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**NUNALIVUT 2018**

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$$\Lambda \subset \mathbb{N} \setminus \{1\}$$

## Defence

**ᄢᆞᆫ ᄡᆞᆯᆺ:**

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

b3r<sup>b</sup>bA7Dσ49JrEzDz<sup>c</sup>: from 0001-01-01 to 0001-01-01

Λαμβάνονται ως δεδομένα:

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On Behalf of Department of National Defence

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Ottawa Ontario K1P 0B6

Canada

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כִּי־יִדְּלֶנּוּ בְּיָדָם

$\varphi_b \Delta^c \dot{\bar{O}}_b \sigma^b \quad \Lambda_{\sigma} \Delta^c \varphi_b \varphi_{\sigma} \Delta_{\mu} \Delta^b L^a \sigma^b$

**ᑭᓪᐱᕈᖅ:** Operation Nunaliivut is a sovereignty operation conducted annually since 2007 in Canada's North. The overall aim is to further enhance the Canadian Armed Forces' (CAF) knowledge and capacity to operate in austere locations and challenging environments, while allowing the CAF to demonstrate their ability to effectively respond to safety and security issues in the Arctic. Operation Nunaliivut 2018 (Op NU 18) will be conducted with patrols on the land, on the sea ice, underwater, and in the air. Op NU 18 will consist of approximately 300 CAF personnel. Op NU 18 will occur from 23 February to 19 March 2018 in the Kitikmeot Region (Cambridge Bay and surrounding area) and Qikiqtaaluk Region (Resolute Bay and surrounding area). Near Cambridge Bay, a Canadian Army platoon and Royal Canadian Navy (RCN) dive team will be supported by members of 1st Canadian Ranger Patrol Group (1stCRPG) for a total of approximately 90 personnel. Patrols and diving operations will be performed on the sea ice. A live fire range is planned to be conducted on the sea ice. In Resolute Bay, a Canadian Army company will be supported by members of 1stCRPG for a total of approximately 90 personnel. Patrols will be performed on the sea ice to the vicinity of Resolute Bay, conducting training in arctic survival skills. A live fire range is planned to be conducted on the sea ice. A Task Force Headquarters will be established in Resolute Bay consisting of approximately 20 members with an additional 40 support personnel. The Department of National Defense / Canadian Armed Forces is committed to the environment. All members participating in Op NU 18 will employ environmental stewardship and best management practices to ensure that the land is not impacted.

▷ΔΑΠΟΠ<sup>c</sup>: n/a

[illegible]

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 βαCD<sup>ε</sup> Δ<sup>ζ</sup>Δ<sup>η</sup>Δ<sup>θ</sup>Δ<sup>ι</sup>Δ<sup>κ</sup>Δ<sup>λ</sup>Δ<sup>μ</sup>Δ<sup>ν</sup>Δ<sup>ξ</sup>Δ<sup>ο</sup>Δ<sup>π</sup>Δ<sup>ρ</sup>Δ<sup>σ</sup>Δ<sup>τ</sup>Δ<sup>υ</sup>Δ<sup>φ</sup>Δ<sup>χ</sup>Δ<sup>ψ</sup>Δ<sup>ω</sup> Δ<sup>α</sup>Δ<sup>β</sup>Δ<sup>γ</sup>Δ<sup>δ</sup>Δ<sup>ε</sup>Δ<sup>ζ</sup>Δ<sup>η</sup>Δ<sup>θ</sup>Δ<sup>ι</sup>Δ<sup>κ</sup>Δ<sup>λ</sup>Δ<sup>μ</sup>Δ<sup>ν</sup>Δ<sup>ξ</sup>Δ<sup>ο</sup>Δ<sup>π</sup>Δ<sup>ρ</sup>Δ<sup>σ</sup>Δ<sup>τ</sup>Δ<sup>υ</sup>Δ<sup>φ</sup>Δ<sup>χ</sup>Δ<sup>ψ</sup>Δ<sup>ω</sup>  
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Inuinnaqtun: Aulatyutit Nunaliut tamna nunagiyaayumun aulatyutit havagiyat ukiuq tamaat taimangat 2007 tahamani Kanataup Ukiurtaqtuani. Tapkuat tamaita tugagat pivaliqtitninit tapkuat Kanatamiuni Anguyaktit (CAF-kut) ilihimani pilaqnitlu aulaninik tikittigittuni inigiyaini akhurnaqtutlu avatigiyaitand, huli pipkaqhugit tapkuat CAF-kut takupkaqni pilarniqtik atuttiaqtumik hugiaqnit hivuganaitninit nautiumatainutlu pityutit tahamani Ukiurtaqtumi. Aulatyutit Nunaliut 2018 (Op NU 18) havagiyauniat kamayiqaglutik nunanut, tagiuplu hikuagut, immap iluagut, qangatayunilu. Op NU 18 ilaqaqniat mikhaani 300 CAF-kut havaktit. Op NU 18 atuqtauniaq talvanga 23 Fibruali tikitlugu 19 Matyi, 2018 tahamani Kitikmeotni (Ikaluktutiak avataanittutlu nunat) tamnalu Qikiqtaalukmi (Qauhuittuq avataanittutlu nunat). Haniani Ikaluktutiak, tamna Kanatamiuni Anguyaktit anguyaktigiyai tapkuatlu Royal Kanatamiuni Tagiuqni Anguyaktit (RCN-kut) aglugaqtit havaqatigit ikayuqtauniat ilaayunit tapkunani 1 Kanatamiuni Unataqtukhagalaat Ilagii (1 CRPG-kut) tapkuat Ikatitlugit mikhaani 90 havaktit. Munaqhiyut tapkuatlu aglugaqtut aulatyutai havagiyauniat tagiup hikuani. Tapkuat qaqtuqnut hiqugaqnit parnagutaayuq atuqtaunikha tahamani tagiup hikuani. Qauhuittumi, tamna Kanatamiuni Anguyaktit ilagii ikayuqtauniat ilaayunit tapkunanga 1 CRPG-kut katitlugit mikhaani 90 havaktit. Munaqhiyut havagiyauniat tagiup hikuani tahamani haniani Qauhuittuq, atuqni ilihagut ukiurtaqtumi annaumanimun ayuitninit. Tamna qaqyuliknik hiqugarniq parnagutaayuq atuqtaunia tagiup hikuani. Tamna Havat Havakti Atanigaqvia pingutauniaq talvani Qauhuittuqmi piqaqniaq mikhaani 20 ilaayut ilagiallutik 40 ikayuqtikhat havaktinik. Tamna Timinga Nunaqyuaqmi Anguyaktit / Kanatamiuni Anguyaktit atuqpiagahuaqta tahaphumunga avatigiyayumun. Tamaita piqatauyut talvani Op NU 18 havaktitniaqta avatiliqutinut pittiaqnit nakuuniquhamiklu aulataunit pitquhiit atuqpiagiangi tahamna nuna aktuanguittanga.

