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December 8, 2010

Richard Dwyer  
Licensing Administrator  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

Subject: ReSubmission of Spill Response Plan and Abandonment & Restoration Plan 3BC-MAR1014

Dear Mr. Dwyer:

Pursuant to your recent letter dated November 30, 2010, please find attached re-submission of the following revised documents.

- Spill Response Plan – Rev 12/8/2010
- Abandonment & Restoration Plan – Rev 12/8/2010

These documents have been revised to address feedback provided in your November 30, 2010 letter. Please accept these submissions on behalf of The Mars Society.

Should you have any questions, or if there is anything further which you require, please do not hesitate to contact me at your earliest convenience.

Sincerely,

**Joseph E. Palaia, IV**

2011 Field Season Director & Crew Commander  
The Mars Society - Flashline Mars Arctic Research Station  
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Copy Robert Zubrin Mars Society

## **Spill Response Plan**

*for the Mars Society's Flashline Mars Arctic Research Station  
Devon Island, Nunavut, Canada*

### **Purpose of this Plan**

This plan is designed to address the prevention of spills into the environment and to address contingencies in case of a spill.

### **Persons Responsible for Activating this Spill Plan**

Robert Zubrin

President, The Mars Society

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### **Description of the Type & Amount of Contaminants Stored on Site**

The primary environmental contaminants used at the FMARS facility are petroleum products (mo-gas, diesel, jet-b, and engine lubricants). No more than 20 drums of these products are on hand at any one time at the facility for servicing of transportation, heating, and electrical generation. In no case will there be 4,000 or more liters on the camp site at any time. Fuel (mo-gas, diesel, jet-b) is stored in 55 gallon drums in the immediate vicinity (~15 meters east) of the station. Material Safety Data Sheets for each contaminant are kept on file within the FMARS facility for easy reference.

### **Description of Spill Prevention Measures During the Handling, Storage & Disposal of Petroleum Products and Hazardous Materials**

All products will be shipped and stored in appropriate containers for the type of product. All fuel and lubricants will be dispensed by hand pump in secondary containment areas. Only one 55 gallon fuel drum will be open at a time. Before it is opened it is placed on an absorbent mat that is on top of an impermeable mat. An empty drum, a hand pump, and a supply of additional absorbent mats are located near or at the secondary containment

area. Any lubricant changes will also take place in these containment areas. Used lubricant will be stored in an appropriate labeled container.

All waste fuel and lubricants will be appropriately packaged along with any contaminated absorbent material and removed from Devon Island before the end of each field season. Empty fuel containers will be verified empty and stored near the airstrip in a manner that will not endanger air operations, until they may be flown out.

### Steps Taken to Report, Contain, Clean Up and Dispose of a Spill

In the event of a spill the Field Season Director & Crew Commander will contact the Nunavut Spill Report line at (867)920-8130 within 24 hours, and Mars Society management via email. As much of the following information as possible will be provided: a) date and time of the spill; b) location of the spill; c) direction the spill is moving; d) name and phone number of a contact person close to the location of spill; e) type of contaminant spilled and quantity spilled; f) cause of the spill; g) whether the spill is continuing or has stopped; h) a description of existing contaminant; i) action taken to contain, recover, clean-up and dispose of spilled contaminant; j) name, address and phone number of person reporting spill; k) name of owner or person in charge, management or control of contaminants at time of the spill.

Before a fuel drum is opened, it is placed in a secondary containment area on an absorbent mat that is on top of an impermeable mat. Should any fuel spill, it will be caught on the absorbent mat and absorbed. The absorbent mat can then be disposed of in a burn barrel. Should the spill be too large for the absorbent mat, it will be caught on the impermeable mat. The residual spilt fuel can then be either pumped back into the empty drum or soaked up with a second absorbent mat.

Cleanup will be using available hand tools and pumps to gather the material in the most expeditious manner. Temporary storage of contaminated cleanup material will be via available empty drums. All measures will be taken to prevent environmental contamination. Any contaminated material, including contaminated soil, will be removed from the site contained and disposed of properly.

For each spill occurrence, the Mars Society shall submit to the NWB, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.

Throughout our many years of operations, we have not damaged the environment with any fuel spills.

Site Map Showing Location of Buildings, Contaminant Storage Areas, Sensitive Areas Such as Water Bodies, Probable Pathways of Containment Flow and General Topography

The FMARS research facility is located on Crown Land, Devon Island, Nunavut Canada. Its geographic location is 75°25'52.75N x 89°49'24.19W. It is a freestanding structure designed to house a seven person field team during the summer months.

A short distance northeast of the station is a small shack which houses generators for use in producing electricity. Its geographic location is 75°26'01.65N x 89°51'15.44W.

Temporary storage of full fuel and engine lubricant containers for less than 24hrs will be at a site near the airstrip located at 75°25'53.02N x 89°49'20.92W.

Permanent on site storage of fuel containers will be on the secondary containment area, located next to the generator shack at 75°26'01.65N x 89°51'15.44W, or in the generator shack. Both of these areas are lined with heavy gage plastic film, are covered by fuel absorbent material with the edges elevated by rocks or soil, and are of adequate size and volume to contain and hold fluids for the purpose of preventing spills. Both areas are located several hundred meters from the nearest water body.

