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Human Exploration of the Moon and Cislunar Space (1)

Author: Mr. Josh Hopkins
Lockheed Martin Corporation, United States, josh.b.hopkins@lmco.com

Mr. Todd Chapman
Lockheed Martin (Space Systems Company), United States, todd.d.chapman@lmco.com

Mr. Nikolay Bryukhanov
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, nikolay.bryukhanov@rsce.ru

Mr. Alexey Bideev
RSC Energia, Russian Federation, Alexey.Bideev@rsce.ru

Mr. Rushan Beglov
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, Rushan.Beglov@rsce.ru

CONCEPT OF CREW-TENDED PLATFORM IN CIS-LUNAR SPACE: INITIAL CONFIGURATION

Abstract

Deep space exploration as a next step of human space activities is widely discussed on international, governmental and industry levels, such as by the International Space Exploration Coordination Group (ISECG). An outpost, or crew-tended platform, in cis-lunar space is considered to be the first step towards deep space exploration. Lockheed Martin and RSC Energia have together studied several concepts of such a platform; one of them is presented in this paper. This concept is based on the systems and elements planned to be available in the early 2020s and assumes utilization of Orion/SLS space transportation capability and relatively small pressurized modules developed on the basis of ISS heritage for the initial phase. These small modules would be launched co-manifested with Orion spacecraft on the SLS Block 1B launch vehicle. The modular platform configuration provides gradually improving habitability and resources to initially perform 30-60 days stays in the lunar neighborhood and later increasing to missions of 300-400 days or longer to test out capabilities needed for Mars missions.