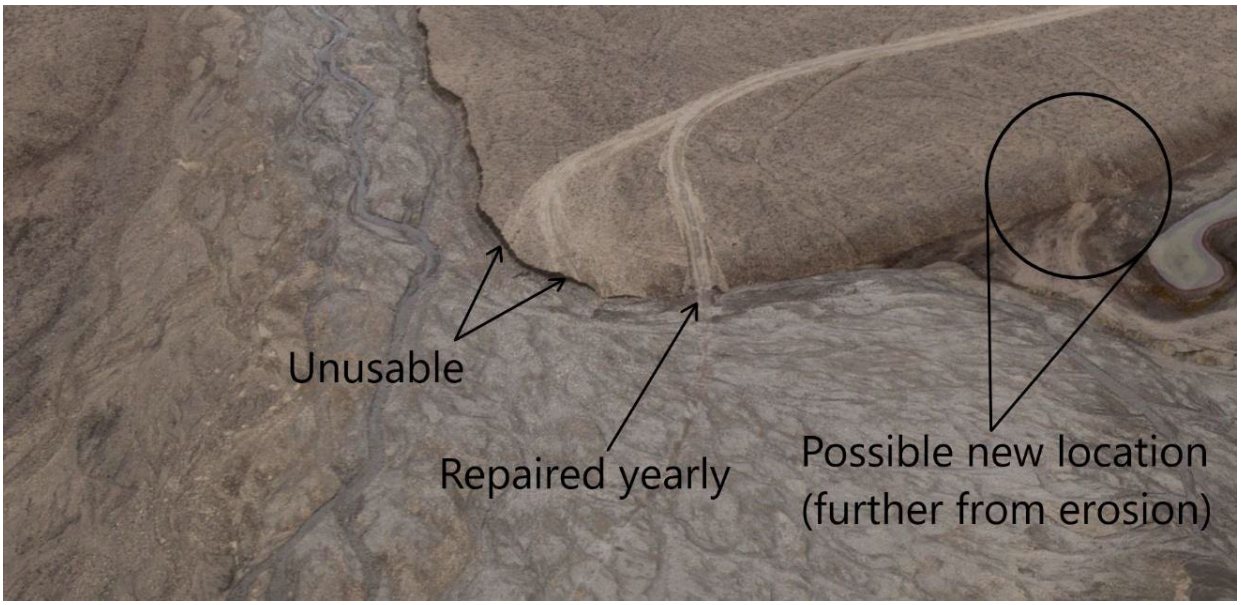

Photo 9 – Erosion of access road from delta to GIC and proposed new location (2021 photo).

Photo 10 – Erosion of the perimeter road to the beach (2024 photo).

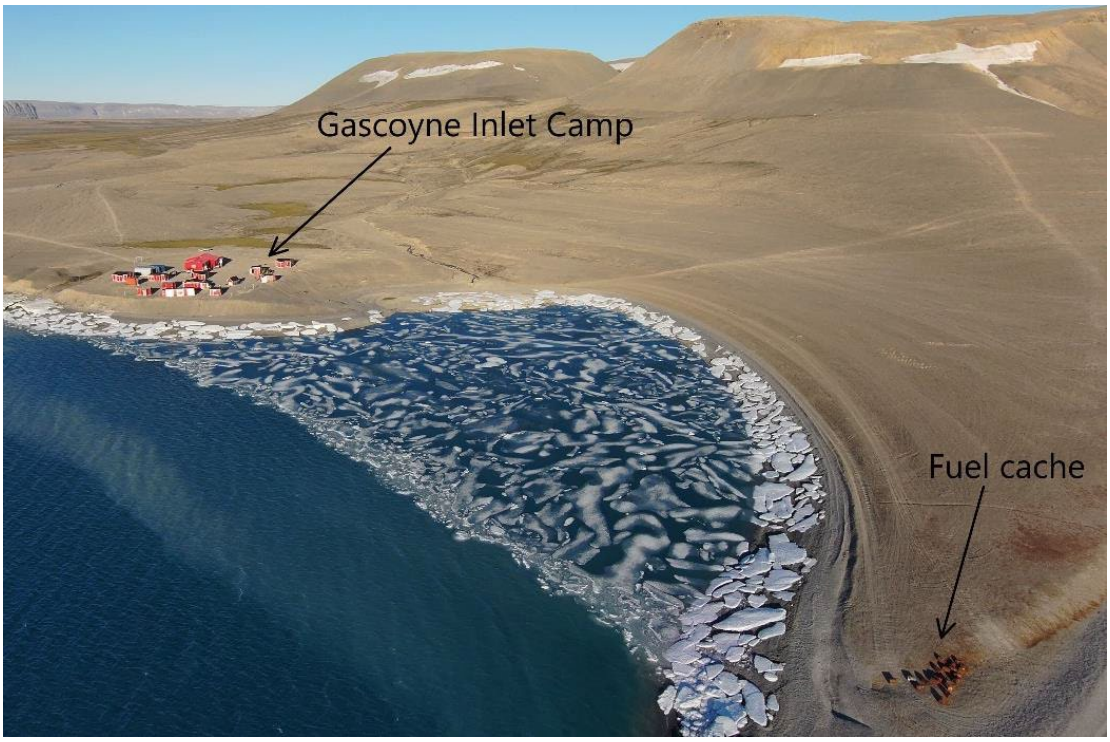

Photo 11 – Non DRDC fuel cache in proximity to GIC.

