Paper ID: 72157
oral
student

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IPB)

Author: Mr. Shreyansh Sharma
R.V.College of Engineering, India, 1503shreyansh@gmail.com

DESIGN ARCHITECTURE OF A PRESSURIZED HABITAT FOR FUTURE LUNAR MISSIONS

Abstract

Human dream to colonize the moon will be a reality soon, Colonization demands a reliable habitat for keeping the habitants safe from the unforgiving environment on the lunar surface. Some of the factors such as sub-zero degree temperature, lack of an atmosphere, radiation exposure can make life in these habitats very difficult. This paper proposes the design architecture of a new generation modular lunar habitat that aims to overcome all the above-mentioned challenges and provide the people on board with all the necessary elements of life.

The location of establishing these habitats was decided based on its accessibility, ease of establishing communication & radiation level of the region. The habitat is designed to have a maximum of four members at a time. Pyrogel is used in the interior walls as it has excellent thermal insulation properties that help in maintaining the optimum temperature of the habitat. The material for the exterior skin of the habitat was chosen based on the comparative analysis of the various composites and metals and their ability to withstand the continuous temperature load cycles, radiation, etc. The ease of installation of these habitats on the lunar surface is also discussed. The paper also explains the various life support system installed in the habitat to sustain all forms of life.

This small vision will help us to realize the dream of the moon colonization of mankind. It will also give future commercial tourists the ability to stay in these habitats as the system doesn't include any complex technology that may be hard to operate. Thus creating "Space for all".