PROJECT DESCRIPTION AND SUPPLEMENTAL INFORMATION

Applicant Name and Contact Information:

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GENERAL

BACKGROUND

During Exercise BAFFIN RANGER, personnel from 1st Canadian Ranger Patrol Group (1 CRPG) were traversing the ice on Amadjuak Lake, Nunavut when the ice failed, and equipment was lost into the lake. Among the equipment lost were two snowmobiles (LOSVs), over 225L of miscellaneous POL, one small arms, and other miscellaneous equipment. The Department of National Defence (DND) understands it is legally required to take all reasonable measures to mitigate and remediate any environmental impacts as Amadjuak Lake is an important Arctic char and caribou habitat. 3rd Canadian Division Support Group's (3 CDSG) Environmental Services is tasked with creating a recovery project description, so to remove the missing items from Amadjuak Lake in a safe and environmentally friendly manner. Ultimately, the recovery task will be completed by DND or a DND/civilian hybrid if military aircraft is a limiting factor or as a future military exercise.

INCIDENT TIMELINE

4 Apr 2023: Two snowmobiles (LOSVs) and equipment break through ice on Amadjuak Lake.

5 Apr 2023: Government of Nunavut, Joint Task Force North (JTFN), 3rd Canadian Division Command and Environment are notified.

12 May – 31 Jul 2023: Extensive staff coordination and communication with OGDs to define the problem space and develop options for response.

4 Aug 2023: Contracted recovery options explored. Determined that recce was required. FDU dive team consulted to plan recce.

11-15 Sep 23: Planned recce by FDU(A) did not occur due to weather and logistical issues.

27 Nov 2023: 1st CRPG conference call meeting (Div Enviro – N Env Coord) to gather additional details if available.

January 2024: Continuation of recce and recovery operation planning with some additional information.

WHAT WE KNOW:

- Names/contact info of patrollers involved in the incident.
- Better idea of what went into the ice and where it went in (19W CN 71596 56745).
- Possible camp locations for the recce/recovery team.
- Situational Awareness (terrain in and around proposed Ops Box, as well as river flow), as well as areas of environmental or cultural significance.
- Amadjuak lake is fish-bearing with known Arctic char (possibly other fish and aquatic species), and a quick internet search identified the area around Amadjuak Lake as "notable as a summer feeding grounds, calving grounds, and migration route for the Southern Qikiqtaaluk herd of Barren-ground caribou."
- Ideal recovery time (Jul-Aug 2024) when weather and light are used as a primary planning factor.

WHAT WE DON'T KNOW:

- Confirmed resting place of all equipment (whether river flow rates have impacted it).
- Confirmed depth of resting site (CRPG patrollers estimate at 5-20 ft depending on each specific item, but near a drop off and we have some information that the water levels fluctuate significantly throughout the year).
- Status of POL containers (intact or leaking).

RECOVERY TIMELINE

MISSION: To recover all missing equipment if possible and mitigate environmental damage to the extent possible.

Feb – May 2024: Obtain any required environmental permits, authorizations, determinations etc. Also plan a recce to collect missing information/data on the condition of the two 208 litre drums of fuel, two LOSVs, and other lost equipment.

Jun 2024: Conduct recce operation.

Jun – Jul 2024: Plan an effective recovery operation based on the sonar, photo, and other data collected during the recce.

Aug 2024: Execute the recovery operation and any required remediation.

NOTE: Understanding the physical geography of this remote area of Baffin Island, depths of Amadjuak Lake, current location of lost items, and other environmental factors is key to planning and executing a successful mission, so a detailed recce is required before a proper recovery plan can be executed.

RECOVERY MISSION & ACTIVITY DETAILS

The Department of National Defence (DND) proposes to conduct both a recce (June) and a recovery (August) operation of lost equipment from the lakebed of the North Bay region of Amadjuak Lake and to be completed by DND or a DND/civilian hybrid if military aircraft is a limiting factor or as an upcoming military exercise with the assistance of 1st Canadian Ranger Patrol Group (1 CRPG), 1st Combat Engineer Regiment (1 CER) divers, and the Fleet Diving Unit Atlantic (FDU(A)) divers if any of the items are below a depth of 15 m. Currently, the recovery operation window is tentatively set for the first two weeks of August 2024.

