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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

EXPLORATION/ REMOTE CAMP SUPPLEMENTARY QUESTIONNAIRE

Applicant: ___Mars Society_____Licence No: _____
(For NWB Use Only)

ADMINISTRATIVE INFORMATION

1. Environment Manager: _Robert Zubrin_ Tel: _303-980-0890_ Fax: _303-980-0753__E-mail:_zubrin@aol.com_____

2. Project Manager Robert Zubrin Tel: _303-980-0890_ Fax: 303-980-0753 E-mail:_zubrin@aol.com
3. Does the applicant hold the necessary property rights? Yes. Land permit N2003J0001

4. Is the applicant an 'operator' for another company (i.e., the holder of the property rights)?No
   If so, please provide letter of authorization.

5. Duration of the Project
   [ ] Annual
   [x] Multi Year:
   If Multi-Year indicate proposed schedule of on site activities
   Start: _June 22 2003_____ Completion:__May 31 2006_____

CAMP CLASSIFICATION

6. Type of Camp
   [ ] Mobile (self-propelled)
   [ ] Temporary
   [x] Seasonally Occupied: _____
   [ ] Permanent
   [ ] Other:_____

7. What are the design population of the camp and the maximum population expected on site at one time? What will be the fluctuations in personnel? It can hold 8 people. We generally have between 5 and 7.

8. Provide history of the site if it has been used in the past.
   We built it in July 2000. In July 2001 and July 2002 it was occupied by crews of 6 people who used it as a base for conducting Mars exploration training exercises.

CAMP LOCATION

9. Please describe proposed camp location in relation to biogeographical and geomorphological features, and water bodies.

It is located on a ridge about 300 meters southeast of a creek.

10. How was the location of the camp selected? Was the site previously used? Was assistance from the Regional Inuit Association Land Manager sought? Include maps and/or aerial photographs.

It was selected based upon its physical resemblance to terrain found on Mars. Site is on crown land. Selection was done independently of Regional Inuit Association Land Manager.

11. Is the camp or any aspect of the project located on:

[x] Crown Lands Permit Number (s)/Expiry Date: N2003J0001_, expires June 21, 2005._____

[ ] Commissioners Lands Permit Number (s)/Expiry Date: _____

[ ] Inuit Owned Lands Permit Number (s)/Expiry Date: _____

12. Closest Communities (distance in km): Resolute bay, 150 km.

13. Has the proponent notified and consulted the nearby communities and potentially interested parties about the proposed work? Yes. Members of the Resolute Bay community participated in the building of the station, and some have provided support to its subsequent operation.

13. Will the project have impacts on traditional water use areas used by the nearby communities? No

14. Will the project have impacts on local fish and wildlife habitats? No.

PURPOSE OF THE CAMP

15. ○ Mining

○ Tourism (hunting, fishing, wildlife observation, adventure/expedition, etc.)

(Omit questions # 16 to 21)

❹Other Scientific research (Omit questions # 16 to 22)

16.
- ○ Preliminary site visit
- ○ Prospecting
- ○ Geological mapping
- ○ Geophysical survey
- ○ Diamond drilling
- ○ Reverse circulation drilling
- ○ Evaluation Drilling/Bulk Sampling (also complete separate questionnaire)
- ○ Other: _____

17. Type of deposit:
- ○ Lead Zinc
- ○ Diamond
- ○ Gold
- ○ Uranium
- ○ Other: _____

DRILLING INFORMATION

18. Drilling Activities
- ○ Land Based drilling
- ○ Drilling on ice

19. Describe what will be done with drill cuttings?

20. Describe what will be done with drill water?

21. List the brand names and constituents of the drill additives to be used? Includes MSDS sheets and provide confirmation that the additives are non-toxic and biodegradable.

22. Will any core testing be done on site? Describe.

SPILL CONTINGENCY PLANNING

23. Does the proponent have a spill contingency plan in place? Please include for review.

Yes. Fuel is stored in 55 gallon drums in the immediate vicinity (15 m east) of the station. Only one 55 gallon fuel drum is open at a time. Before it is opened it is placed on as absorbent mat that is on top of an impermeable mat. There is an empty drum, a hand pump, and a supply of additional absorbent mats nearby. 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 either be pumped back into the empty drum or soaked up with a second absorbent mat. In three years of operation, we have not damaged the environment with any fuel spills.

24. How many spill kits will be on site and where will they be located?

We have two spill kits. One is located right next to the fuel drums, the other is located in the station, about 15 meters away.

25. Please describe the types, quantities, and method of storage of fuel and chemicals on site, and provide MSDS sheets. We have diesel fuel and gasoline located on site. There are typically about three 55 drums of each. Only one drum is opened at any one time. There are no other chemicals.

