

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Moon Exploration – Part 3 (2C)Author: Mr. Chrishma Singh-Derewa  
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University of Colorado Boulder, United StatesCALIFORNIA RESEARCH ANALOG FOR DEEPSPACE AND LUNAR EXPLORATION (CRADLE)  
BRAHMANAUT STUDIES**Abstract**

California Research Analog for DeepSpace and Lunar Exploration (CRADLE) Brahmanaut Studies

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 campaign is underway, NASA and its industry partners need testing grounds to identify and solve problems that might arise while 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. In addition to the end-to-end human-robotic interface simulations the study of the human system is paramount to the success of long duration human exploration campaigns.

Long term space exploration requires a new breed of explorers. A Brahmanaut initiative turned to the ancient Sufi techniques of Tamarkoz this year to prepare analog astronauts for the rigorous mental and physical training which supplements a cadets spiritual preparations. Sustained lunar presence and missions beyond will require mission specialists to exhibit advanced physical, mental and technical aptitudes. Manned deep space missions have many adverse psycho-physiological effects on human body such as bone density loss and muscle atrophy in low gravity, DNA degradation resulting from extreme radiation environments, reduced spatial orientation and vestibular functions, as well as depression and psychological stress.

Brahmanauts unify intellectual, physical and spiritual sciences to forge a new frontier for mankind. Encourages to view space exploration as a spiritual journey rather than solely a scientific one, these humans are seeking enlightenment for themselves as well as for mankind. They will seek to answer the fundamental questions of who we are, why are we here and what is our purpose. Spirituality has long been the most powerful force behind exploration.

Here CRADLE details the physical training including breathing exercises, yoga and self-deprivation techniques such as metabolic rate maintenance. Underwater mission training occurs in specially designed pools and ocean environments. In these buoyancy scenarios Brahmanaut's perform possible construction tasks while working with robotic systems. Preparations for strenuous flight conditions include parabolic flight environments and high G simulators while maintaining a meditative state. 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.