NANOOK 2016 PROJECT DESCRIPTION AND SUPPLEMENTAL INFORMATION

GENERAL

Operation NANOOK 2016 is the centerpiece of three sovereignty operations conducted annually by the Canadian Armed Forces (CAF) in Canada's North in August. Operation (Op) NANOOK 2016 is also the key whole of government (WoG) operation for the North, and provides the opportunity to strengthen links with WoG partners, enhancing cooperation and facilitating CAF support in response to future threats and hazards. The engagement of WoG partners provides other departments and agencies the opportunity to examine their own plans, processes and relationships. This year's Operation NANOOK will be conducted from 01 August to 25 September out of Whitehorse, Haines Junction and Rankin Inlet (Fig 1) and will feature two scenarios. In the first scenario, deployed CAF forces will respond to a major earthquake in conjunction with our Northern Partners. In the second scenario, CAF personnel, ships and aircraft will conduct a combat scenario in vicinity of Rankin Inlet. CAF assets will conduct patrols, training and simulated combat exercises. There will be significant command, control and support activities operating out of Whitehorse. These will occur in military and rented facilities as well as a temporary camp.

WHITEHORSE

The Yukon portion of OP NANOOK will be supported out of Whitehorse (Fig 2). The bulk of activities will occur at the Cadet Camp (Fig 3), the Canada Games Center, the Takhini Arena (Fig 4) and the Aklan Air Hanger at the Whitehorse Airport (Fig 5). An advance party will arrive at the community beginning 01 August 2016 to begin preparations for Op NANOOK.

Command and control of the Yukon will be out of the Canada Games Center in Whitehorse with the airport acting as the hub for support of this operation. The Air Task Force (ATF) which will including a C-177 Globemaster and C-130 Hercules for airlift into and out of Whitehorse, and CH-146 Griffon, CH-147 Chinook helicopters, and CC-138 Twin-Otters for transportation of personnel and supplies to and from remote sites. This may include helicopter slinging operations. Military personnel will use the Cadet Camp for accommodations and eating. The existing infrastructure will be augmented with a tented camp at the Cadet Camp. The Takhini Arena is also planned for use as additional bed space for influx of transient personnel. Divers will conduct an underwater inspect the Robert Campbell Bridge.

HAINES JUNCTION

Haines Junction (Fig 6) will serve as a Forward Operation Base (FOB) for an army company. The company headquarters will operate out of mezzanine in the Bill Brewster Arena (Fig 7). Elements of the ATF will operate out of the Parks Canada farm site (Fig 8). The main accommodation will be at the Wildland Fire site (Fig 8). Tasks in the local area will include bridging operations, the setting up of a Reverse Osmosis Water Purification Unit (ROWPU) (Fig 9) and day patrols (Figs 10, 11).

RANKIN INLET

Command and control of the portion of the operation that will occur in Nunavut will be out of the Forward Operation Location (FOL) in Rankin Inlet (Fig 12) with the airport acting as the hub for support of this operation. An army company will operate from the FOL in Rankin Inlet. They will move ashore with a combination of Rigid Hull Inflatable Boat (RHIB) and aircraft to establish a platoon camp near Chesterfield Inlet (Fig 13) and conduct dismounted patrols within the local area. A Radar Squadron will deploy mobile Radar equipment In the vicinity of Rankin Inlet

ENVIRONMENTAL CONSIDERATIONS

It is important to note that DND operates under strict environmental guidelines. Digital images of locations will be taken during and after use and will be included in the Post-Operation Environmental Report. Some of the environmental protection measures that will be implemented include but are not limited to:

All CAF personnel will be briefed with respect to general environmental awareness, including spill response and reporting procedures;

All hazardous materials, fuel storage, generator and vehicle parking areas are subject to inspection by environmental support staff. All involved elements will appoint an environmental representative, accountable for the supervision of best environmental practices;

All hazardous materials and fuel will be stored in approved storage containers and facilities, including compliant secondary containment;

Generators will be placed within suitable containment throughout the operation, and will be emptied for transportation;

Local treatment systems and municipal landfill or incineration will be used for the disposal of human waste wherever possible. Waste generated by personnel on the land will be bagged and packed out for appropriate disposal;

Local landfill or incineration will be used for the disposal of combustible waste. Disposal will occur in accordance with Territorial and Municipal regulations (waste will be handled by contract);

Local landfill, incineration or recycling centres, where available, will be used for the disposal of non-combustible wastes. Disposal will occur in accordance with Territorial and Municipal requirements (waste will be handled and disposed by contract); and

Hazardous waste will be appropriately packaged and transported to a suitable facility for disposal, in accordance with appropriate regulations – provided by an approved third party waste disposal facility if required.

Permitting process requires detailed information regarding the nature and locations of the operation. The information contained in this document that is known at the time of production. Minor variances may occur during the conduct of the operation. Such variances will be captured in a Post-Operation Environmental Report and will include the precise locations of activities during the operation, along with an overall review of the execution.

The following is a list of potential impacts that could result from the proposed activities:

Activity and vehicle traffic from the proposed activities is expected to increase ambient noise levels and may also cause minor disturbance to the wildlife within the vicinity of activity locations. However, because all activities will be temporary and all wildlife will be actively avoided, impacts are expected to be minimal.

