



ᓄᓇᑭᑦ ᐃᓐᑎᑦᑎᐱᐅᑦ ᑲᑎᓚᐱᐱᑦᑎᑦ ᐅᐱᑦᑭᑦᑭᑦ ᓄᓄᑦᑭᑦᑭᑦ #126161 Mars Exploration through Analog-site Drilling (MEAD)

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New

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Scientific Research

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Friday, March 21, 2025

Period of operation:

from 2025-07-24 to 2025-08-03

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כחלק מפרויקט

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ᖃᓪᐸᑦᐱᑦᐳᑦ: The Haughton Impact Structure (HIS) is a 22 km wide crater on Devon Island, NU, formed by a meteor impact 31 million years ago. It has conditions similar to Mars, including icy ground, a cold desert climate, and signs of ancient and present life. The MEAD project will drill shallow holes (less than 1 meter) to search for tiny life signs using a special tool called SOLID. Another tool, ARIA, will test how well it can detect minerals and organic changes in crater rocks. MEAD will also test new drilling imaging methods to avoid hazards and find underground targets. These studies will help scientists look for life under the surface of Mars in the future. MEAD is supported by NASA's Mars Exploration Program. We are planning for our base camp to be at an existing camp location in the Haughton River Valley, accessible by Twin Otter flights to an existing landing strip near the camp. Transportation of people and equipment to scientific sites within the crater will rely on All Terrain Vehicles (ATVs), trailers, and walking, staying on existing trails where possible. ATV fuel will be safely stored within a spill-secured platform a safe distance from our camp tents. Propane will be used for cooking. MEAD is a new project, but its leader Brian Glass has been known by many members of the Resolute Bay community since the late 1990s. MEAD will reach out and contact both the Resolute and Grise Fiord communities and ask for their concerns or requests. we are aware of the following possible concerns expressed during previous consultations and discussions. The Haughton Crater site is located far from protected areas and parks. Nevertheless, wildlife may be present, such as polar bears, foxes or migratory birds. If found or sighted, nests, dens or animals of any type will not be disturbed nor interacted with. No archeological sites are known to be located in the area – if we find a site, the location will be recorded and communicated to proper authority for further investigation. If using ATV's and an animal is sighted, alternative paths will be used. We plan to be in the field for 11 days at Haughton, in the first two weeks of August. Most field supplies will be brought up from the south, but others such as ammunition and fresh food will be bought at the Tudjaat Co-op store at Resolute. Water for camp use (approx. 0.1 m3 per day) will be collected from the nearby Haughton River. Solid waste will be backhauled to Polar Continental Shelf or approved (landfill) facilities for disposal. Following our deployment at the Haughton site, the campsite area and study sites will be restored to their condition upon arrival.

►Δ&NDS: La structure d'impact de Haughton (HIS) est un cratère de 22 km de large situé sur l'île Devon, au Nunavut, formé par l'impact d'une météorite il y a 31 millions d'années. Ses conditions sont similaires à celles de Mars, avec un sol gelé, un climat désertique froid et des traces de vie ancienne et actuelle. Le projet MEAD forera des trous peu profonds (moins d'un mètre) à la recherche de minuscules traces de vie à l'aide d'un outil spécial appelé SOLID. Un autre outil, ARIA, testera sa capacité à détecter les minéraux et les modifications organiques dans les roches du cratère. MEAD testera également de nouvelles méthodes d'imagerie par forage afin d'éviter les dangers et de trouver des cibles souterraines. Ces études aideront les scientifiques à rechercher la vie sous la surface de Mars à l'avenir. MEAD est soutenu par le programme d'exploration de Mars de la NASA.Nous prévoyons d'installer notre camp de base sur un site existant dans la vallée de la rivière Haughton, accessible par Twin Otter depuis une piste d'atterrissage existante à proximité du camp. Le transport des personnes et du matériel vers les sites scientifiques du cratère se fera en véhicules tout-terrain (VTT), en remorque et à pied, en restant autant que possible sur les sentiers existants. Le carburant des VTT sera stocké en toute sécurité sur une plateforme sécurisée contre les déversements, à une distance sécuritaire de nos tentes. Le propane sera utilisé pour la cuisson.MEAD est un nouveau projet, mais son responsable, Brian Glass, est connu de nombreux membres de la communauté de Resolute Bay depuis la fin des années 1990. MEAD contactera les communautés de Resolute et de Grise Fiord pour recueillir leurs préoccupations ou leurs demandes. Nous sommes conscients des préoccupations suivantes, exprimées lors de consultations et de discussions précédentes. Le site du cratère Haughton est situé loin des zones protégées et des parcs. Néanmoins, des animaux sauvages, tels que des ours polaires, des renards ou des oiseaux migrateurs, peuvent y être présents. S'ils sont trouvés ou aperçus, les nids, les tanières ou les animaux de toute sorte ne seront ni dérangés ni interagis. Aucun site archéologique n'est connu dans la région ; si nous en trouvons un, son emplacement sera enregistré et communiqué aux autorités compétentes pour une enquête plus approfondie. Si nous utilisons des VTT et qu'un animal est aperçu, des sentiers alternatifs seront empruntés.Nous prévoyons de rester sur le terrain pendant 11 jours à Haughton, au cours des deux premières semaines d'août. La plupart des fournitures de terrain proviendront du sud, mais d'autres, comme les munitions et les aliments frais, seront achetées à la coopérative Tudjaat de Resolute. L'eau nécessaire au campement (environ 0,1 m³ par jour) sera collectée dans la rivière Haughton toute proche. Les déchets solides seront acheminés vers le

[illegible]

Personnel on site: 7
Days on site: 10
Total Person days: 70
Operations Phase: from 2025-07-24 to 2025-08-03
Closure Phase: from 2025-08-03 to 2025-08-07

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[illegible]

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

Temporary Camp

[illegible]

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

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Waste disposal	ᐳᐳᓕ ᑭᓴᓂᐅᓂᐅᓂᐅᓂᐅᓂᐅ	300L total	disposed in a sump dug out far from the river	filled in upon departure
Waste disposal	ᑭᓴᓂᐅᓂᐅ ᐳᐳᓕᓂᐅᓂᐅᓂᐅᓂᐅᓂᐅ	3-4 large 100L trash bags	Backhaul to Resolute	coordinate disposal with Polar Shelf
Drilling	ᐅᓯᓈᓂᐅᓂᐅᓂᐅ ᓄᓇᓲᓗ ᓄᓂᓂᓂᐅᓂᐅ ᑭᓴᓂᐅᓂᐅᓂᐅᓂᐅᓂᐅᓂᐅ, ᓇᓵᓴᓂᐅᓂᐅ	100-200 gm per 1m sample hole	backfilled into hole after sampling	N/A
Waste disposal	ᓴᓂᓂᓂᓂᓂᐅᓂᐅ	50L total	disposed in a sump dug out far from the river	filled in upon departure

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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).

[illegible]

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

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

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($P = \langle b \rangle_{\mathcal{A} \cap \mathcal{B} \cap \mathcal{C}}$, $N = \langle b \rangle_{\mathcal{A} \cap \mathcal{C}}$, $M = \langle b \rangle_{\mathcal{B} \cap \mathcal{C}}$, $U = \langle b \rangle_{\mathcal{C}}$)

List of Project Geometries

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