

SOP A-352-2

Preliminary Trial Plan

Trial Name: ARC_U_OPNANOOK_2022001 Arctic Acoustic Recorders Preliminary Trial Plan

Planned Trial Dates: 23 August – 2 September 2022

Written By:

Approved by:

Signature, Date
Sean Pecknold, Trial Lead

Signature, Date
Michel Couillard, Centre Director

1. Trial Overview

The Integrated Surveillance via Layered Arctic Networked Defence Sensors (ISLANDS) project, a component of the Defend North America (DNA) Strategic Focus Areas (SFA) Warning Architecture Line of Effort, has a requirement to characterize the underwater acoustic environment in Canada's Arctic regions. One area that has not been adequately characterized is the ambient noise background in and around Baffin Bay. To rectify this situation, a set of Arctic acoustic recorders (AARs) will be deployed in several area in and around Baffin Bay. The aim of this experiment is to is to develop a year-long ambient noise record in the Eastern Arctic that will: support future plans for comms/nav system for autonomous systems; inform and advise future developments in comms and navigation for the RCN; provide inputs to ambient noise database and verification/validation for noise modelling; perform environmental characterization for ISLANDS; and gather data on marine mammal movements for the RCN.

2. Classification of Trial

This trial is UNCLASSIFIED.

3. Scientific & Technical Objectives

The main scientific objectives of the trial are:

- 1) Acoustic data collection: acquire directional ambient noise data in various frequency ranges.
- 2) Oceanographic data collection: acquire coincident conductivity/temperature/depth (CTD) data;
- 3) Trials expertise: develop the capability to deploy moorings from RCN vessels in the Arctic.

4. High Level Trial Activities


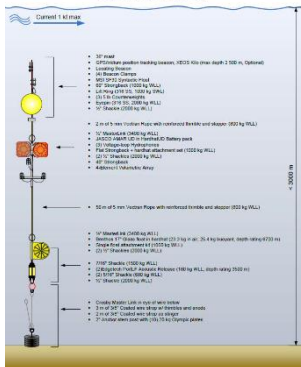
The major activities / types of activities that are planned to achieve scientific and technical objectives are listed below:

1. Ship Arctic acoustic recorders (AARs) to three locations in and around Baffin Bay via HMCS Goose Bay (GBY)
2. Deploy AARs

A detailed list of the trial activities will be included in the Detailed Trial Plan.

5. Major Equipment

A list of the planned major equipment for the trial is provided below:

#	Asset	Photo	Deploy/recover	Point of Contact	Status
1	AAR 1 (shallow water)		Crane	Sean Pecknold	Procured, still to be set up
2	AAR 2 and AAR 3		Crane	Sean Pecknold	Procured, still to be set up

A detailed equipment list will be included in the Detailed Trial Plan.

6. Preliminary Trial and Travel Schedule

The preliminary schedule for the major trial activities and travel is provided below:

Arctic Acoustic Recorder deployment

Lead: Sean Pecknold

Project Start: Wed, 8-10-2022

Display Week: 1

TASK	ASSIGNED TO	PROGRESS	START	END	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
Sean Pecknold																																
Travel to Resolve Bay	Commercial air	0%	8-19-22	8-20-22																												
Travel to GIC/Stay	Charter	0%	8-20-22	8-22-22																												
Embark to GBY	Small boat	0%	8-23-22	8-23-22																												
Transit to Site 1	GBY	0%	8-23-22	8-24-22																												
Deploy AAR 1		0%	8-24-22	8-24-22																												
Transit to Site 2	GBY	0%	8-24-22	8-26-22																												
Deploy AAR 2		0%	8-26-22	8-26-22																												
Transit to Site 3	GBY	0%	8-26-22	8-26-22																												
Deploy AAR 2		0%	8-26-22	8-26-22																												
Transit to Site 3	GBY	0%	8-26-22	8-26-22																												
Deploy AAR 3		0%	8-30-22	8-30-22																												
Transit to Nuuk	GBY	0%	8-30-22	9-1-22																												
Wait for flight in Nuuk		0%	9-1-22	9-4-22																												
Travel to Halifax	Commercial air	0%	9-4-22	9-5-22																												
Andre Tremblay																																
Travel to GIC		0%	8-9-22	8-10-22																												
In GIC		0%	8-11-22	8-22-22																												
Embark to GBY	Small boat	0%	8-23-22	8-23-22																												
Transit to Site 1	GBY	0%	8-23-22	8-24-22																												
Deploy AAR 1		0%	8-24-22	8-24-22																												
Transit to Site 2	GBY	0%	8-24-22	8-26-22																												
Deploy AAR 2		0%	8-26-22	8-26-22																												
Transit to Site 3	GBY	0%	8-26-22	8-30-22																												
Deploy AAR 3		0%	8-30-22	8-30-22																												
Transit to Nuuk	GBY	0%	8-30-22	9-1-22																												
Wait for flight in Nuuk		0%	9-1-22	9-4-22																												
Travel to Halifax	Commercial air	0%	9-4-22	9-5-22																												
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A detailed schedule will be included in the Detailed Trial Plan.