Emission from vehicles involved in the operation will release particulate into the atmosphere and contribute to greenhouse gas emissions. Air quality in the vicinity of activities may be temporarily reduced due to the increased fumes. However, due to the relatively short duration of the activity, and the use of new, lower emission vehicles, impacts to the atmosphere are expected to be minimal.

Despite efforts to ensure that all waste material is to be properly contained and transported back to municipal facilities for disposal, the potential exists for waste material produced during the Operation to litter property or be windblown onto surrounding locations. However, every effort will be made to ensure this does not happen, therefore the impact is considered to be easily mitigated and insignificant.

Should a fuel leak and/or spill occur from vehicles, equipment, etc., the possibility exists for contamination of ground water resources, soil and/or surface water. However, all units traveling on the land will have spill cleanup supplies, and will be instructed on their use; therefore the potential for a malfunction and/or accident to cause any significant impact is low.

Bridging operations have the potential to destabilize or erode embankments during operations, possibly releasing sediment into the watercourse. However, the bridging operations will be limited to one location to reduce the risk. The locations chosen for the bridging operations will take into account the stability of watercourse embankments. Throughout the operations, all embankments near the watercourse will be monitored and additional measures will be put in place where required to prevent destabilization, therefore the impacts will be minimal.

Use of the Reverse Osmosis Water Purification Unit (ROWPU) may temporarily increase the concentrations of dissolved solids currently in the water in the water nearest the output of the unit. The impact would be significantly increased if the water surrounding the output of the unit was stagnant. However, the ROWPU will be operated both drawing water and releasing water back into a moving watercourse, mitigating the effects. Additional measures will also be taken by monitoring the concentration of dissolved solids in the water downstream from the output of the ROWPU. Potential impact to the watercourse is expected to be low.

Although there is potential for activities to impact the environment, mitigation measures have been established to minimize their significance. These mitigation measures, include, but are not limited to:

An environmental brief will be provided to personnel involved in the exercise to ensure they have the required general level of environmental awareness and knowledge, and are aware of requirements related to wildlife prevention, response and reporting.

Vehicle movement will be restricted to avoid sensitive areas where possible. In the event that established trails are impassable, personnel will be instructed to use alternate routes for as limited a distance as necessary.

Individuals will be tasked to ensure that waste material and litter is collected on the site prior to departing the camp location. All waste produced on site will be packed out to municipal facilities for proper disposal.

In order to prevent any unnecessary wildlife encounters, all waste will be appropriately contained, stored and removed from the sites as soon as possible.

Personnel will be made aware of the potential for threats from local wildlife and instructed to avoid encounters or disrupting any wildlife.

All activities that generate excess noise will be minimized to the furthest extent possible.

Vehicles and equipment will be maintained in good repair to prevent leakage of fluids and fuel.

When in built up area, all vehicle/equipment refueling will occur at a commercial, municipal or prepared site.

Use of spill containment items including drip pans or mobile plastic berms will be used during refueling.

All fuel storage systems and containers used in the proposed operation will be transported, stored, protected and handled according to proper legislation, regulation, codes and guidelines.

HAZMAT prevention/response resources (spill pans, hydrocarbon spill pads, absorbal etc.) will be available and ready for use if required. Spill kits will be specifically located at all fuel storage areas, vehicle maintenance areas and refueling areas.

Photographs will be taken of all locations before during and after use and noted in the In/Out Clearance Report.

LOCATIONS

Despite best efforts to identify all bivouac and fuel cache locations, it is entirely possible that the locations identified will differ from those identified below. Op Boxes will be provided to those participating in the operation to ensure that all activities identified in this application occur within the boundaries identified in the Op Boxes and ideally at the specific locations identified.

(Table 1) A List of sites and Op Boxes

Site	Location	Latitude	Longitude	Use
Robert Campbell Bridge	Whitehorse	60.713820	-135.045402	Underwater Site Inspection
Wildland Fire site	Haines Junction	60.773862	-137.575506	Camp Location
Gravel Pit	Haines Junction	60.806918	-137.516213	Staging Area
Bill Brewster Arena	Haines Junction	60.754776	-137.509068	Forward Command Post
Parks Canada Site	Haines Junction	60.77383	-137.582308	ATF using landing pads
ROWPU Site	Haines Junction	60.676511	-137.359076	ROWPU
Bridging site	Haines Junction	60.592134	-137.231241	Bridging Operations
Walking path start	Haines Junction	60.756243	-137.507118	Foot Patrol
Walking path end		60.756867	-137.503117	
Route Recce S	Haines Junction	60.854839	-137.033988	Route recce
Route Recce N		61.085411	-136.995143	
OP Box SW	Haines Junction	60.799111	-137.512404	GSAR/Dive
OP Box SE		60.840623	-137.31259	
OP Box NE		60.912807	-137.357222	
OP Box NW		60.88275	-137.589308	
Trail NW	Kluane National Park	61.103002	-138.558635	March (on established Trails)
Trail NE		61.038564	-138.354015	
Trail SW		60.813005	-138.83192	
Trail SE		60.785239	-138.525276	
Forward Operating Location	Rankin Inlet	62.802951	-92.099593	Camp Location
East OP Box NE	Rankin Inlet	63.26577	-91.97205	Patrols
East OP Box SE		62.77861	-90.54932	
East OP Box NW		63.29664	-90.60425	
East OP Box SW		62.84512	-92.03796	
West OP Box N	Rankin Inlet	62.87018	-92.38403	Patrols
West OP Box S		62.42853	-92.24671	
West OP Box W		62.71446	-92.87293	
West OP Box E		62.58828	-91.81274	

