



New

Scientific Research

Thursday, March 20, 2025

from 2025-07-27 to 2025-08-06

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6-3-2020: We propose to use a low-power, shallow (<1m depth) drill to excite the local surface, the vibrations then are sensed with geophones to create a shallow seismic map. This enables future Mars and lunar missions to generate target maps before drilling and sampling. MEAD drilling will also bring up small ~50gm samples that will be fed to two prototype Mars life-detection instruments and contribute to a study of microbial population changes in a polar desert (Haughton impact crater) in summer, above and below the frozen boundary (active layer, about 0.6m deep). MEAD results will improve our knowledge of where to look for possible Mars life, how to target it for sampling, and the efficacy of two potential life-detection instruments.

▷ ΔΑΝΔ: Nous proposons d'utiliser une foreuse de faible puissance et peu profonde (< 1 m de profondeur) pour exciter la surface locale. Les vibrations sont ensuite captées par des géophones afin de créer une carte sismique peu profonde. Cela permettra aux futures missions martiennes et lunaires de générer des cartes de cibles avant le forage et l'échantillonnage. Le forage MEAD permettra également de prélever de petits échantillons d'environ 50 g qui alimenteront deux prototypes d'instruments de détection de vie sur Mars et contribueront à l'étude de l'évolution des populations microbiennes dans un désert polaire (cratère d'impact Haughton) en été, au-dessus et en dessous de la limite gelée (couche active, environ 0,6 m de profondeur). Les résultats de MEAD amélioreront nos connaissances sur les endroits où rechercher une éventuelle vie sur Mars, comment la cibler pour l'échantillonnage et l'efficacité de deux instruments potentiels de détection de vie.

[illegible]

Personnel

Personnel on site: 7

Days on site: 10

Total Person days: 70

Operations Phase: from 2025-07-27 to 2025-08-06

Closure Phase: from 2025-08-06 to 2025-08-10

Λ Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω

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Base Camp Location	Camp	Inuit Owned Surface Lands	Site previously used by Western University and others	N/A	N/A
Existing Airstrip Location	Airstrip use or construction	Inuit Owned Surface Lands	Previously used strip by Twin Otters near camp	N/A	N/A
Proposed Study Range	Sampling sites	Inuit Owned Surface Lands	Impact melt breccia deposits inside the crater	N/A	N/A

[illegible]

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Information is not available			

$\subset \Delta^{\text{eq}}_j \wedge J_{\alpha} \models \dot{n} \triangleleft^{\text{eq}} r^{\text{eq}} \subset \triangleright / L \text{ } ^c$

[illegible]

Transportation Type	Vehicle/Equipment	Length of Use
Air	DHC-6 Twin Otter from Resolute	
Land	4 ATVs on Devon	

Temporary Camp

[illegible][illegible]

AL^{9b} ◀^{9b} C ▶^{9b} L^{9b} ▶^{9b}

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0	Water pulled by bucket and used for cooking, drinking and camping.	Haughton River bank

$$\Delta^b C d \Gamma n \sigma \Delta^c \sigma^c b$$

ᐱᑦᓕᓂ ᐸᓚᔨᐅᒃᓴᓯᑭᑦ	ᖃᓄᐳᑦᑐᖆ ᐸᑲᑭᑫᑦ	ᖃᓄᓇᓶᑦ ᐸᑲᑭᑫᑦ	ᙰᑦᓵᓈᑦ ᐸᑲᑭᑫᑦ	ᙰᑦᓵᓈᑦ ᐸᑲᑭᑫᑦ
Waste disposal	ΔΛΔ ^c ᐸᑬᑦᑭᑤᓴᓎᖁᓷᑦᓴᑦ	300L total	disposed in a sump dug out far from the river	filled in upon departure
Waste disposal	ᐸᑲᑭᑫᑦ Δᑉᐸᑦᑭᑥᑦᓴᓏᑦᓴᑦᓴᑦ	3-4 large 100L trash bags	Backhaul to Resolute	coordinate disposal with Polar Shelf
Drilling	ᑮᑦᓴᐳᓊᐳᓏᑦ ᓄᓗᑦᑭᑦ ᑭᓇᓂᓂᓏᑦ ᐸᑬᑦᑭᑥᑦᓴᓏᑦᓴᑦᓴᑦᓴᑦ, ᓴᓴᓴᑦᓴᑦᓴᑦ	100-200 gm per 1m sample hole	backfilled into hole after sampling	N/A
Waste disposal	ᙰᑦᓴᑦᑭᑦᓴᓂᓏᑦ	50L total	disposed in a sump dug out far from the river	filled in upon departure

