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Managing the Mars Analogue Research Station at Hanksville, Utah.

A.A. Westenberg (1, 2) , Mission Support Team (1), Science Support Team (1), Engineering Team (1),

(1) The Mars Society Inc., 11111 W. 8th Ave, unit A, Lakewood 80215, Co, USA, (2) Mars Society NL., Amiranten 12, 2904 VB Capelle aan den IJssel, NL, (Artemis@MarsSociety.org Fax: +31 84 746 7745),

Abstract

The goal of the Mars Desert Research Station [1] is to provide a field station to test and demonstrate instruments, research methods and, support the interpretation of ongoing missions, validate procedures for Martian surface in-situ and return science, and study human performance aspects, all on Mars-analogue terrain at a remote location.

Mars Desert Research Station

The Mars Desert Research Station (MDRS) is one of two operational Mars-analogue research stations of The Mars Society Inc. [2]. The MDRS sits in the Utah desert near Hanksville, which terrain provides a very good analogue for the dried up sea bed terrain that at present is the focus of Mars research on the planet Mars.
The MDRS is a two floor, round, simulated Human flight Mars-lander on stilts. The base floor contains biology and geology laboratories equipped with autoclave, microscopes, etc.
Also an EVA preproom to don the simulated Mars Surface Suits aimed at learning how a surface suit impacts the field research due to its bulkiness, limited manoeuvrability and limited visibility.
Furthermore the base floor contains the bathroom and shower room.
The upper floor contains 6 crew cabins each with a bunk bed, some personal storage space and a desk with wired internet connection. The rest of the upper floor is an open floor space with the gas range/stove kitchen, a communal table for meals, planning and socialising and wired work desks along the sides of the upper floor.
Next door the GreenHab houses the greenhouse and a recycle system for grey water usage.
The Hab is outfitted with satellite internet-connection, wired and wireless.

On site generators provide power to the MDRS. LPG is used to heat the facilities and the water, and to cook. A 4X4 car is at the MDRS for use by the crews as are 3 ATVs.
Local support engineer is available for a limited amount of support time, as crews are expected to take care of the power- and overall systems themselves in close cooperation with the mission support teams for engineering and science.
A remote medical doctor is available as part of the mission support team 24/7 for minor emergencies.

The MDRS is remotely managed by the Mission Director and the various support teams.

Teams of 6 are invited to send in applications for joined research at the MDRS for 2-week periods in a crew. Alternatively individual scientist can apply for a slot on one of the crews selected from applicants by the Mars Society. Under strict rules the Mars Society rents out the facility for research. Crews are expected to publish their research results in peer-reviewed journals and to participate in ongoing human factors, biological, geological and engineering research, that will put a limited impact on their time. Also crews are expected to file reports of their activities and the state of the facilities every evening over the internet during the designated communication window [3] and to adhere to the safety protocols of the station.

Figure 1: MDRS in landscape

References

[1] http://desert.marssociety.org/MDRS/mdrs01.asp

[2] http://www.marssociety.org/portal

[3] Daily reports from MDRS (crew 71 to 81) on http://desert.marssociety.org/MDRS/.