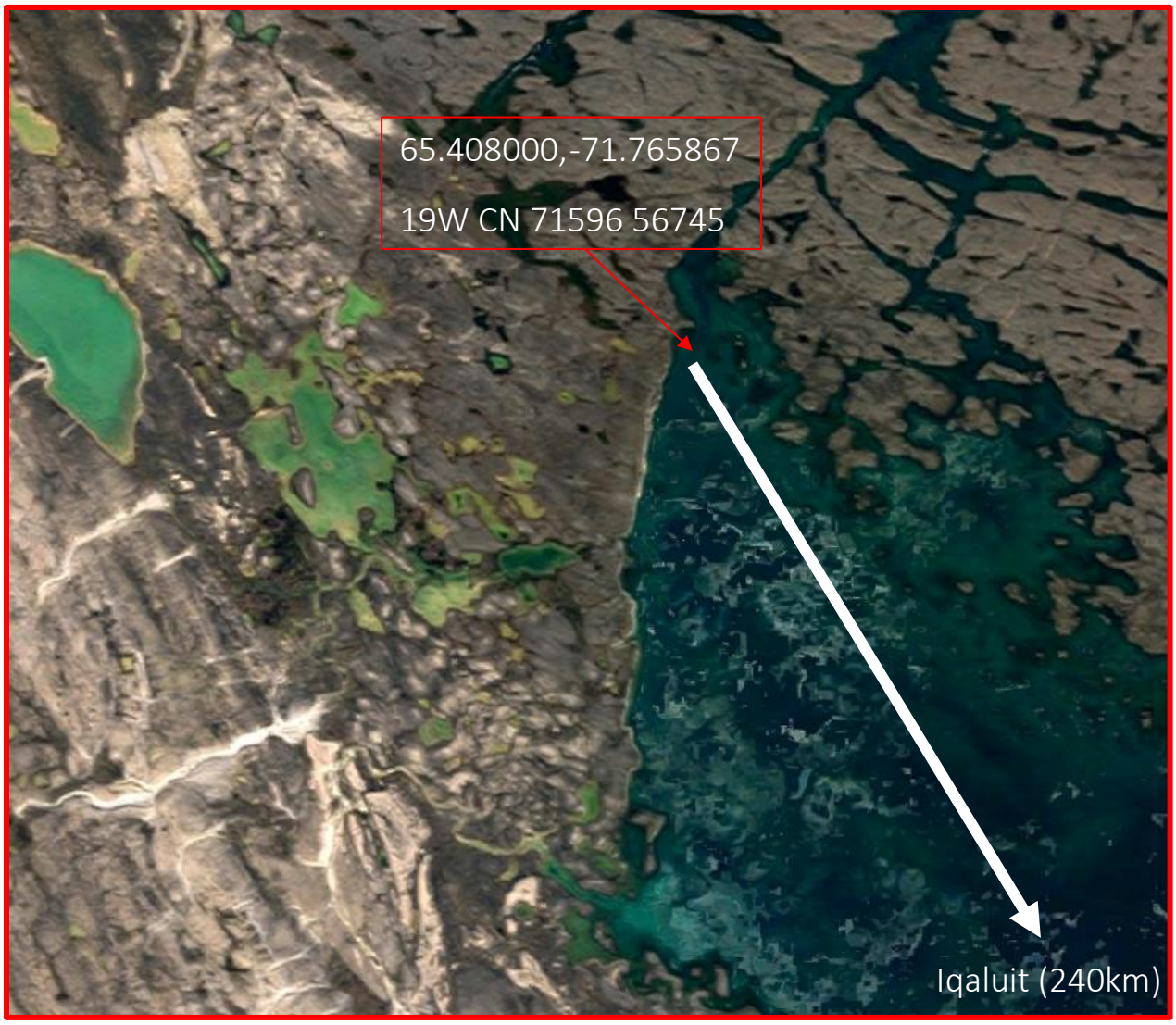
The main purpose of this recovery operation is to remove two 55-gal (208 L) drums of gasoline (one submerged in lake & one on shoreline), two snowmobiles (LOSVs), POLs, and other miscellaneous equipment Amadjuak lake in south-central Baffin Island that is an important Arctic char and caribou habitat. Due to the remoteness of the location and the nature of this type of recovery, the only feasible way to be successful in this mission is to utilize a long range Chinook helicopter (CH-147) or a civilian equivalent, so that it can travel the distance from Iqaluit and back along with the necessary cargo (e.g. camp supplies, dive equipment, zodiacs, personnel, etc.), as well as being able to carry the recovered items back along with all the camp/mission waste for proper disposal.

