

SPACE OPERATIONS SYMPOSIUM (B6)
Mission Operations, Validation, Simulation and Training (3)

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PREPARATION, CONDUCTION AND ANALYSIS OF A TRAINING EXERCISE MARS ANALOGUE
MISSION: ISOMARS 2014

Abstract

The Internal Simulation Of Mars Analogue Research Strategies 2014 (ISOMARS 2014), consists of a set of up to four 2-day missions conducted by the Austrian Space Forum (OeWF). The aims are to test and validate the efficiency of the internal work-flows and the procedures applied between the different

Mission Support Centre (MSC) teams and the Field Crew. The MSC teams such as Flight Control Team (FCT), Flight Plan Team (FPT), Remote Science Support (RSS) and Information Technology (IT), provide the necessary support for the Field Crew to conduct Mars simulation operations including scientific experiments using Aouda - Series Space Suit Simulators. The ISOMARS mission builds on the heritage of previous OeWF Mars analogue missions such as Mars2013 and the World Space Week mission 2013 and addresses their lessons-learned. As such it is designed as a pure laboratory simulation, using the stable environment and infrastructure of the MSC and the suit laboratory of the Austrian Space Forum to not only study the operations under normal conditions but also to artificially introduce a pre-defined set of realistic issues and emergencies. A specific scientifically interesting Martian landing site is determined and a set of appropriate experiments is defined based on the ones performed during the MARS2013 mission, including a thoughtful composition of resources and limitations for the field crew. This provides constraints on the number of solutions applicable to solve a possible issue. Before the first ISOMARS, the most likely issues and emergencies that may occur for this mission set-up (as well as for future human Mars missions) are identified and detailed procedures for how to deal with these issues are defined. During the mission, the teams are interacting, testing and modifying pre-defined procedures. The Simulation Supervisor (SimSup) introduces the identified disturbances to the simulation during the mission and observes the interactions and work-flows between the teams in the MSC and the Field Crew to detect weak points. A concluding analysis will then serve to improve the respective procedures to better handle this kind of issue for future missions. This paper concentrates on the planning and preparation process for ISOMARS and on the conduction and analysis thereof by providing insight into the proceedings and lessons-learned.