Site	Location	Latitude	Longitude	
OP Box NE	Rankin Inlet	62.864113	-92.209362	Radar site
OP Box SE		62.860589	-92.117008	
OP Box NW		62.842182	-92.126964	
OP Box SW		62.822901	-92.196144	
OP Box W	Chesterfield Inlet	63.470809	-91.367879	Patrols
OP BOX S		63.333658	-91.026788	
OP BOX E		63.418317	-90.872121	
OP BOX N		63.590120	-91.524355	

CANADIAN ARMED FORCES PERSONNEL BY LOCATION

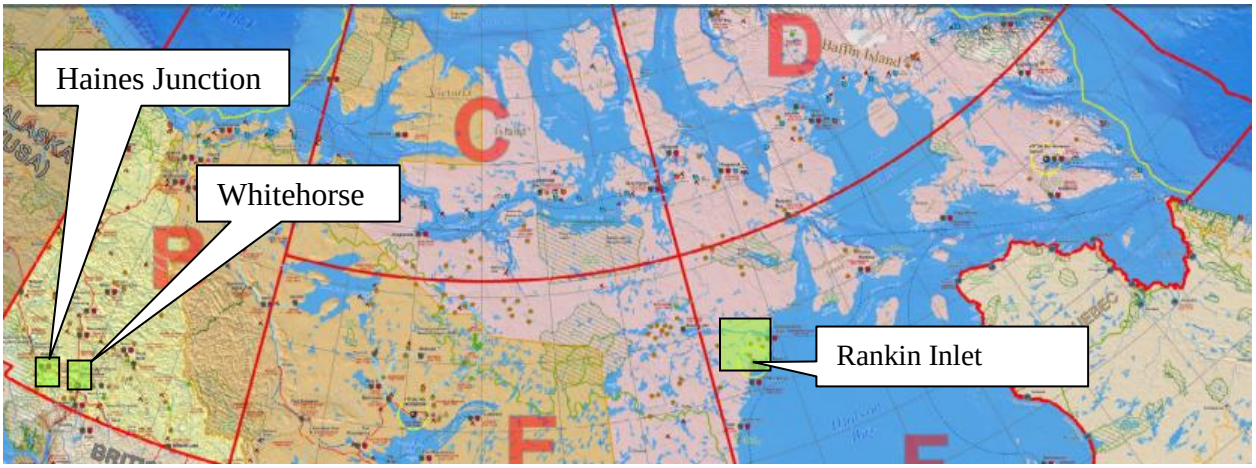

Fig 1. Operation locations, Op NANOOK 2016

CAMP DETAILS

WHITEHORSE MAIN CAMP

The main camp consisting of up to 300 personnel will be primarily located within the municipal boundaries of Whitehorse. Operations will be mounted from the Community Canada Games Center. The bulk of military personnel in Whitehorse will be situated in a tented camp at the Cadet Camp (*Fig 2, 3*) with transient personnel in the Takhini Arena (*Fig 4*). The Air Task Force (ATF) will be working out of the Akland Air hanger and the Wildland Fire Hanger (Hanger D) at the airport (*Fig 5*).

HAINES JUNCTION

The camp will be located Wildland Fire Site (*Fig 8*). It will consist of approximately 250 personnel. Personnel will be accommodated in two, four and ten person tents. There will be a small operations section located in Arena Mezzanine (*Fig 7*). The forward ATF elements (CH146 Helicopters) will be located at the Parks Canada Site (*Fig 8)*. Waste will be disposed of by contract into municipal facilities.

RANKIN INLET

All personnel (190) will be located at the FOL. A platoon of approximately 100 people will leave Rankin Inlet (Fig 12) and spend 8 days patrolling in an established Op Box west or south of Chesterfield Inlet (Fig 13 and 14). All waste generated during patrolling operations will be moved back to Rankin Inlet where it will be disposed of by contract into municipal facilities. A RADAR unit will operate near Rankin Inlet.

The following table provides an estimate of the maximum number of personnel expected in each location. It includes personnel that will be transiting through that location as they move forward.

Table 2. A table of personnel by location

Location	**Max Personnel**	**Total Nights**	**Dates**
Whitehorse	300	55	01 Aug – 25 Sept
Haines Junction	250	8	26 Aug – 03 Sept
Rankin Inlet	190	12	18-30 Aug
Chesterfield Inlet	100	12	18-30 Aug

WASTE GENERATED

Table 3. A table of estimated amounts of waste generated
Haines Junction

Type of waste	**Projected amount**	**Method of Disposal**	**Additional treatment procedures**
Sewage (human waste)	100 Kg/day	Human waste produced in the field will be collected (bagged) and returned to the main camp location for proper disposal.	Nil
Greywater	500 L/day	Greywater produced at the camp locations will be disposed of via contracted disposal into existing infrastructure.	Nil
Combustible wastes	100 Kg/day	All combustible waste produced in the field will be returned to the main camp for proper disposal.	Nil
Non-Combustible wastes	250 Kg/day	All non-combustible waste produced in the field will be returned to main camp. Waste will be disposed of by contract into municipal facilities.	Nil
Overburden (organic soil, waste material, tailings)	N/A	N/A	Nil
Hazardous waste	TBC	All hazardous waste will be Disposed of in accordance with territorial regulations.	Nil