During the recovery operation, one temporary camp will be erected for up to 25 military personnel for a duration of no longer than ten days that will also serve as the Main Operating Base (MOB). The camp will be composed of six McPhearson tents with Yukon stoves for the entire duration and the exact location will be determined by ground conditions. Only the Canadian Rangers will carry weapons for predator control during the daily dive recovery operations and during the night. All members of the recovery team (civilian and DND) will conduct themselves with the "Leave No Trace" policy as much as reasonably possible from the moment they arrive to their departure. Fuel for heating, cooking, zodiacs, etc. will be used and stored properly within secondary containment. Except for a small quantity of greywater being used for cooking and hygiene, and the possibility of small quantities of wastewater being disposed of on land, all sewage and domestic waste will be contained and hauled back to Iqaluit

or another suitable sanitary landfill for proper disposal. Every effort will be made to ensure that this recovery operation causes no significant impact to the environment, and no known archaeological sites and/or natural resources will be impacted.

Figure 1: Recovery Operation Location (Amadjuak Lake).

Figure 2: Site of Loss and Nearest Community (approximate coordinates).



ENVIRONMENTAL CONSIDERATIONS

It is understood that the environmental review and related approvals processes requires detailed information regarding the nature and location of the recce and recovery operations, and the information contained in this document is based on latest available information at the time of application submission. In order to achieve the intent of the mission, some decisions must remain with the Commander and the onsite team. As such, minor variances may occur during the conduct of the exercise. Such variances will be captured in a Post-Operation Environmental Report which will include the precise locations used during the recce and recovery operations, along with an overall review of the execution.

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

- Increased foot activity, zodiac, and helicopter traffic to and from the proposed temporary camp (MOB) is expected to increase ambient noise levels and may also cause minor disturbance to the wildlife within the vicinity of activity locations. However, since there will be local Canadian Rangers accompanying all components of the mission, and all activities will be temporary, impacts are expected to be minimal. Further the advance liaison with the local Hunters & Trappers Organization (HTO) will ensure the exercise participants remain cognizant and respectful of the wildlife and environment at all times.

- Vehicles (i.e., helicopter(s), zodiacs) involved in the operation will release particulate into the atmosphere and contribute to greenhouse gas (GHG) 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 recovery mission, impacts to the atmosphere are expected to be minimal.

- Despite direction to ensure that all waste material is to be properly contained and transported for disposal, the potential exists for waste material produced during the exercise to litter the ground, water, and/or be windblown onto surrounding land locations that are outside the recovery areas. Regardless of the weather circumstance, every effort will be made to ensure this does not happen and a final litter sweep of the land will be conducted before departing the site; therefore, the impact is considered temporary and can be easily mitigated.

- Should a fuel spill and/or leak occur from the helicopter(s), zodiacs, generators, etc., as the possibility exists for contamination of ground water resources, soil and/or surface water. To mitigate this concern, all POL containing equipment and supplies will be stored and handled within secondary containment whenever possible, and spill cleanup supplies will be maintained in close proximity. Further, all operation participants will be instructed on their proper usage and spill response qualified individuals and environmental professionals will be part of the onsite team to provide guidance and oversight. With mitigations in place, the potential for a malfunction and/or accident to cause any significant impact is deemed to be low.

While 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 upon arrival to personnel involved in the recovery mission to ensure they have a general level of environmental awareness and are aware of the requirements related to wildlife prevention/protection responses and reporting.

- Helicopter landing locations will be restricted from sensitive areas, such as shorelines, sensitive caribou breeding grounds, and archaeological sites.

- Individuals will be tasked to ensure that waste material and litter is collected on the site prior to departing the temporary camp. All waste, including sewage waste, produced on site will be removed for proper disposal.

- To prevent any unnecessary wildlife encounters, all waste will be appropriately contained, stored, and removed from the temporary MOB camp at the end of the mission.

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

- All noise making activities will be limited to occur during daylight hours whenever possible.

- As much as possible, helicopter(s), zodiacs, generators, and other POL equipment will be maintained in good repair to prevent leakage of fuel, oil, etc.

