

Interactive Presentations (IP)
Topic 3 - Interactive Presentations (3)

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ASTROLAND AGENCY, THE INTERPLANETARY AGENCY. FIRST ANALOG MISSION:
TRAINING, SCIENTIFIC RESEARCH AND REPRESENTATIVITY FOR MARS SIMULATIONS.

Abstract

Astroland Agency is the first Interplanetary Agency created in Spain, in charge of testing new technologies and developing skills to live in the hostile environment of Mars. Its first analog mission was conducted in July 2019 to celebrate the 50th anniversary of the landing of the Mission Apollo 11, the first manned mission to land on the Moon. Nowadays, Astroland has permanent analog astronaut corps, named Astrolanders, and an established Mission Support Center, the Space Center, with trained personnel and a permanent underground Martian analog environment of 2 km long and 60 m deep lava tunnels in Santander-Spain, which includes two habitats: the main one, Ares Station, with complete Mars-representative life-support for up to 8 members and equipped with everything necessary to test all the technologies and human performance capabilities needed for life in Mars. Research laboratories, made-to-measure astronaut suits, technical clothing for the various missions, life capsules, hydroponics lab, autonomous power and water production systems, 3D printers, kitchen, leisure areas, gym, survival kits, food supplies specifically adapted for each crew member, robot explorer and sensors. The environment includes also a secondary habitat for support during Extra-Vehicular Activities.

A complete training program has been prepared and implemented to develop and train the skills of the Astrolanders: basic training in the major areas of technical skills and emergency training supplemented by a continuous physical training, speleology, nutritional coaching, media and education and outreach activities. In addition, mission specific training is added in preparation for the major field missions, approximately one month prior to the start of the activities and progressively renewed as soon as the scientific programs are finalized. The concepts learned in the online part of the course during the first month are then exploited during the fact to face part of the course, in which additional communication skills are developed in preparation for the analog simulation, in which the participants are getting a first introduction to the Space Center, experiment tools and Extra-Vehicular Activities. In the same timeframe the participants receive the first introduction to the Astroland Spacesuit, which is used by the Analog Astronauts during the simulated Extra-Vehicular Activities and can experience the donning inside the Ares Station.

Astroland is a commercial and scientific organization open to all professionals and in general targeting anyone with an interest in space, therefore there is a variety of backgrounds and skills, which have to be considered and integrated in the training preparation and deployment of tasks within the mission.

The first mission was conducted by 5 Astrolanders with diverse profiles and backgrounds, and provided a wide range of lessons-learn in the main working domains of the analog simulation: psychological performance, biological analysis and engineering set-ups. This article provides details and describes the complete scientific experience provided by the first official mission of Astroland, together with all the lessons-learned acquired before, during and after this first analog mission inside the lava tunnel which will be useful on future simulation of Mars environments.