Rankin Inlet (including Chesterfield Inlet Op Box)

Type of waste	**Projected amount**	**Method of Disposal**	**Additional treatment procedures**
Sewage (human waste)	50 Kg/day	Human waste produced in the field will be collected (bagged) and returned to the main camp location for proper disposal.	Nil
Greywater	450 L/day	Greywater produced at camp locations will be disposed of via contracted disposal into existing infrastructure.	Nil
Combustible wastes	50 Kg/day	All combustible waste produced in the field will be returned to Main Camp for proper disposal.	Nil
Non-Combustible wastes	100 Kg/day	All non-combustible waste produced in the field will be returned to the nearest community. Waste will be disposed of by contract into municipal facilities.	Nil
Overburden (organic soil, waste material, tailings)	N/A	N/A	Nil
Hazardous waste	TBC	All hazardous waste will be Disposed of in accordance with territorial regulations.	Nil

PATROL ROUTES

All major movements will be by air and sea. Ground movement will be limited to small local dismounted and ATV patrols.

FRESH WATER

In Yukon (Whitehorse/Haines Junction), approximately 1500L of fresh water will be drawn from local sources each day. In Haines Junction 500L per day will be drawn from the ROWPU site for consumption. In Rankin Inlet, approximately 1000L of fresh water will be drawn from local sources each day.

MAJOR EQUIPMENT INVOLVED

Table 4. The following table lists approximate numbers of major equipment operating out on the land.

Equipment type and number	Size – dimensions	Proposed use (and location by Territory)
20 x All-Terrain Vehicle (ATV)	L3.00m/W1.30m/H1.20m/Wt140kg	Transportation of troops and equipment(Nunavut)
2 x Kingston Class Maritime Coastal Defence Vessel (MCDV)	Length 56m, Beam 12m, Draft 3.4m Displacement 970t	Transportation, *surveillance* and other operations (Nunavut)
4 x 68kW Generators	Example Dimensions: L4.0m/W3m/H.2m	Temporary power (Yukon)
3 x CC-138 Twin Otter Aircraft	L15.1m/W9.81m/H5.66m/Wt5600kg	Transportation of troops and equipment (Nunavut and Yukon)
3 x CH-146 Griffon Helicopters	L17.1m/W14m/H4.6m/Wt3500kg	Transportation of troops and equipment (Nunavut and Yukon)
2 x CH-147 Chinook	L30m/W19m/H5.7m/Wt10,185kg	Transportation of troops and equipment(Yukon)
CC-130 Hercules	L30m/W40m/H11m/Wt34,400kg	Transportation of troops and equipment (Nunavut and Yukon)
CC-177 Globemaster	L53m/W52m/H17m/Wt128,100kg	Transportation of troops and equipment (Nunavut and Yukon)
1 x ROWPU	L6.09m/W2.43m/H2.43m	Water purification (Yukon)
Front End Loader	Example Dimensions: L7.84.m/W2.87m/H3.56m/Wt19505kg	Movement and installation of Bridging equipment (Yukon)
50 x Troop Transport Vehicles (Vans and Busses)	Maximum Dimensions: L12.50m/W2.51m/	Movement of personnel (Nunavut 10, and Yukon 40)
2 x RHIB	L3.80m/W2.23m/H1.78m	Transportation of troops
1 x Mobile RADAR	Example Dimensions: L8.34.m/W2.54m/H4.35m/Wt20000kg	Training (Nunavut)

FUEL AND HAZMAT INVOLVED

All fuel used or hazardous materials generated will be handles, stored, and disposed of in accordance with municipal, territorial, and federal regulations. At this time there are no fuel caches planned at any of the locations. All fueling points are commercial and/or pre-existing facilities. Pyrotechnics (smoke signalling) devices may be used in the Chesterfield Inlet Op Box.

Table 5. A list of possible fuels used in the operation.

Fuel	Number/Capacity of Containers	Total Amount (in Litres)	Proposed Storage Methods (Location)
Diesel	20 x 20L jerry cans	400	Jerry cans in portable berm c/w spill pads (Yukon)
Gasoline	80 x 20L jerry can	1600	Jerry can in portable berm c/w spill pads (Nunavut)
Aviation fuel	None	none	Aircraft will be fueled by contract and existing infrastructure (Yukon and Nunavut)
Other: Naphtha	80 x 3.78L	310	Original metal cans in portable berm c/w spill pads (Nunavut)

COMMUNITY INVOLVEMENT

Community days are planned for Haines Junction and Rankin Inlet. In Haines Junction, the community day is planned for some time in the 31 August to 02 September timeframe. In Rankin Inlet, the community day will occur between 28 and 30 August.

CONCLUSION

The information provided is the most accurate information available at this time, and that dates and locations may change slightly due to unpredictable circumstances such as weather. Regardless of circumstance, the CAF is accountable to environmental stewardship, and will conduct the operation with due diligence towards the environment.