7. Location

The trial will take place in the areas shown in Figure 1. In Figure 1, the triangle show deployment points for AARs. All coordinates can be found in Table 1. Deployment locations can be changed if necessary, although water depths should remain approximately the same.

Table 1 Deployment locations

#	Asset	Latitude	Longitude (West)	Depth (m)	Note
1	AAR 1	73°49'30.00"N	84°16'45.00"W	300	Near Arctic Bay
2	AAR 2	73° 6'00.00"N	74° 9'22.00"W	900	Near Pond Inlet
3	AAR 3	68° 7'52.00"N	63°20'56.00"W	900	Near Qikiqtarjuaq



Figure 1 Trial location showing approximate deployment locations for AARs.

8. Permissions / Clearances – Water, Air and Land Space

No air or land clearance/permission are foreseen. Water space permissions will be arranged by the MCC Planners for OP NANOOK.

Confirmation the permissions and clearances are in place will be included in the Detailed Trial Plan.

9. Contact List

1. Trial Lead: Sean Pecknold, cell: 902-449-1535, email: sean.pecknold@forces.gc.ca
2. H/US: Warren Connors, cell: 902-478-6519, email: warren.connors@forces.gc.ca
3. H/RED: Erin MacNeil, email: erin.macneil@forces.gc.ca

10. Participants

A preliminary list of trial participants is provided below:

#	Name	Group	Role in Trial	Email (@forces.gc.ca)	Location
1	Sean Pecknold	UWW	Trial Lead	Sean.pecknold	GIC/GBY
2	Andre Tremblay	RED	Technical Lead	Andre.tremblay2	GIC/GBY

This list is subject to change as the trial planning progresses. A detailed list of participants and their roles will be included in the Detailed Trial Plan.

11. Data Handling

The following data / types of data will be collected during the trial:

Table 2 Data and information required

Data	Security Requirements	Special Data Handling
Recorded acoustic data	None (UNCLASS)	None planned
Recorded CTD data	None (UNCLASS)	None planned
Notes, photos, videos, etc.	None (UNCLASS)	None planned
Ship position data	None (UNCLASS)	None planned
Environmental conditions and data (wind speed, direction, etc.)	None (UNCLASS)	None planned

Recordings will be scheduled to avoid collection of sensitive information from deploying vessel.

12. Security

There are no significant security risks for the trial. Recordings will be scheduled with sufficient delay to avoid collecting acoustic signatures of the deploying vessel.

Note: SOP A-734 Trial Security will provide additional guidance on trial security risk assessment and mitigation (at the time of writing, SOP A-734 had not been developed).

13. Health & Safety

The major health and safety risks for the trial are listed below, along with the measures that will be taken to reduce the risk:

#	Potential Health & Safety Risks	Risk Reduction Measures
1	<i>Personnel will be working from a large ship at sea</i>	<ul style="list-style-type: none"> • <i>DRDC personnel will have a valid Health Canada Field Medical</i> • <i>DRDC personnel will have Standard First Aid Training</i> • <i>Personal Protective Equipment (PPE) will be worn</i>
2	<i>Personnel will be deploying and recovering bulky equipment over the side of a large ship</i>	<ul style="list-style-type: none"> • <i>Personal Protective Equipment (PPE) will be worn</i> • <i>Personnel with appropriate experience will be used and they will be briefed on the deployment/recovery procedures for the equipment as part of a safety brief prior to commencing work</i>
3	<i>Personnel may be working with equipment capable of producing high voltages</i>	<ul style="list-style-type: none"> • <i>Personal Protective Equipment (PPE) will be worn</i> • <i>Setup and operation only be personnel familiar with the equipment</i>
	<i>Operating in a COVID-19 environment</i>	<ul style="list-style-type: none"> • <i>All trials personnel will abide by the CAF COVID-19 risk mitigation procedures in effect at the time of the trial⁴</i>

Note: SOP A-783 Health & Safety will provide additional guidance on trial health and safety risk assessment and mitigation (at the time of writing, SOP A-783 had not been developed).