Photo 12 – Construction of temporary fuel cache containment area for non-DRDC-owned drums by DRDC.

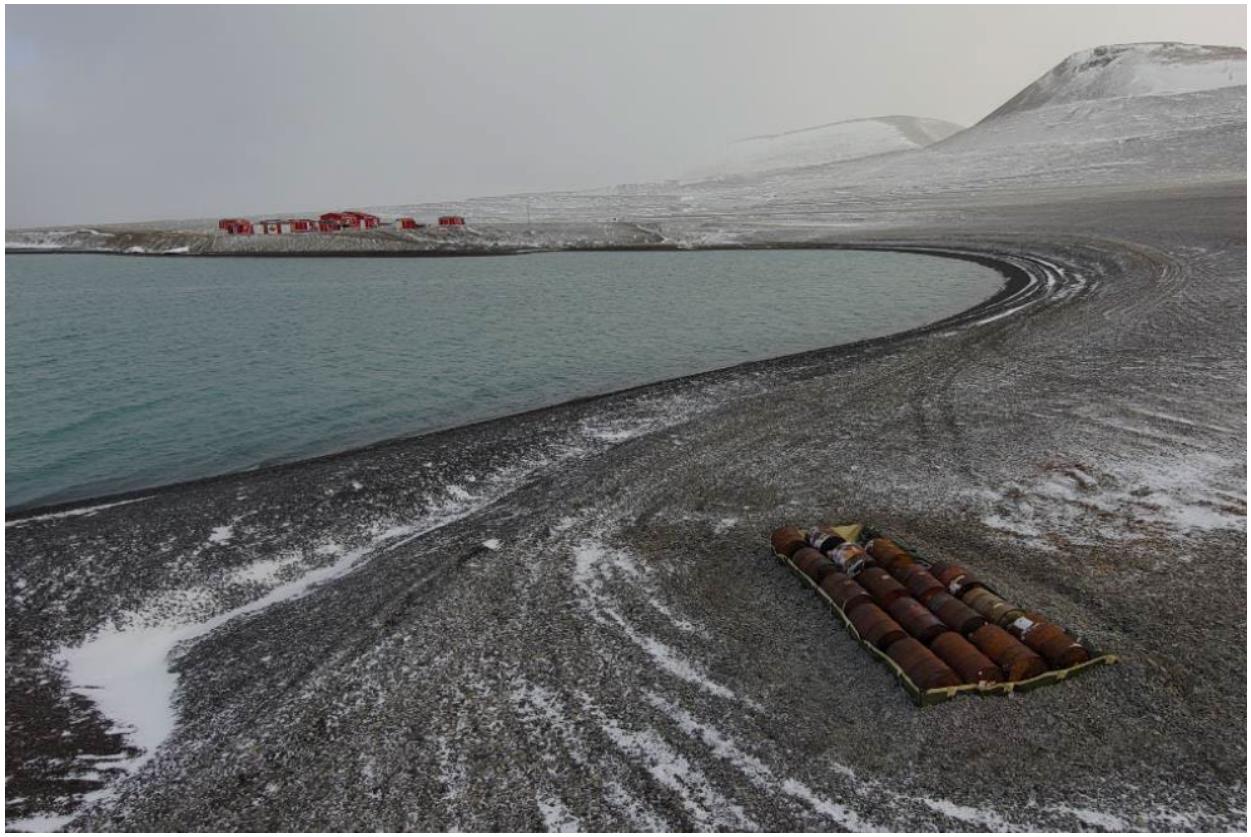

Photo 13 – Temporary containment area for fuel cache, with GIC in background..

Summary of Wildlife Monitoring Activities

Upon arrival at the camp, claw marks were visible on the exterior paneling of several structures. The methanol fuel cell exhaust heat trace had also been chewed.

Wildlife spotted in the area this year included polar bear, muskox, seal, fox, and hare.

Polar bears were observed on six (6) days this year. Deterrents (e.g., bear bangers, wooden clappers, loud noises) were used multiple times this season, when the bear was close to, or approaching the camp.