- All vehicle/equipment refueling will occur in one allocated fixed location(s).

- Use of spill containment items including drip pans or mobile plastic berms will be maximized during refueling. Within the temporary camp, all fueling will be done within containment areas.

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

- Hazmat prevention/response resources (overpacks, spill pans, absorption socks and pads, etc.) will be available and ready for use if required. Additional spill kits will be specifically located at all fuel storage and refueling areas, as well as maintenance area(s).

- Photographs will be taken of all temporary utilization sites, including the MOB camp location before, during, and after use.

- Onsite and remote environmental oversight by trained environment personnel will be provided throughout the operation.

The proposed recovery operation has been designed based upon the principles of responsible environmental stewardship and due diligence with a focus on minimizing negative impacts to the surrounding environment by utilizing the knowledge and expertise of 3rd Canadian Division Support Group Environmental Services Branch (3 CDSG Env), Joint Task Force North HQ (JTFN), and the knowledge and experience of the local Nunavut Canadian Rangers who were present during the equipment loss incident on 4 Apr 23. Through this methodology, identified mitigation measures, and proper In and Out-clearances, this operation is deemed as not likely to cause significant negative effect or impact to the environment. With an effective recovery plan and deployment of proper personnel and equipment, the expectation leaves the location in a better state. Safely executing a detailed recce of the location of loss prior to the execution of the

recovery operation is vital for the success of the overall mission as it will take place in an extremely remote region of Baffin Island on and around a glacially fed Amadjuak Lake.

RESTORATION PLAN

To ensure that any impacts are avoided or appropriately mitigated, a rear party remediation team will consist of recovery team and environmental support personnel. They will be responsible for completing a thorough inspection of each location used prior to departure and will be provided with appropriate equipment and resources to complete minor site remediation and restoration work at each site used during the recovery mission. The general principle is to return the temporary camp site to the same pristine condition prior to any activity as documented during the recce/In-clearance process. A rear-party team will be embedded within the overall recovery team will be responsible for completing a thorough inspection and clean-up of each work and camp location prior to departure from the site (i.e., waste collection, clean-up of minor fuel spills, etc.). Site condition at the time of departure will be documented by the rear-party as part of the out-clearance process and reported back to the 3rd Canadian Division Commander and Division Environment Officer.

If the recovery team cannot restore the MOB temporary camp site to its pre-occupation condition, it will document the specific concerns in the Out-clearance form for future remediation and restoration, however this is not anticipated and every effort will be made to make the area(s) right before final departure due to the extreme remoteness of the operation and the high financial costs. If required, the relevant authorities will be notified and consulted. 3 CDSG's Northern Environmental Coordinator will remain engaged throughout the planning and execution of all phases of the recovery mission and is available to deploy to Amadjuak Lake on short notice.

