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Author: Dr. Peter WEISS
Spartan Space, France, p.weiss@spartan-space.com

Prof.Dr. JEAN FAVIER
IMT Mines Albi, France, ps1sts78@gmail.com
Mr. Jacques Rougerie
Jacques Rougerie Architecte, France, j.rougerie@rougerie.com
Mr. Thibaud GOBERT
France, t.gobert@spartan-space.com
Mr. Jean-Francois Clervoy
Novespace, France, Jean-Francois.Clervoy@novespace.fr
Mr. Alexis Paillet
Centre National d'Etudes Spatiales (CNES), France, alexis.paillet@cnes.fr
Mr. Pierre BOUTTE
Centre National d'Etudes Spatiales (CNES), France, pierre.boutte@cnes.fr
Mr. Gregory Navarro
Centre National d'Etudes Spatiales (CNES), France, Gregory.Navarro@cnes.fr
Ms. Juliette Mollard
Centre National d'Etudes Spatiales (CNES), France, juliette.mollard@cnes.fr
Ms. Miriam Opazo Mendez
ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France,
Miriam.OPAZO-MENDEZ@student.isae-supaero.fr
Mr. Marcos Eduardo Rojas Ramirez
Centre National d'Etudes Spatiales (CNES), France, marcoedu97@gmail.com
Mrs. Elizaveta SHASHKOVA
ISAE-Supaero University of Toulouse, France, Elizaveta.SHASHKOVA@student.isae-supaero.fr
Mr. Nisheet Singh
Spartan Space, France, n.singh@spartan-space.com

EUROHAB: CONCEPT OF AN INFLATABLE HABITAT PAYLOAD AS SUPPORT TO CREWED MISSIONS ON THE LUNAR SURFACE OR MARS

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 have the potential to constitute the first elements of a permanent facility. Various architectures have been developed in the past years showing lunar surface bases with large extensions, but concepts of intermediate-size habitats, between Apollo-like landers and large, permanent bases, are still to be found.

EUROHAB is a habitat concept that could serve as a bridge between these two extremes as it could be used with the first coming lunar landings, ahead of a larger lunar basis. A first prototype of EUROHAB will be available for testing as early as 2021. It will serve as a new platform for experimenting the new

generation of technologies for future human exploration (ECLSS, energy production and storage, etc). It could be used as a testbed in artificial analogue facilities or serve as a mobile basis for analogue missions.

EUROHAB is designed for a crew of 2 to 4, and mission durations of 14 or 28 terrestrial days (lunar cycle). Besides being a secondary habitat for crewed lunar missions, it can be also considered as a safe haven in case of emergency. The habitat will be transported to the surface by a cargo vehicle, like the one currently under consideration by ESA. It 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 then on stand-by, telemonitored by a User Support and Operation Centre. It 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 and its subsystems.