**Personnel**

Personnel on site: 300  
 Days on site: 25  
 Total Person days: 7500  
 Operations Phase: from 2018-02-23 to 2018-03-19

$$\Lambda \subset \mathbb{N} \times \mathbb{N} \rightarrow \mathbb{R}^{\geq 0}$$
[illegible]

$\epsilon \Delta^{\alpha} j^c \wedge J^{\omega} e \triangleright \dot{n} \triangleleft^{\omega} r^{\flat} C \triangleright r L \triangleleft^c$

$a^{\dagger}r d^{\flat} r^{\sharp}\sigma^{\flat}$      $\Lambda\pi_{\perp} d n^{\circ} \delta D\sigma d^{\flat b} J^c$      $n n^{\circ} \omega^{\circ} r^c$

Kitikmeot  
North Baffin

**ᄇᄃᆫᆯ ᄇᄃᆫᆯ ᄇᄃᆫᆯ ᄇᄃᆫᆯ**

<p>ሲባላቸው ሲሆን ለዚህም ምሳሌ ለገደባቸው የሚገኝ ሲሆን ለሌሎች ግን ሊገኝ አይችልም፡፡</p>	<p>የሚገኝበት ሲሆን ለሌሎች ግን ሊገኝ አይችልም፡፡</p>	<p>የሚገኝበት ሲሆን ለሌሎች ግን ሊገኝ አይችልም፡፡</p>	<p>የሚገኝበት ሲሆን ለሌሎች ግን ሊገኝ አይችልም፡፡</p>	<p>የሚገኝበት ሲሆን ለሌሎች ግን ሊገኝ አይችልም፡፡</p>
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[illegible]

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ΔL<sup>96</sup> ΔD<sup>96</sup> CD<sup>96</sup> ΔI<sup>96</sup> Δ<sup>96</sup>

 $\triangleleft^b C d^c$ 
$$\Delta^b C d \leq \rho \sigma \Delta^a \sigma^a$$

ለፍጥነት ለመረጃ ለመስጠት ለሚያስፈልግ የሆኑትን ሁሉንም መረጃዎች ያስገቡ	የፍጥነት ለመረጃ ለመስጠት ለሚያስፈልግ የሆኑትን ሁሉንም መረጃዎች ያስገቡ	የፍጥነት ለመረጃ ለመስጠት ለሚያስፈልግ የሆኑትን ሁሉንም መረጃዎች ያስገቡ	የፍጥነት ለመረጃ ለመስጠት ለሚያስፈልግ የሆኑትን ሁሉንም መረጃዎች ያስገቡ	የፍጥነት ለመረጃ ለመስጠት ለሚያስፈልግ የሆኑትን ሁሉንም መረጃዎች ያስገቡ
Access Road	የፍጥነት ለመረጃ ለመስጠት ለሚያስፈልግ የሆኑትን ሁሉንም መረጃዎች ያስገቡ	100 lbs/day	All combustible waste produced in the field will be returned to	None