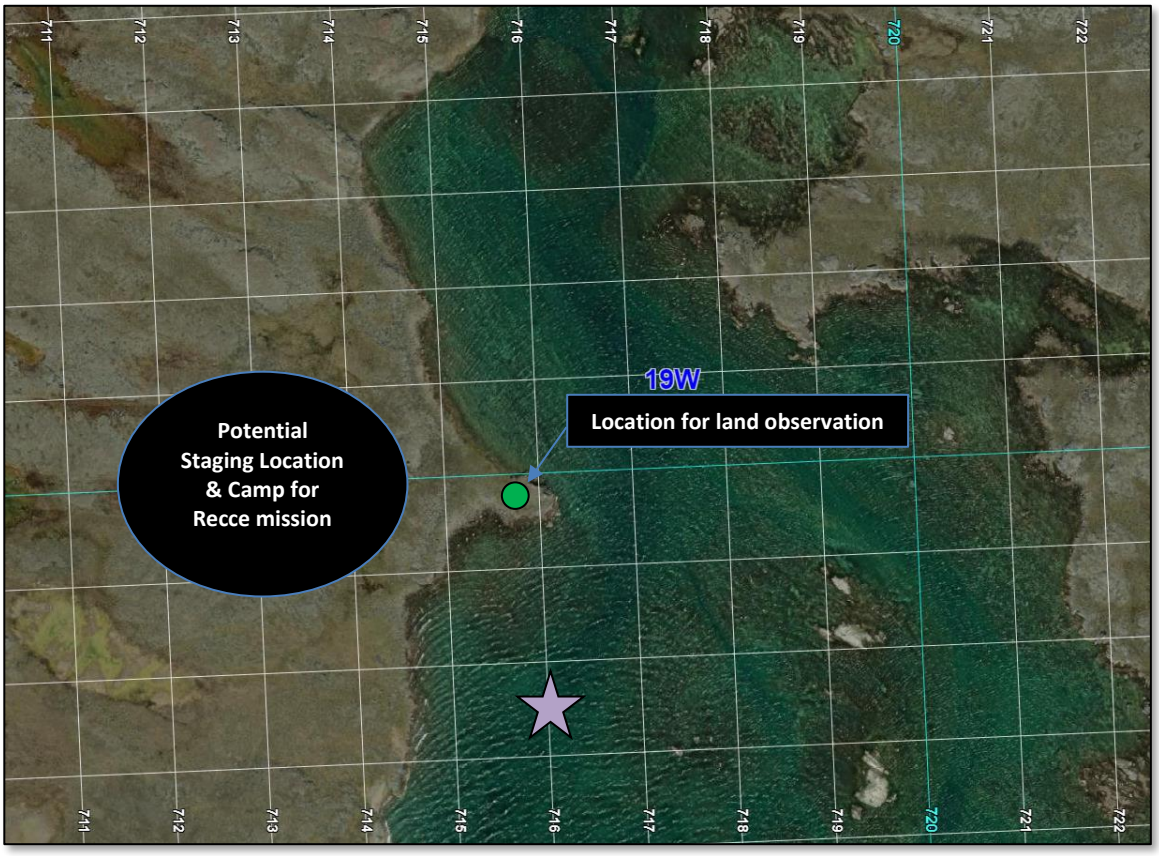
CAMP LOCATION

Despite best efforts to identify the main bivouac camp location (MOB), weather and ground terrain will dictate the final bivouac site. It is therefore possible that the final location will differ from the coordinates identified below, however, it will be located inside the main Operations Box.

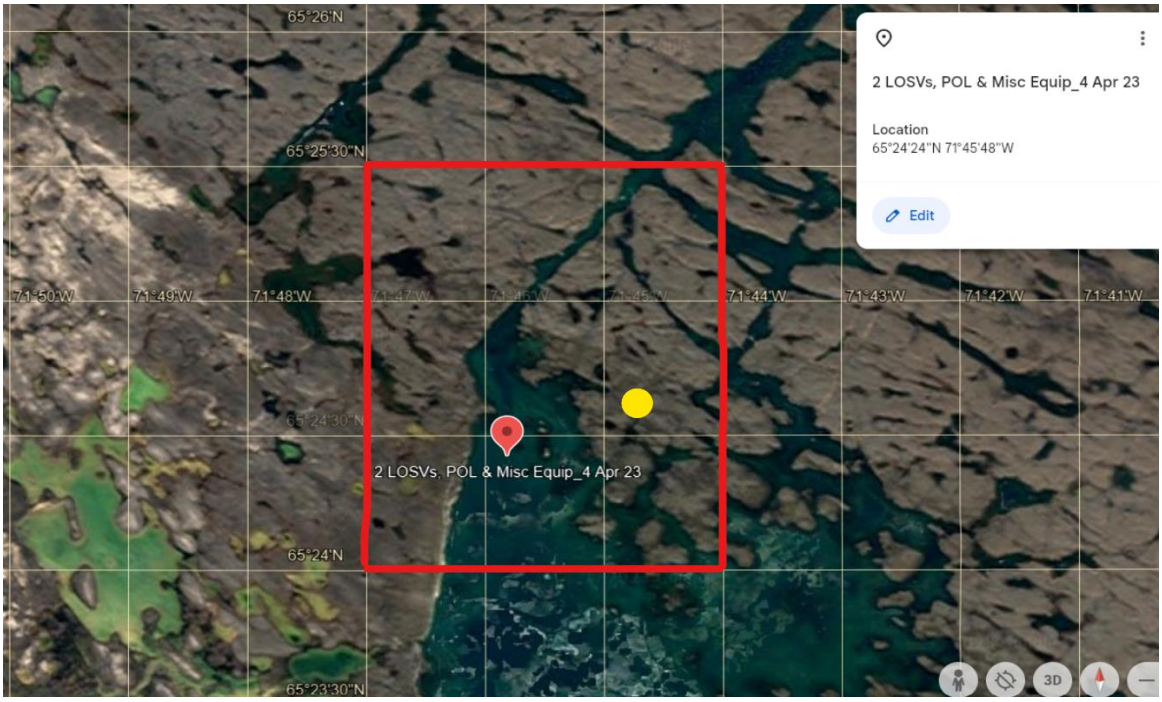
	BIVOUAC CAMP & MOB SITE (Amadjuak Lake, NU)			
BIVOUAC SITE	**FUEL**	**DMS**	**UTM**	**MGRS**
MOB Recovery Camp (North Bay Region) & Water Management Area (Koukdjuak Watershed)	**No**	**65° 24' 36" N** **71° 44' 56" W**	**19W** **372312.8 E** **7255077.5 N**	**19WCN** **72312.8 E 55077.5 N**