DRDC plans to procure non-lethal rounds (rubber bullets) as a further means of deterrence when required, in accordance with the Government of Nunavut document: *Bear Safety – Reducing Bear-People Conflicts in Nunavut*[1]. Scare cartridges (i.e., "bear bangers") were noted once again to be of limited effectiveness in permanently deterring the bear from the area.

A new bear fence was installed this year and remained activated throughout the GIC season. On one occasion, a bear was observed touching the fence and turning away with a head shake, interpreted as having received an effective, non-lethal, shock. Only necessary work was permitted to be conducted outside of the bear fence, using deterrents and a designated spotter.

A summary of wildlife observations for 2025 for this Project is provided in Table 3 below. It is emphasized that the scope and resources of the Project do not necessarily provide for explicit monitoring and evaluation of critical life history events (e.g., calving, mating, denning, nesting, migration) for each activity, beyond those observations recorded during the primary research activities or camp operation. Further, the DRDC field team does not generally include a trained or certified biologist (except as required for a specific research activity). The observations noted below should be considered descriptive and not definitive.

Table 3 - Summary of Wildlife Observations in 2025

Date	Wildlife and Quantity	Location
13-08-25	1 Seal	Inlet to west of runway.
14-08-25	2 Muskox	Walked down over cliff southeast of camp and headed northeast.
15-08-25	1 Seal	Inlet west of runway.
16-08-25	1 Seal	Inlet west of runway.
17-08-25	1 Fox	Near camp.
18-08-25	2 Muskox	Across inlet.
20-08-25	1 Polar bear	Swam across inlet toward camp then headed south along shore.
23-08-25	1 Polar bear	Near runway northeast of camp.
23-08-25	1 Seal	Inlet west of camp.
26-08-25	1 Polar bear	At point southwest of camp.
26-08-25	1 Polar bear	Southeast side of camp. Touched electric fence and deterred. Headed south.
27-08-25	3 Polar bear (mom and 2 cubs)	South of camp. Deterred and headed south away from camp.
28-08-25	1 Arctic hare	Near camp.
30-08-25	1 Polar bear	Across inlet moving south.
31-08-25	1 Arctic hare	Laying down east of camp.

[1] Ross, T., Medill, S. and Hansen, B. (2022), Bear Safety: Reducing Bear-People Conflicts in Nunavut. (Department of Environment Avatiliqiyikkut website), https://www.gov.nu.ca/sites/default/files/publications/2022-01/bear_safety_-_reducing_bear-people_conflicts_in_nunavut_0.pdf (Accessed: 01 October 2024).

Impact Assessment

In several instances, polar bears were identified approaching the camp and which required use of deterrents. Specific causes for animal encroachment were not identified beyond simple curiosity or a return to previously-visited areas. Deterrents including electric fences and/or scare cartridges (i.e., “bear bangers”) were used to deter the animals from approaching any further. As noted in prior reports, bear bangers were of limited effectiveness. Visual observations of the bears did not indicate any obvious health concerns.

The Project stakeholders have endeavored to comply with all the terms and conditions required by applicable permits and Acts, Regulations and Guidelines. Specific procedures and mitigation measures used to minimize or mitigate potential impacts from Project activities included:

- briefing DRDC staff on all the terms and conditions of licencing including the archaeological and palaeontology requirements;
- forbidding hunting or fishing without a Nunavut fishing licence;
- managing and securing all food and food waste to mitigate detection and access by local wildlife;
- ensuring vehicle refueling and lubrication processes were handled with care, including use of drip trays as appropriate;
- stacking all camp building materials neatly at the conclusion of the activities;
- identification and communication of observed wildlife and making efforts to avoid those areas where possible;
- limiting use and areas of travel for vehicles;
- providing pre-travel training to camp team leads on wildlife interactions (notably for bears); and
- following a safety plan for polar bears sighted close to camp; plan details included verification and maintenance of bear fences and other deterrence to ensure they are in good condition, procedures to cease work and/or bring staff indoors, and procedures for use and escalation of deterrence methods to be used, if any and as appropriate.

Overall mitigation measures described above are understood to have been reasonably effective in 2025 and will be included, and refined, as part of future camping planning activities.

Fuel Drums

As noted in prior reports, there is a longstanding fuel cache located south of the camp at Walrus Point. The cache consists of twenty (20) drums containing jet fuel and diesel and are in poor condition. The drums do not belong to DRDC, and owner of the cache is unknown. The coordinates of the cache are (latitude and longitude): 74.659444, -91.316111.

DRDC has reported the existence and condition of the cache to authorities on several occasions, and recommended regulators and land-owner stakeholders undertake the required actions to address the deficiencies at the cache as soon as possible.

DRDC inspected the cache this year and observed evidence of leaking drums. In response, DRDC submitted a spill report on 26 August 2026 to the Government of Nunavut. Further correspondence took place between Environment and Climate Change Canada (ECCC) and DRDC, whereby DRDC was instructed to remove the drums regardless of non-ownership.

