Lunar Exploration (2)
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EUROHAB: CONCEPT OF AN INFLATABLE HABITAT PAYLOAD AS SUPPORT TO CREWED MISSIONS ON THE LUNAR SURFACE

Abstract

Future missions on the lunar surface are planned to set the basis of a sustainable human presence on the Moon. Today there is still a lack of concrete concepts of habitation systems that can constitute the first elements of a permanent facility. Various architectures have been developed in the past years that show lunar surface bases with large extensions, but concepts of intermediate-size habitats, between Apollo-like landers and large, permanent bases, are missing. EUROHAB is a habitat concept that could serve as bridge between these two concepts as it could be used with the first coming lunar landings, ahead of a larger lunar basis. It is a concrete development capable of preliminary laboratory and analogue tests as early as 2021. The habitat can be considered as a safe haven or habitat in support to a crew of four on the Moon in the 2024 – 2030 timeframe. It is transported to the surface by a cargo vehicle, like the one currently under study by ESA. The habitat is conceived to fit as a payload of such lander and can be autonomously deployed by inflation on the surface of the Moon. The system remains on stand-by, telemonitored by a User Support and Operation Centre and activated before the arrival of a crew. EUROHAB is a versatile concept of a small surface habitat which can serve short-term missions on the Moon. The system is designed to be mobile and may be moved in the short range of the landing site by either a rover or by repositioning the lander to a spot farer away. Ultimately several habitats could be combined to build a larger facility lunar base. The paper will present the design of EUROHAB and the current development plan. The concept received an award by the Jacques ROUGERIE Foundation for Architecture and Art in Space. Currently the development of a first prototype is undergoing, which can be used as a testbed in artificial analogue facilities, or which can serve as a mobile basis for analogue missions.