(Decimal Degree: 65.410000 -71.748888)

BAFFIN RECOVERY RECCE OP SITE MAP (Temp Camp & Site of Loss Location)



BAFFIN RECOVERY OP MAP (MOB Camp & Op Box Locations)



<u>Main Operation Box (Op Box) Extent Coordinates (DMS & Decimal Degree)</u>:

NW 65 25’30”N 71 47’00”W	65.425000 -71.783333
NE 65 25’30”N 71 44’00”W	65.425000 -71.733333
SE 65 24’00”N 71 44’00”W	65.400000 -71.733333
SW 65 24’00”N 71 47’00”W	65.400000 -71.783333

<u>CAMP DETAILS</u>

Despite best efforts to identify the ideal main camp site on Google Earth, weather and ground terrain will dictate the final bivouac location once personnel arrive. It is therefore possible that the locations identified in the recce or recovery operations could differ in the Post-Operation Environmental Report, but the planned camp site is the preferred location. An alternative site will only be utilized in extreme conditions. The actual site(s) used will be identified in all post-exercise evaluation reports. The main Op Box is identified above with the yellow area depicting the MOB camp site. Regardless of final locations, all camps and operational activities will occur within the identified Op Box, and all areas that are utilized in the recovery mission will be documented by GPS coordinates along with associated pictures and ground/terrain reports for record-keeping.

MAIN OPERATING BASE (MOB) – North Bay of Amadjuak Lake

The planning of a small recce operation is to take place tentatively from 3-8 Jun 2024 with up to 10 military personnel to collect valuable intel using side sonar equipment to collect the location and depth of the missing items, as well as collecting nearby land terrain information with GPS imbedded photos, so their rustic camp footprint would be negligible and probably located on the West shore to be closer to the location of loss. With regards to the later recovery operation, the Main Operating Base (MOB) will be attached to the main camp for logistics and safety considerations. All recovery activities will deploy from this Operations Centre (OpCen/MOB) location (Coordinates: 65° 24' 36" N 71° 44' 56" W**)**. Once the permit approvals are in place, up to 25 military personnel, will have a maximum of ten days to complete the recovery operation of two 208 L (55 gal) drum of gasoline, two snowmobiles (LOSVs), and as much of the other equipment as possible. Near the end of the mission, the same deployed personnel will also assist the Northern Environmental Coordinator to ensuring proper cleanup and the removal of all items and POL is conducted in an environmentally sound manner as part of the Out-clearance process.

All potable water and food will be brought in along with all personnel and equipment via Chinook (CH-47) helicopter or civilian equivalent to conduct multiple trips from Iqaluit, Nunavut to the remote recovery mission site. With the exception of greywater and some wastewater, all waste generated at the site will be removed for proper disposal. Any disposal on land will be in accordance with acquired authorizations. Power and heating will be provided by generators and Herman Nelson heaters (all of which will be within secondary containment). Lastly, power for communications equipment may be provided using a small generator, Coleman lanterns for light, Coleman stoves for cooking and backup heat supply.

FUEL CACHE

No fuel caching is proposed for this recovery mission, however, various fuel will be brought in and stored properly near the main camp/MOB site for the duration of the recovery mission. The refueling of ATVs, zodiacs, generators, etc. will be done via jerry cans from fuel drums. All fuel will be dispensed utilizing secondary containment and drip trays, and spill kits will be located at the refueling locations. No fuel cache will be left on site after departure.