FMARS is located on a ridge about 300 m southeast of a creek, which is the closest body of water. The station is on Crown Land. No fuel will be stored on Inuit owned land.

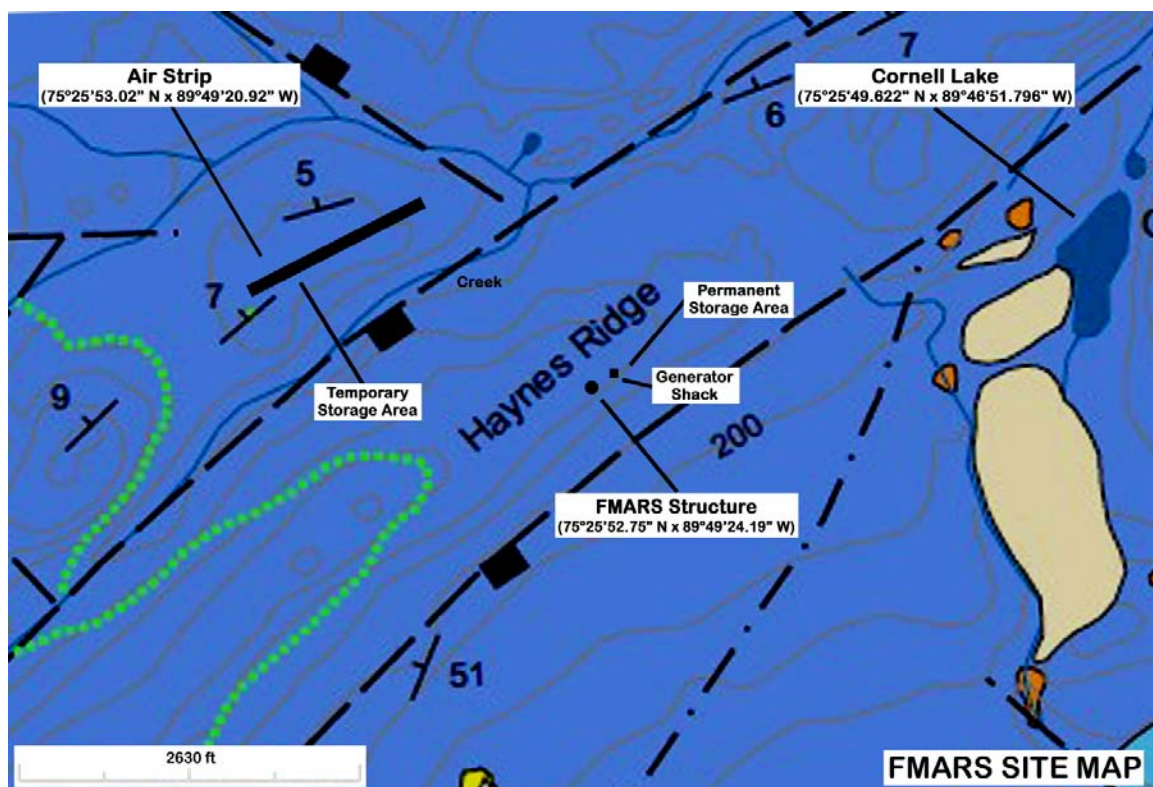


Diagram 1 – Immediate Vicinity of the FMARS Habitat, Showing Topography & Nearby Water Bodies  
(Adapted from “Geological Map of the Houghton impact structure” by G. R. Osinski)

### Description of the Spill Response Training Provided to Employees

This plan will be reviewed by all field team members prior to beginning of the field season. Team members will be instructed in the correct use of containment areas, made aware of the location of response and clean up equipment (spill kits) and instructed in the proper procedures to report, contain, clean up and dispose of a spill, as described in this Spill Response Plan.

At the beginning of each field season, a simulation exercise will be conducted, where the crew on-site will pretend that a spill has occurred and simulate executing the steps necessary to report, contain, clean up and dispose of the pretend spill.

### Inventory and Location of Response & Clean Up Equipment (Spill Kits)

Several rolls of spill absorbent materials are located within the generator shack (located at 75°26'01.65N x 89°51'15.44W), immediately adjacent to the permanent storage site and near secondary containment areas. They are contained within appropriately labeled containers. Also at this location are a hand pump and one empty drum for use as needed in spill containment and clean up.

### Means by Which The Spill Plan is Activated

This plan will be activated in the event of a spill. It will be activated by the staff on site, under the supervision of the Field Season Director & Crew Commander.

### Date Which this Spill Plan Was Prepared

12/8/2010

*Please note that the following documents were referenced  
in the preparation of this Spill Response Plan:*

*“Consolidation of Spill Contingency Planning and Reporting Regulations R-068-93”*

*“Contingency Planning and Spill Reporting in Nunavut A Guide to the New Regulations”*

*and*

*“Part H – Conditions Applying to Spill Contingency Planning”  
of Water License 3BC-MAR1014*