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**CAT-TRAIN: Canadian Arctic Tidal Transect Research and Infrastructure Network  
(2018-2020)**

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**Period of operation:** from 0001-01-01 to 0001-01-01

b3r<sup>b</sup>bA7Dσ49JfzDz<sup>c</sup>: from 0001-01-01 to 0001-01-01

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כחול לבן

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The Arctic Research Foundation (ARF) recently developed self-sustaining portable research laboratories, called Mobile Marine-Archeology-Geology Network (M-MAG-N) labs. These labs were designed to run specifically on green energy, which includes wind and solar panel power. The approvals for the project obtained in 2017 were not in place in time to allow us to deploy the mobile laboratories in the spring of 2017. Since that time we have further developed our plans for the mobile labs. As such we have three modifications to make to our previous application: 1) As the labs were not deployed in 2017 we are requesting to shift our timeline from Spring 2017- Spring 2019 to Spring 2018- Spring 2020 2) To improve the utility of the lab intended to support fisheries research we are requesting to change the site from Halokvik ~60km west to Lauchlan River, another commercial fishery site commonly accessed by community members from Cambridge Bay. 3) To support ongoing research in the Bathurst Inlet area we request to add a third lab near the town site at Umingmaktok. Our goal for this project is to deploy and maintain this key research infrastructure in areas where it will be useful to research projects in the Kitikmeot Region. As such we are applying to relocate three M-Mag-N labs over sea ice (March-April 2018) and set them up at three strategic locations, the Finlayson Islands and Lauchlan River in Dease Strait, and near the town site at Umingmaktok, where they will be left for two years. The research labs will be moved on skids as part of a train that will also include an accommodation trailer and cooking trailer. A tracked vehicle will lead the train to clear a path and a second will pull the train. Up to five snowmobiles will escort the train to provide transportation to crew and to allow crew members to travel ahead to pre-scout the route. The preferred route for the deployment of the labs will be from Cambridge Bay where the labs are currently located to the Finlayson Islands, on to Lauchlan River site, and then south to Umingmaktok, following direct routes when permitted by ice conditions and weather. If weather or ice conditions do not permit direct access the train will follow a less direct route along the coast, or be split into two trips with the Finlayson Island and Lauchlan River Labs being deployed on one trip and the Umingmaktok on another. After setting up the labs, the tracked vehicles, accommodation trailer and cooking trailer along with all remaining fuel and waste will follow the same route back to Cambridge Bay or return using a more direct route from Umingmaktok over sea ice immediately south of Kent peninsula and crossing the peninsula at the narrow point near Minto Islands. Lab Use: Once the labs are deployed we have two main research objectives and anticipate that other research programs will utilize the facilities. Our current plans for the labs in 2018-2020 are to: 1) Take measurements of sea ice growth and decay processes and monitor air-sea CO<sub>2</sub> exchange. 2) Study Arctic char physiology and migration in relation to their rapidly changing environments. Note that after consultations with NIRB in Spring, 2017, we have agreed that each research program will independently secure its own approval for activities utilizing the labs and



$$\Lambda \subset \mathbb{N} \times \mathbb{N} \rightarrow \mathbb{R}^{\mathbb{N} \times \mathbb{N}}$$

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Potential extent of route pending ice and snow conditions	Other	Marine	Cat-trains have been operated over the sea ice in the region many times by the contractors involved. We cross over land on existing roads/paths while leaving and returning to Cambridge bay and at the narrow connection between Kent Peninsula and the mainland.	None known.	The project is based out of Cambridge Bay, and extends to townsite at Umingmaktok ~200km south west of Cambridge Bay
Umingmaktok Mobile Lab Location	Researching	Inuit Owned Surface Lands	This location is small town-site and a popular and traditional camping location for Kitikmeot residents	None known.	Umingmaktok is approximately 200km south west of Cambridge Bay and approximately 300km east of Kugluktuk
Lauchlan River Mobile Lab Location	Researching	Inuit Owned Surface Lands	Lauchlan River is frequently used by locals from Cambridge Bay as a camping, hunting and fishing site and in some years is also a focus of the local commerical fishery.	None known.	Lauchlan River is approximately 140km west of Cambridge Bay.
Finlayson Island Mobile Lab Location	Researching	Crown	The Finlayson Island site currently has a weather station and is visited on a regular basis for maintenance.	None known.	The Finlayson Islands are 30km west of Cambridge Bay
Proposed Lauchlan River Route	Other	Marine	Cat-trains have been operated over the sea ice in the region by the contractors involved. We cross over land on existing roads/paths while leaving and returning to Cambridge bay	None known.	The route is based out of Cambridge Bay, and extends to Lauchlan River approximately 140km west of Cambridge Bay.
Proposed Umingmaktok Route	Other	Inuit Owned Surface Lands	Cat-trains have been operated over the sea ice in the region by the contractors involved. We cross over land on existing roads/paths while leaving and returning to	None known.	The route is based out of Cambridge Bay, and extends to Umingmaktok approximately 200km



		travel primarily over sea-ice and occasionally over land	
Land	0	The lead tracked vehicle, the tracked vehicle pulling the train, and the snowmobiles will travel primarily over sea-ice and occasionally over land	