OPERATION NANOOK 2015 OVERALL ACTIVITIES

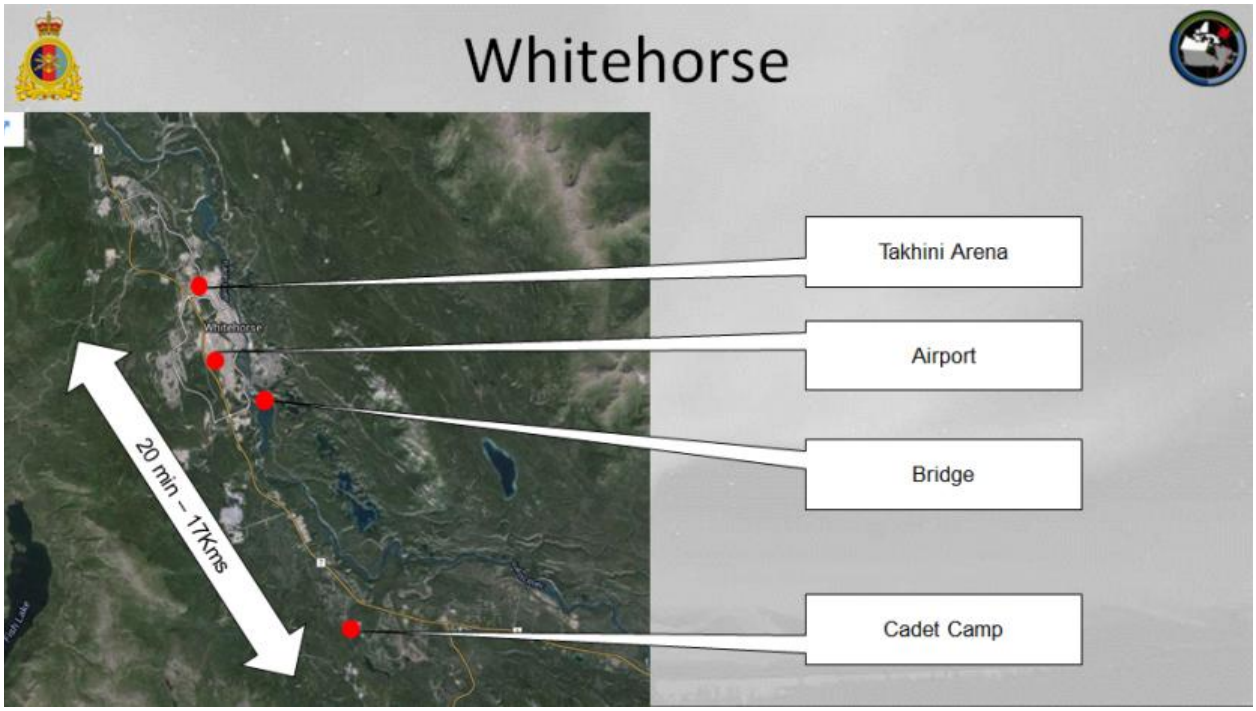

Fig 2. Locations in the vicinity of Whitehorse

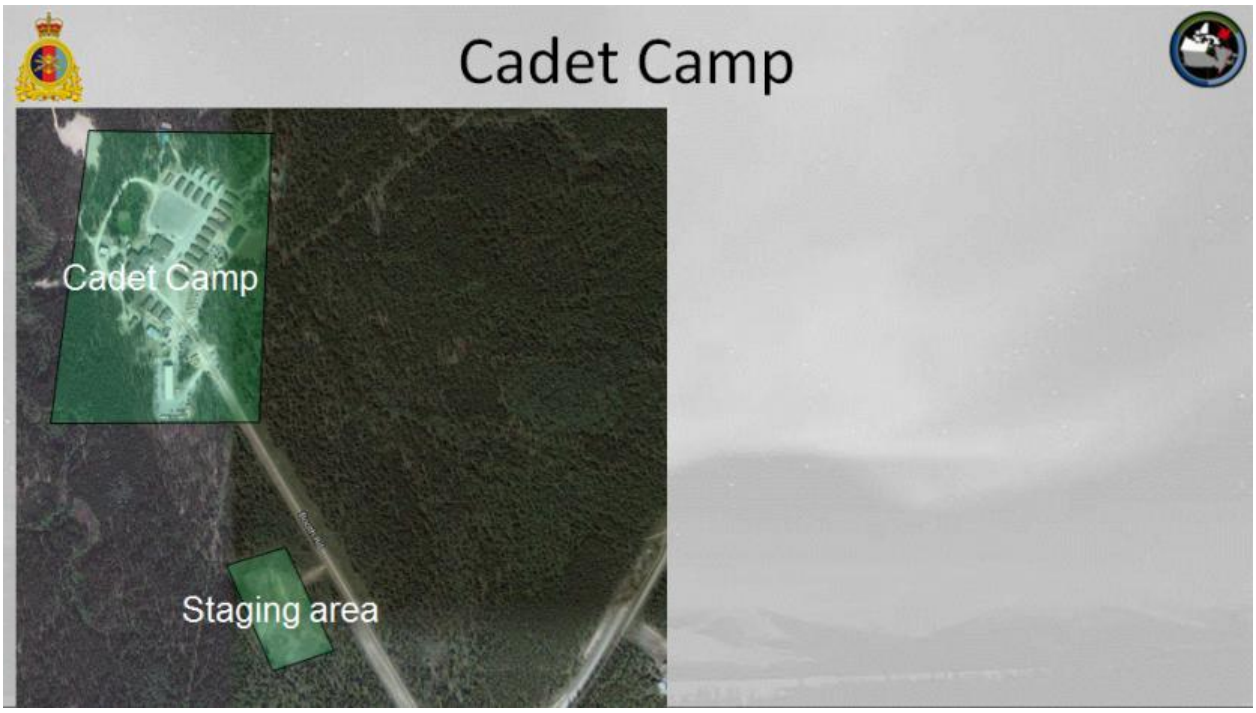

Fig 3. Layout of the Cadet Camp

Fig 4. Locations of the Canada Games Center and the Takhini Arena