AENGAD C^aC^c **A^bC^{cb}CΔYLK^c**

2cm x 1m depth boreholes at sampling sites: will be filled in ATV tracks: will stay on existing trails Wastes: gray/blackwater in sump away from river, will be filled in Trash: backhauled to Polar Shelf

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 I1: Municipal Development

[illegible]

22 million year old meteor impact crater with well-preserved gray impact rocks and no overburden.

[illegible]

Polar desert with almost no plant life and very rare inland sightings of seagulls or foxes. Bears occasionally traverse Devon Island and their tracks or scat are sometimes found (away from camp).

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Haughton Crater has no settlements or lodges. 7km northwest of the proposed campsite is both the Mars Society habitat camp and Pascal Lee's HMP camp area, but neither is expected to be in use this year.

Miscellaneous Project Information

Re-use of campsite previously used by Western University and others

[illegible]

This project is primarily observational except for small drilled soil samples (< 200g each, no deeper than 1m, using a low-power electric drill with no lubricants or fluids). Traverses to study sites may leave minor ATV tracks.

Cumulative Effects

Reinforcement of existing ATV trails

Impacts

$\mathbb{A}^{\mathfrak{b}} \mathbb{C} \triangleright \sigma^{\mathfrak{a}} \tau^{\mathfrak{c}} \triangleleft \mathfrak{A} \mathfrak{B} \mathfrak{C} \triangleright \mathfrak{C}^{\mathfrak{c}} \mathfrak{D}^{\mathfrak{c}} \triangleleft \mathfrak{b}^{\mathfrak{b}} \mathbb{C} \triangleright \mathfrak{L} \mathfrak{L}^{\mathfrak{c}}$

[illegible]
$$(P = \langle b \rangle_{\mathcal{A}} p \cap r^{\mathcal{A}} a^{\mathcal{B}} \rangle^{\mathcal{C}}, N = \langle b \rangle_{\mathcal{A}} r^{\mathcal{A}} \langle r \rangle^{\mathcal{A}} a^{\mathcal{B}} \rangle^{\mathcal{C}} \langle \langle \langle \rangle^{\mathcal{A}} r^{\mathcal{A}} \rangle^{\mathcal{B}} \rangle^{\mathcal{C}} \langle r^{\mathcal{A}} a^{\mathcal{B}} \rangle^{\mathcal{C}} \rangle^{\mathcal{C}}, M = \langle b \rangle_{\mathcal{A}} r^{\mathcal{A}} \langle r \rangle^{\mathcal{A}} \langle r^{\mathcal{A}} a^{\mathcal{B}} \rangle^{\mathcal{C}} \langle \langle \langle \rangle^{\mathcal{A}} r^{\mathcal{A}} \rangle^{\mathcal{B}} \rangle^{\mathcal{C}} \langle r^{\mathcal{A}} a^{\mathcal{B}} \rangle^{\mathcal{C}} \rangle^{\mathcal{C}}, U = \langle b \rangle_{\mathcal{A}} \langle \langle \langle \rangle^{\mathcal{A}} a^{\mathcal{B}} \rangle^{\mathcal{C}} \rangle^{\mathcal{B}})$$

List of Project Geometries

1	polygon	Proposed Study Range
2	point	Base Camp Location
3	point	Existing Airstrip Location