WATER SUPPLY AND TREATMENT

26. Describe the location of water sources. The water source for the station is a creek located 300 m to the northwest.

27. Estimated demand (in L/day * person):

- ❹ Domestic Use: 150 l/day Water Source: the creek
- ○ Drilling Units: _____ Water Source: _____
- ○ Other: _____ Water Source: _____

28. Describe water intake for camp operations? Is the water intake equipped with a mesh screen to prevent entrapment of fish? Describe: We go to the creek and use a hand pump to fill several plastic jerry cans. We then transport the cans to the station using an ATV trailer.

29. Will drinking water quality be monitored? Yes. What parameters will be analyzed and at what frequency? We look for coliform bacteria daily.

30. Will drinking water be treated? Yes. How? A few drops of bleach will be put in every 40 gallon load.

31. Will water be stored on site? Yes. 40 gallons at a time will be stored inside the station.

WASTE TREATMENT AND DISPOSAL

32. Describe the characteristics, quantities, treatment and disposal methods for:

- Camp Sewage (blackwater) We burn solid human waste in an incinerator toilet. Urine is transported back to Resolute for proper disposal.

- Camp Greywater We have 150 liters of gray water per day. It is discharged into the rocks that cover the ridge on the side facing away from the creek.

- Solid Waste out solid waste is burned in a burn barrel. The residue is transported to Resolute Bay for disposal.

- Bulky Items/Scrap Metal We don't have much of this. But what we have is transported to resolute bay for disposal.

- Waste Oil/Hazardous Waste We have no hazardous waste. We have not yet had any oil spills. If we had, we would dispose of it as described in section 23, above.

○ Empty Barrels/Fuel Drums. Except for our burn barrel and our reserve barrel for dealing with potential spills, all empty fuel drums are transported back to Resolute Bay for reuse or disposal.

○ Other:

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33. Please describe incineration system if used on site. What types of wastes will be incinerated?
34. We have an incinerator toilet for human wastes. We have a burn barrel for disposing of other burnable wastes

34. Where and how will non-combustible waste be disposed of ? If in a municipality in Nunavut, has authorization been granted? The small amount of non-combustible waste is brought back to Resolute Bay. It is disposed of for us by the South Camp Inn.

35. Describe location (relative to water bodies and camp facilities) dimensions and volume, and freeboard for sumps (if applicable). Our gray water is discharged (150 l/day) on the opposite side of the ridge from the creek. The creek is 300 m to the northwest. Our gray water is discharged on the southeast side of the ridge.

36. Will leachate monitoring be done? No. What parameters will be sampled and analyzed, and at what frequency?

OPERATION AND MAINTENANCE

37. Have the water supply and waste treatment and disposal methods been used and proven in cold climate? Yes. We have been doing this for three years. What known O&M problems may occur? What contingency plans are in place? If the incinerator toilet should fail, we have a camp toilet. The bagged human waste it produces can be disposed of in the burn barrel.

ABANDONMENT AND RESTORATION

38. Provide a detailed description of progressive and final abandonment and restoration activities at the site.
39. When the project is concluded, the site will be restored to its original condition. All materials, including wastes, fuel, drums, etc. will be removed.

BASELINE DATA

39. Has or will any baseline information be collected as part of this project? Provide bibliography.

- ○ Physical Environment (Landscape and Terrain, Air, Water, etc.)
- ○ Biological Environment (Vegetation, Wildlife, Birds, Fish and Other Aquatic
- ○ Organisms, etc.)
- ○ Socio-Economic Environment (Archaeology, Land and Resources Use,
- ○ Demographics, Social and Culture Patterns, etc.)
- ⊘ Other: this project is primarily concerned with evaluating human exploration operations, such as those that might be conducted on Mars. A paper reporting on this work was presented at the World Space Congress in 2002. It has been included with this water license application.

REGULATORY INFORMATION

40. Do you have a copy of

- ○ Article 13 - Nunavut Land Claims Agreement
- ○ NWB - Water Licensing in Nunavut - Interim Procedures and Information Guide for Applicants
- ○ NWB - Interim Rules of Practice and Procedure for Public Hearings
- ○ NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the NWT
- ○ NWTWB - Guidelines for Contingency Planning
- ○ DFO - Freshwater Intake End of Pipe Fish Screen Guideline
- ○ Fisheries Act - s.35
- ○ RWED - Environment Protection- Spill Contingency Regulations
- ○ Canadian Drinking Water Quality Guidelines
- ○ Public Health Act Camp Sanitation Regulations
- ○ Public Health Act Water Supply Regulations
- ○ Territorial Land Use Act and Regulations

You should consult the above document, guidelines, and legislation for compliance with existing regulatory requirements.