Fig 5. Layout at the Whitehorse Airport

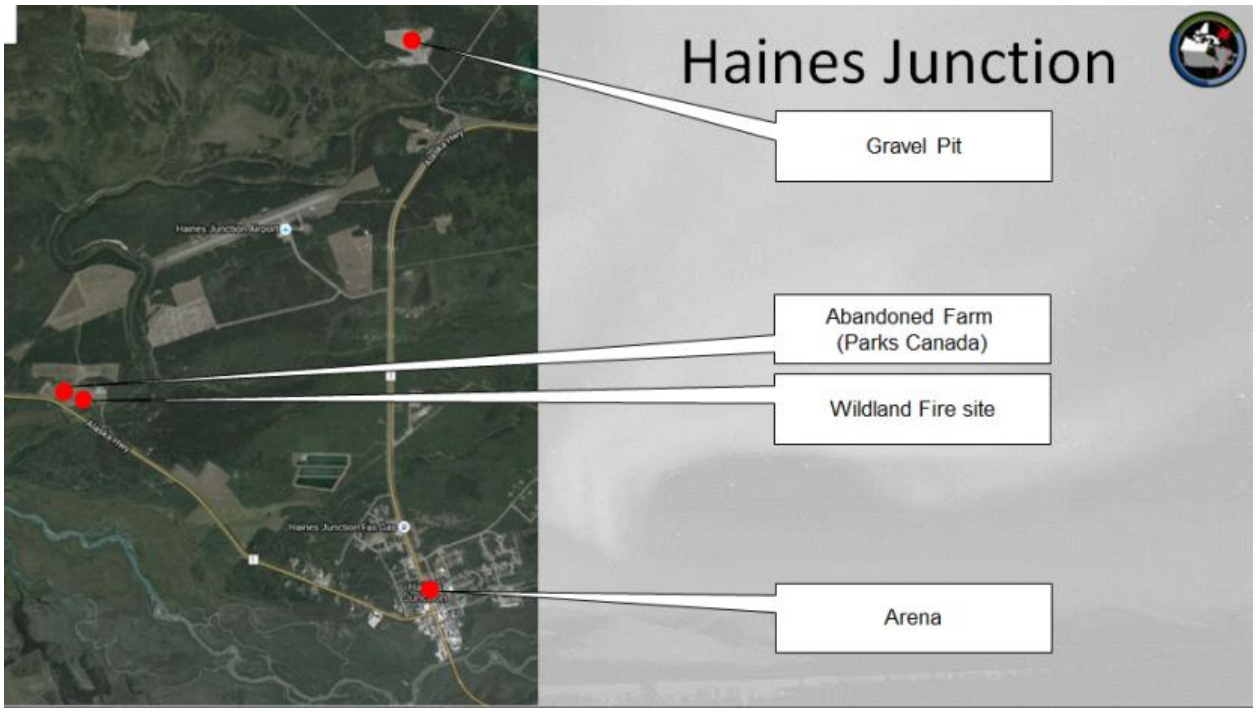

Fig 6. Locations at Haines Junction

Fig 7. Arena in Haines Junction

Fig 8. Camp locations in Haines Junction

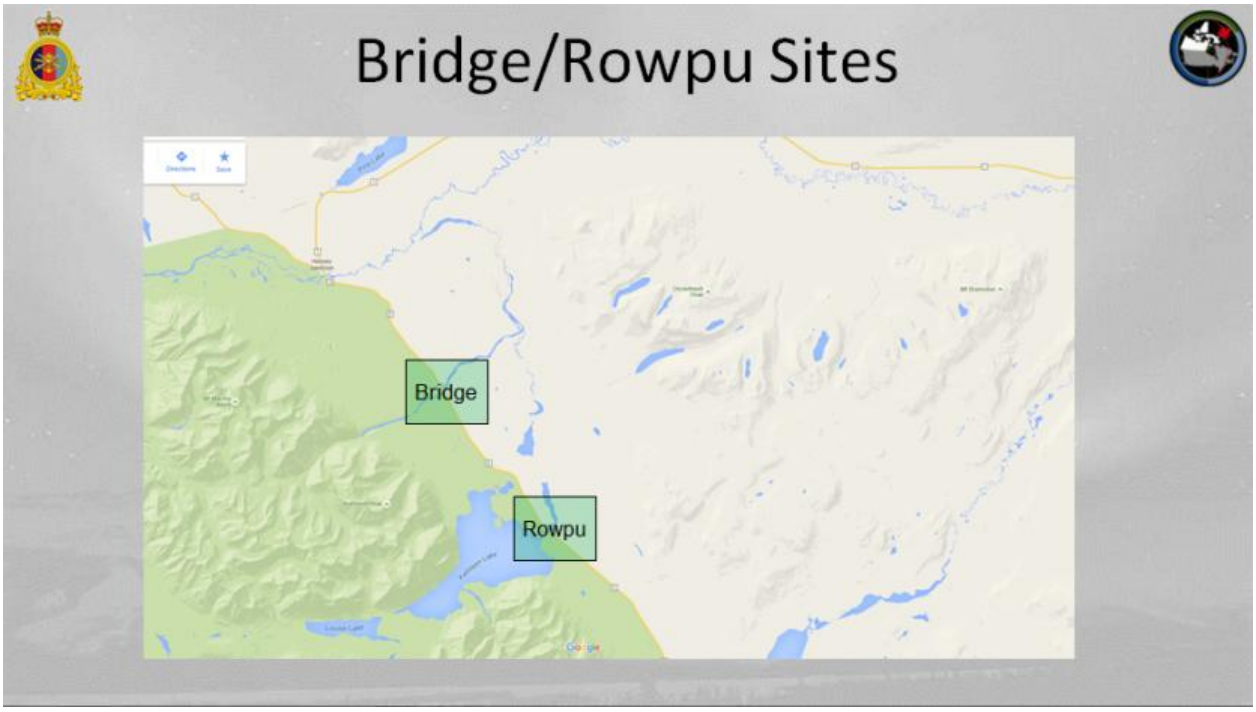