## **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 G1: Well Authorization

## SECTION G3: Offshore Exploration

## SECTION G4: Rig

## SECTION H1: Vessel Use

## SECTION H2: Disposal At Sea

## SECTION 11: Municipal Development

[illegible][illegible]

All activity conducted in this area is assessed as low impact and any wildlife sightings will be recorded and reported. Peary Caribou are an endangered species and live in the vicinity of Resolute Bay. Dolphin and Union Caribou are a species of special concern and live in the vicinity of Cambridge Bay. Human activities have the potential to disturb these animals, however any caribou seen will be avoided minimizing the potential disturbance of any individual caribou or caribou herds.

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Based on all of the information available regarding the proposed Op NU 18 and the surrounding environment, if designed and carried out using the knowledge of the local I CRPG members in to addition to the identified mitigation measures, and follow-up programs and monitoring, Op NU 18 is not likely to cause any significant effect on the environment.

[illegible]

The following is a list of potential impacts which 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, since all activities will be temporary, impacts are expected to be minimal. • Vehicles involved in Op NU 18 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 direction to ensure all waste material is to be properly contained and transported back for disposal, the potential exists for waste material produced during Op NU 18 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 outside Resolute Bay or Cambridge Bay 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. • Peary Caribou are an endangered species and live in the vicinity of Resolute Bay. Dolphin and Union Caribou are a species of special concern and live in the vicinity of Cambridge Bay. Human activities have the potential to disturb these animals, however any caribou seen will be avoided minimizing the potential disturbance of any individual caribou or caribou herds. 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 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 in sensitive areas. In the event 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 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 Resolute Bay or Cambridge Bay 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.
- All caribou will be avoided and not disturbed in any way.
- Personnel will keep at least 1 km away from the boundary of the Polar Bear Pass National Wildlife Area.
- Personnel will be made aware of the potential for threats from local wildlife and instructed to avoid encounters or disrupt any wildlife unless absolutely necessary.
- Local treatment systems and municipal landfill or incineration will be used for the disposal of human waste. Waste generated during foot patrols or when municipal services are otherwise unavailable, 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 centers, 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).

All noise making activities will be limited as much as possible.

- Vehicles and equipment will be maintained in good repair to prevent leakage of fuel, oil, etc.
- Generators will be placed within suitable containment throughout the operation, and will be emptied for transportation.
- When in Resolute Bay or Cambridge Bay, all vehicle/equipment refueling will occur in a central location.
- Use of spill containment items including drip pans or mobile plastic berms will be maximized during refueling.
- All fuel storage systems and containers to be used in Op NU 18 will be transported, stored, protected, etc. according to proper legislation, regulation, codes and guidelines.
- All hazardous materials (HAZMAT) and fuel will be stored in approved storage containers and facilities, including compliant secondary containment and will be stored in accordance with municipal, territorial, and federal regulations.
- HAZMAT prevention/response resources (spill pans, hydrocarbon spill pads, absorbent, 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.
- All hazardous materials (HAZMAT), 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.
- HAZMAT waste will be appropriately packaged and transported to a suitable facility for disposal, in accordance with appropriate regulations – provided by a third party waste disposal facility if required; and,
- Photographs will be taken of all training location sites, and temporary camp locations before, during and after use.

Based on all of the information available regarding the proposed Op NU 18 and the surrounding environment, if designed and carried out using the knowledge of the local I CRPG members in addition to the identified mitigation measures, and follow-up programs and monitoring, Op NU 18 is not likely to cause any significant effect on the environment.

## **Cumulative Effects**

## Impacts

$\Delta^{\text{fb}} \subset \sigma^{\text{fb}} \Gamma^C \quad \nabla \in \Pi \cap \partial C \dot{\sigma}^C \cup \partial^b \dot{\sigma}^{\text{fb}} \subset \partial^b \dot{\sigma}^{\text{fb}} \subset \partial^b \dot{\sigma}^{\text{fb}}$

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$$(P = \langle b \rangle \Delta \mathcal{P} \cap \mathcal{J}^a \mathcal{Q}^b)^c, N = \langle b \rangle \mathcal{P}^b \mathcal{J}^c \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c \langle \mathcal{C} \mathcal{D} \mathcal{J}^b \mathcal{J}^b \rangle^b \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c, M = \langle b \rangle \mathcal{P}^b \mathcal{J}^c \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c \langle \mathcal{C} \mathcal{D} \mathcal{J}^b \mathcal{J}^b \rangle^b \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c, U = \langle b \rangle \mathcal{J}^b \mathcal{L}^a \mathcal{Q}^b \mathcal{J}^c \rangle^b)$$