

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Virtual Presentations - IAF SPACE EXPLORATION SYMPOSIUM (VP)

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DESIGNING OF AN INTERMEDIATE LUNAR BASE FOR MARS AND DEEP SPACE MISSIONS

Abstract

Several space-oriented industries, research centers and individual researchers are working on a road-map to colonize the Mars. Majority of the studies are related to the designing of the habitation and other types of equipment like rovers, helicopters etc on Mars. Only a few are focused on the transportation of payload between the two planets. The periodic supply of payload to and fro is must for the colony to function smoothly. Thus, transportation between the two planets is a very important aspect to make the dream of mankind to colonize on extra-terrestrial bodies a reality. The Earth's Moon must act as an intermediate base as per current technology restrictions. The base will serve as a refueling station and quick response station in case of an emergency. The conditions on Moon vary drastically as compared to Earth including different material/substance behaviors and because of this a complete re-designing of all the systems and structural components, as per local conditions, is required therefore an extensive study of local conditions is needed so that the design of the intermediate base can be proposed which can operate efficiently in the discussed drastic conditions within established safety parameters. Apart from this, the intermediate lunar base can be used for other deep space missions. This paper primarily aims to design a Lunar base, which consists of a space center and a living module which serves as a home for the working crew and a relaxing zone for the passenger's, in accordance to the physical conditions of Moon. The secondary objective of this paper is to study the various power production methods and energy sources on the moon for the intermediate base over a long time frame.