Fig 9. Locations of bridging and ROWPU operations

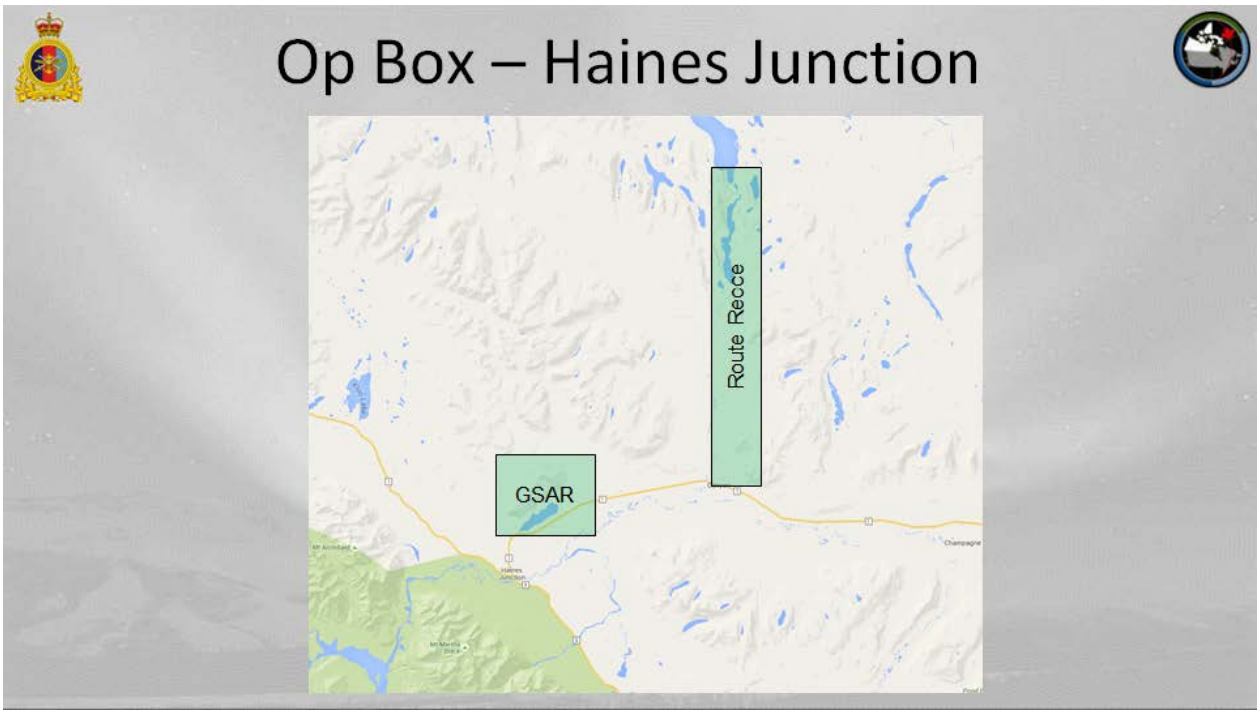

Fig 10. Locations of patrol routes near Haines Junction

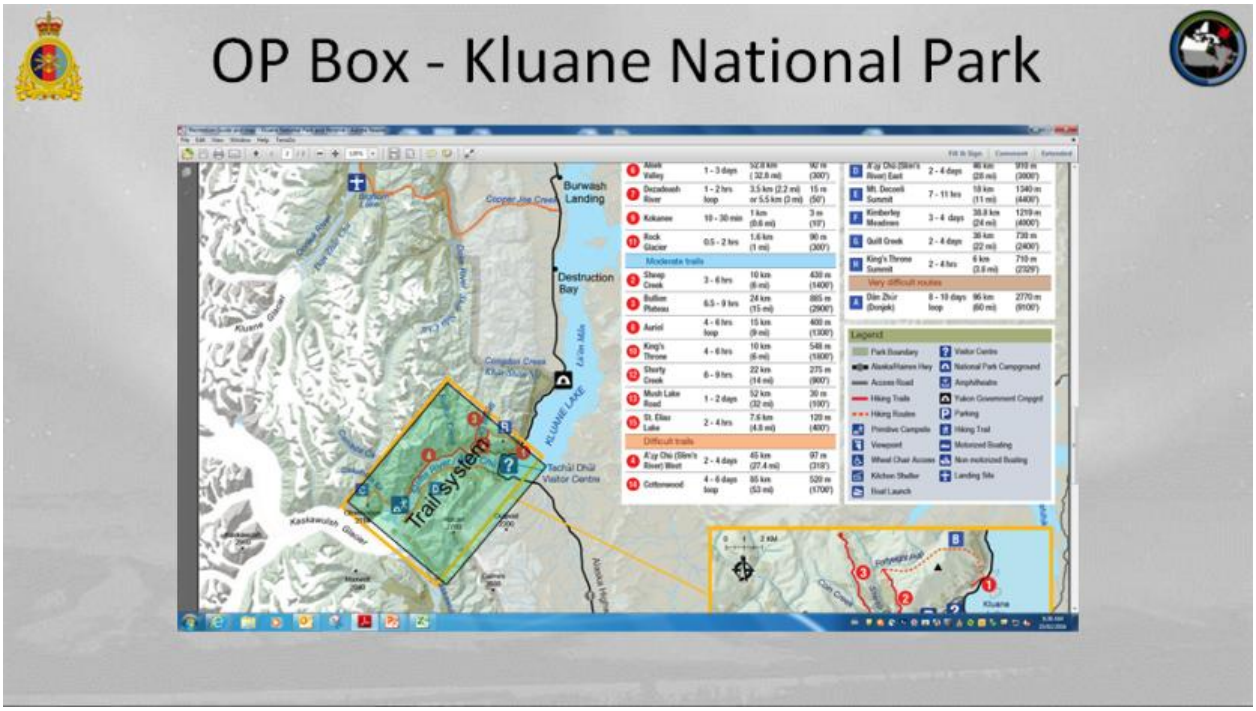

Fig 11. Locations of patrol routes near Haines Junction