14. Environmental Impacts

The environmental risks associated with this trial are covered under an existing due diligence environmental assessment, being prepared by NETE for Op NANOOK.

Note: SOP A-781 Environmental Impact Assessments will provide additional guidance on trial environmental impact assessment and mitigation (at the time of writing, SOP A-781 had not been developed).

15. Overtime

Overtime (OT) must be pre-approved iaw DRDC Atlantic SOP A-109 Overtime Approval and Administration (at the time of writing, SOP A-109 had not been finalized).

During the trial DRDC participants will be on Field Pay per their collective agreement. While on travel, participants will be on Travel Duty, per their collective agreement.

The estimated overtime for the trial is shown in Figure 2:

DEPARTMENT OF NATIONAL DEFENCE					
Defence R&D Canada - Atlantic					
AUTHORIZATION FOR OVERTIME OR HOLIDAY WORK					
(EXCEPT SCHEDULED SHIFTS ON HOLIDAY)					
THE FOLLOWING EMPLOYEES WILL BE REQUIRED TO WORK OVERTIME FOR THE ESTIMATED NUMBER OF HOURS, DURING THE PERIOD FROM:					
					10 to 26 Aug 2022
NAME	GROUP/LEVEL	ANNUAL PAY RATE (top of scale)	NO OF HOURS	COST ESTIMATE	EXPLANATION FOR OVERTIME WORK
Sean Pecknold	DS-05	145971	63	7050.117295	Required for OP Nanook AARs - for SP may include extra day in Resolute or GIC
Andre Tremblay	EG-04	80102	58.5	3604.59	Field trial pay as per collective agreement while on ship or in GIC
				0	
Sean Pecknold (travel)	DS-05	145971	14	1566.692732	Travel Resolute to GIC (possibly)
Andre Tremblay (travel)	EG-04	80102	12	739.4030769	Travel Nuuk - Halifax (only flight that week is on Sunday 4 September)
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
			TOTAL:	12960.8031	
	Name	Date	Signature		
Person who will Verify Hours:	Sean Pecknold		X		
Recommended:	Dave Hooper		X		
Recommended:	Warren Connors		X		
CD Approval	Michel Couillard		X		

Figure 2 Estimated trial and travel overtime.

Note: it is important to communicate OT expectations to all trial participants prior to the trial taking place. If there are objections, they must be resolved in advance of the trial.

16. Travel

DRDC personnel will require travel to Gascoyne Inlet Camp (GIC) to embark on GBY, and travel to return from Nuuk, Greenland, to Halifax. Travel to GIC will be via a combination of commercial and chartered air. Travel from Nuuk will be via commercial air.

Approximate travel costs will be \$1400/person for travel from Nuuk, \$400/day/person in Nuuk, and \$1500 for travel to GIC (Pecknold), for a total of \$6100.

Travel will be submitted as part of an overall DRDC travel plan for Op NANOOK.

17. Reporting

The following reports will be produced during or after the trial:

- ## 1. Logbook

2. Trial Report (post-trial report)
3. Daily update email will be sent to Section Heads as/when possible.

18. Glossary of Abbreviations

Table 3 Abbreviations

Abbreviation	
AAR	Arctic Acoustic Recorder
AIS	Automatic Identification System
ARC	DRDC Atlantic Research Centre
DRDC	Defence Research and Development Canada
CTD	Conductivity, temperature, and depth
DS	Defence Scientist
DUSN	Distributed Underwater Sensor Network
EED	Environmental Effects Determination
GBY	HMCS Goose Bay MCDV
GIC	Gascoyne Inlet Camp
iaw	In accordance with
OT	Overtime
RED	Research, Engineering and Design
UWW	Underwater Warfare