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Human Exploration of Mars (2)

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PRELIMINARY RESULTS OF THE POLAND MARS ANALOGUE SIMULATION

Abstract

Mars analogue missions allow participants to develop the optimal procedures for a real Mars mission. By closely observing the human and technological components of such a mission, scientists can test existing hardware, software, and procedures, as well as troubleshoot pitfalls and potential crises while mistakes are still an option. Analogues are an opportunity to try diverse methods and determine which achieve the best results. The Poland Mars Analogue Simulation (PMAS) will be held in July and August of 2017. It is set apart from other analogue missions by its diverse and international group of students and

young professionals in the space sector; its location in eastern Europe; and its independent nature, with mission control facilities provided by a local aerospace startup company and the habitat constructed by an association of private and public partners. In this paper we will present the results we have already gained from the preparation phase, as well as results from the July-August phase of the mission. PMAS members acted as an experimental secondary mission support team for an analogue mission at the Mars Society's Mars Desert Research Station in January 2017. We concluded that while infrastructure, mission support, and leadership are all crucial elements of a mission's success, far and away the most important determinant of success seemed to be the relationships between crew members. Results relating to human factors such as crew attitude are a particularly useful outcome of analogue missions because their interpretation can be subjective, so a consensus based on a large number of analogues around the world is necessary for future Mars mission planners. Continuing through the preparatory process as well as during and after the mission itself, we will share our findings with the scientific and space exploration communities through peer-reviewed publications and conference presentations.