AERIAL ROUTE

An aerial reconnaissance will also be conducted at the same time as the planning recce of the site of loss. The most economic means route will be from Iqaluit, Nunavut, which is ~240 km away, and it will serve as the main staging area for this remote recovery mission. Low level flights below 1000m may be required due to dive safety requirements, however every effort will be made to avoid known or identified wildlife corridors, and flight paths will be altered as required to avoid disturbance to wildlife sighted during execution of the operation.

MAJOR EQUIPMENT INVOLVED

EQUIPMENT TYPE	SIZE - DIMENSIONS	PROPOSED USE
1 x Chinook Helicopter or Civilian Equivalent	L15.88m/W3.78m/H5.77m/DryWt12,156kg Fuel Tank Capacity: 3900L	Transportation of personnel and equipment from Iqaluit to North Bay (Amadjuak Lake) for recce and recovery missions.
2 x Polaris Sportsman 570 ATVs and/or Argo Vehicles	L2.18m/W1.21m/H1.22m/DryWt345kg	Transportation of personnel and equipment during recovery execution.
5 x Honda 5K Generators (one for spare)	L1.0m/W0.7m/H0.75m/DryWt96kg	Temporary power.
2 x Inflatable Zodiac Boats	Zodiac FC 420: L4.2m/W1.75m/H0.75m/DryWt130kg Mercury 9.9MH	Dive and safety boats for recovery of sunken equipment.
3 x 25HP Outboard Motors (one for spare)	Outboard Motor: DryWt38kg	Outboard motors for the dive/safety boats.
1 x Diver Decompression Chamber	L3.6m/W1.6m/H2.0m/Wt2300kg	If lost items are at a depth >15m, then a decompression chamber will be required in Iqaluit for safety.
1 x Sonar Equipment & Cable	L1.3m/W0.4m/H0.3m/Wt6kg	To accurately map the lakebed and the

		location of the lost items.
6 x McPhearson Tents (one for spare)	L4.3m/W3.7m/H2.3m&1.5m/Wt96kg	Accommodations for 20-25 personnel and MOB/OpCen.
Recovery Equipment (Misc)	Various	Recovery of lost items Equipment to include float bags, rope, shackles, sling load netting etc.
Pollution Prevention Equipment	Various	Containment and prevention of pollution. Equipment (containment booms, overpack drums, absorption socks/pads, containment berms, etc.).
Starlink Satellite Internet	Dish: L0.51m/W0.3m Router: W0.18m/H0.25m Total Wt: 10.5kg	Internet connectivity and communications.
Satellite Phones	Depends on model	Communications and safety.

FUEL INVOLVED

FUEL	NUMBER OF CONTAINERS & CAPACITY OF CONTAINERS	TOTAL AMOUNT OF FUEL (LITRES)	PROPOSED STORAGE METHODS

Jet A Fuel	Fueled at Iqaluit, NU Airport	~10,000-15,000L	For helicopter use only and will be fueled up after every round trip to the recovery site (North Bay of Amadjuak Lake).
Gasoline	20 x 40L Jerry cans	800L	For ATV, generators, outboard motor use. Will be properly stored and transported – stored in drums.
Propane	2 x 20lb tanks	40lbs	For space heater and torch. Will be stored together in their certified tanks.
Naptha	25 x 4L cans	100L	For cooking and lantern use. Will be properly stored and transported.
HAZARDOUS MATERIALS AND CHEMICALS	**NUMBER OF CONTAINERS & CAPACITY OF CONTAINERS**	**TOTAL AMOUNT OF HAZARDOUS MATERIALS & CHEMICALS (LITRES)**	**PROPOSED STORAGE METHODS**
Oil	Various sized containers	40L	For use in ATV/out board motors. Will be properly stored and transported.
Hazardous Waste (POL)	Various sized containers (i.e. 3, 210L overpacks)	~630L	By-products of maintenance operations. Any waste oil or other hazardous materials, such as lithium batteries, will be stored within a designated Hazmat storage area with proper containment and returned to Iqaluit for final disposal.

SIGNATURE BLOCK:

Lieutenant Colonel Kristian Udesen	Commanding Officer, 1st Canadian Ranger Patrol Group	_____	_____
Name (Print)	**Title (Print)**	**Signature**	**Date**
Michael Gray	Environmental Officer, 3rd Canadian Division	_____	_____
Name (Print)	**Title (Print)**	**Signature**	**Date**