DRDC made a request to the Canadian Coast Guard (CCG) for support in removing the drums, but this request was denied. DRDC attempted to pump out and transfer the drum contents to new drums for transport to Resolute but was unsuccessful due to the poor condition of the drums. One (1) leaking drum and two (2) empty drums were overpacked in what available containers DRDC had for spill response and transported to Resolute for disposal. A temporary fuel containment berm equipped with a drainage filter

was installed. The remaining seventeen (17) drums were relocated into the temporary berm pending further consideration of disposal solutions. It is estimated that thirteen (13) of the seventeen (17) drums are full; the rest appear partially empty.

Summary of Planned 2026 Activities

The following Project activities are planned for 2026:

- Gascoyne Inlet Camp and Northern Array Activities
- Recovery of Northern Watch Array
- Sonobuoys Deployments and Experiments
- Arctic Acoustic Recorders (AAR) Trial

A summary of each Project activity currently planned for completion in 2026 is provided in the following section.

Gascoyne Inlet Camp

Description: DRDC will continue general maintenance and repair activities to camp facilities in support ongoing scientific research based out of the camp. Planned logistical activities include opening and repair/maintenance of the camp's buildings and equipment, performance of a safety inspection, and closing of the camp. Planned research activities include setting up camp and research continued through CCG or commercially supported activities.
Location: Gascoyne Inlet Camp.
Duration: Up to eight (8) weeks beginning in August 2025 (start of field season).
Support Platform: Gascoyne Inlet Camp, supported by Resolute Bay Polar Continental Shelf Program.
Environmental Assessment: Completed in 2025 and being reviewed for 2026.

Recovery Of Northern Watch Array

Description: DRDC will continue its recovery efforts of the Northern Watch Array. The Northern Watch system consists of two arrays that were deployed approximately a decade ago. Both arrays need to be recovered. One array was recovered in 2025. The remaining array cable, which is approximately 9 kilometres (km) long and 15 millimetres (mm) in diameter, will be recovered with the support of a CCGV in 2026.
Location: Lancaster Sound, with bounding coordinates as follows (latitude and longitude): 74.580278, -86.966389; 74.580278, -88.196667; 74.702222, -86.966389; and 74.702222, -88.196667.
Duration: Five (5) days during the August-September 2025 field season.
Support Platform: Gascoyne Inlet Camp, CCG Support Vessel.
Environmental Assessment: Completed in 2023 and updated in 2024 and 2025.

Sonobuoys Deployments and Experiments

Description: DRDC will deploy "drifter" sonobuoys in Baffin Bay to be frozen in ice. As with previous years, the buoys will be used to assess the suitability of the arctic marine environment for multi-static (i.e., multiple, fixed, and location-diverse), anti-submarine warfare techniques and passive sonar.
Location: Outside the NSA, in Baffin Bay.
Duration: Two (2) days during the August-September 2025 field season.
Support Platform: Gascoyne Inlet camp, Canadian Coast Guard Vessel.
Environmental Assessment: Underway.

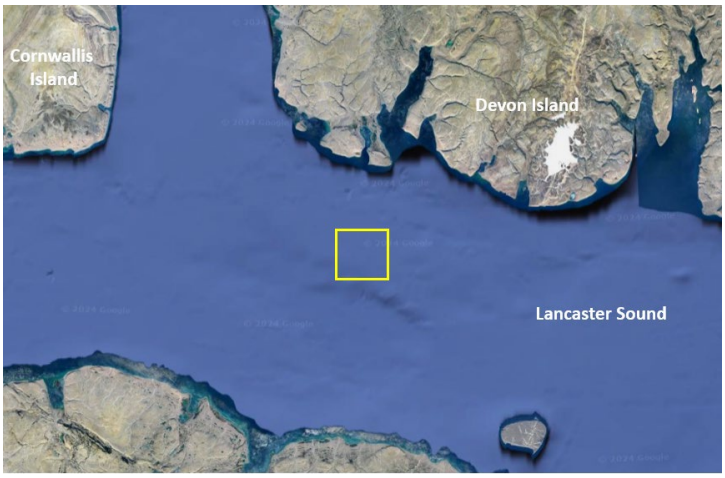

Figure 2 – Sonobuoys Deployment Box

Arctic Acoustic Recorder (AAR) Trial

Description: DRDC plans to continue the AAR trial in 2026 in Baffin Bay. As this Trial will involve activities outside the NSA for the foreseeable future, and thus not under permit requirements, it will no longer be reported on in subsequent annual reports.

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,

SANGSTER, JAMES 524

Digitally signed by SANGSTER, JAMES 524
Date: 2026.03.26 14:53:03 -03'00'

Patrick Sangster

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