Fig 12. Location of Op Box near Rankin Inlet

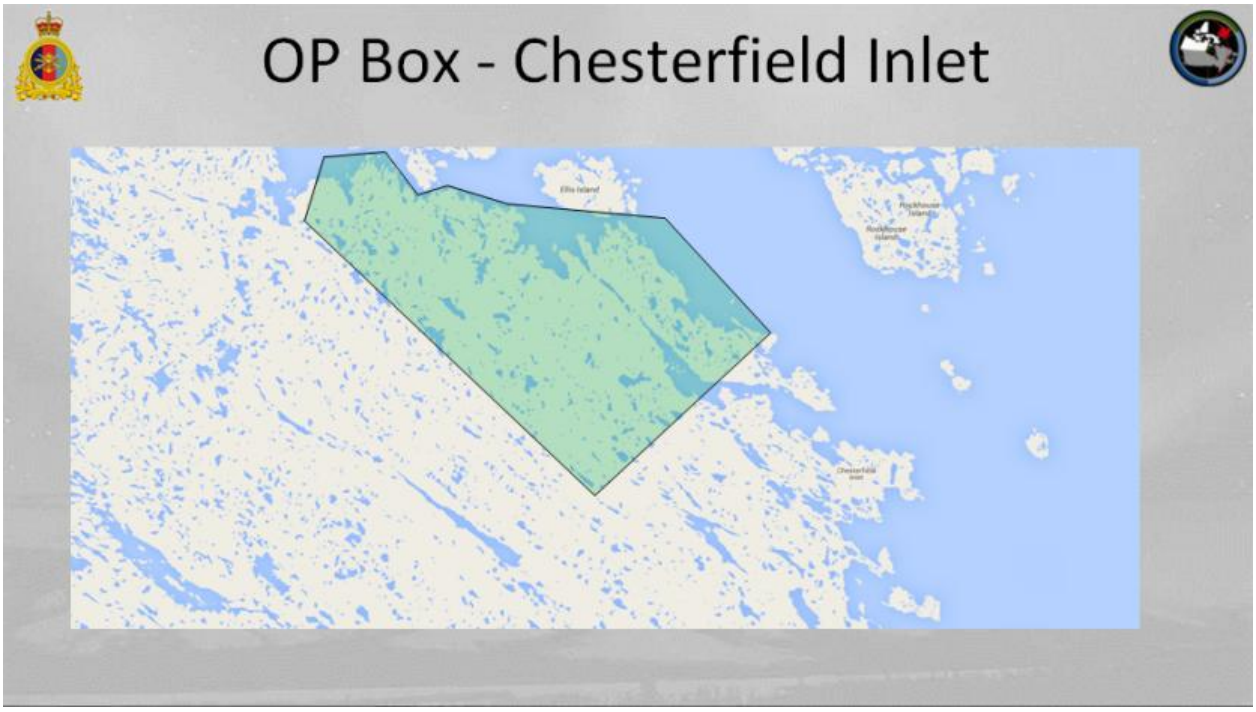

Fig 13. Location of Op Box near Chesterfield Inlet

Fig 14. Two additional Op Boxes, south of Chesterfield Inlet and east of Rankin Inlet.