### Project accomodation types

Temporary Camp

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Diesel	fuel	6	200	1200	Liters	Fuel for tracked vehicle
Gasoline	fuel	2	200	400	Liters	Fuel for Snowmobiles
Gel Batteries	hazardous	15	2	30	Liters	used to store power from the green-energy systems. These batteries are secured in the labs, and are designed so that they cannot spill acid, even if they are cracked (“non-spillable” gel batteries)
oil	hazardous	2	26	52	Liters	Engine Oil

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0	brought from cambridge bay	cambridge bay municipality

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Researching	ΔΛΔ <sup>ᐸ</sup> ᐱᐅᖃᐅᐱᐱᖃᐅᐱᐱᖃᐅᖃ	0-10kg/day	Stored and returned to Cambridge Bay for disposal for mobilization/deployment phase over ice	None
Researching	ᐱᐱᐅᐱᐱᖃᐅᐱᐱᖃᐅᖃ	0-50L	Oil changes may be needed. All oil will be stored and returned to Cambridge Bay for disposal.	None
Researching	Other, Garbage	0-10kg/day	Returned to Cambridge Bay for disposal in landfill	None
Researching	Other, recycling	0-10kg	Returned to Cambridge Bay for recycling	None
Researching	ᖃᓄᐱᐅᐱᐱᖃᐅᐱᐱᖃᐅᖃ	0-10kg/day	Stored and returned to Cambridge Bay and disposed of through municipality for the mobilization/deployment phase	None

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We expect this project to have a minimal negative environmental impact, as waste products, excess fuel/oil and all other foreign items/objects (excluding 3 mobile research labs) will be taken back with us to Cambridge Bay for proper storage or disposal. The project will have a lead tracked vehicle, and a Cat-train with one tracked vehicle towing 5 trailers, which will consist of 3 mobile labs (M-MAG-N), 1 accommodation trailer and 1 kitchen trailer. Up to 5 snowmobiles will be present to transport personnel along with the cat-train and to pre-scout the sea ice route before the cat-train arrives. All fuel for the snowmobiles and the tracked vehicle (gasoline and diesel) will be stored on the cat-train. To mitigate further environmental impacts, an emergency spill response plan has been set in place with personnel being trained in spill response prior to leaving Cambridge Bay. When the labs are set up on site they will be left on their transport skis/skids to limit ground disturbance and we will take the shortest route possible when it is necessary to cross over land. The Umingmaktok and Lauchlan River locations were chosen specifically in part because Kitikmeot residents (Cambridge Bay and Kugluktuk) routinely use these areas for camping, hunting, and commercial and subsistence fishing so there is already some level of human activity. We do not anticipate any substantial environmental impacts based on the fact the area is already in active use, and given the relatively small scale of the proposed project. From a socioeconomic standpoint the impact will be positive. The Cat train will be operated by local contractors and collaborators (e.g. Local Canadian Rangers and Field assistants hired through the HTO) at an estimated \$50000 minimum for deployment and retrieval. Furthermore the labs will at a minimum support locally valuable environmental and fisheries research.

## **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

## SECTION H2: Disposal At Sea

## SECTION 11: Municipal Development

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## Cumulative Effects

## Impacts

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$$(P = \langle b \rangle \Delta \cdot \rho \cap \langle a \rangle \Delta \cdot \sigma)^c, N = \langle b \rangle \Delta \cdot \rho' \cup \langle a \rangle \Delta \cdot \sigma)^c \subseteq \langle a \rangle \Delta \cdot \rho' \cup \langle a \rangle \Delta \cdot \sigma)^c, M = \langle b \rangle \Delta \cdot \rho' \cup \langle a \rangle \Delta \cdot \sigma)^c \subseteq \langle a \rangle \Delta \cdot \rho' \cup \langle a \rangle \Delta \cdot \sigma)^c, U = \langle b \rangle \Delta \cdot \rho' \cup \langle a \rangle \Delta \cdot \sigma)$$