

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

Author: Mr. Chrishma Singh-Derewa
United States, starhunterceo@hotmail.com

Dr. Galina Nicoll
University of Colorado Boulder, United States, galina.nicoll@colorado.edu

CALIFORNIA RESEARCH ANALOG FOR DEEPSPACE AND LUNAR EXPLORATION (CRADLE)

Abstract

Testing and evaluation are essential processes for delivering capable technologies that will contribute to human exploration. Space analog testing centers provide a simulation environment for the validation of major systems. As the Artemis mission is underway, the aerospace industry finds the need for testing grounds to identify and solve problems that might arise for autonomous systems that will be essential for establishing a lunar base. Located in Lucerne valley California, CRADLE (California Research Analog for Deepspace and Lunar Exploration) provides the terrain needed to simulate operations on the lunar surface. This is an update of an ongoing project to institute a lunar-like settlement at CRADLE to evaluate logistical operations for humans, telerobotic, and space resource utilization. A rapid prototyping approach was used to design the settlement where the analog astronauts simulated tasks that would be typical in a lunar base. End-to-end simulations for the human-robotic interface are necessary for the advancement of space exploration. This will render the interest of prospective companies to facilitate testing, validation, and evaluation of autonomous and semi-autonomous systems. The outcome of these simulations is of tremendous value and provide support to multiple commercial and private aerospace organizations to mitigate risk and ensure project success. More importantly, the corporation aims to advance and assess risks for key technologies in support of but not limited to the Artemis mission and beyond.