

SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND
DEVELOPMENT (D3)Systems and Infrastructures to Implement Future Building Blocks in Space Exploration and Development
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LIFE SUPPORT FOR MULTI-YEAR HUMAN DEEP SPACE EXPLORATION

Abstract

Deep space exploration missions will require crews to spend years in the space environment without direct support from Earth. Previous and current life support systems depend on constant supply of “expendables”, such as air, water and food and rely primarily on ease of access and the relatively short duration of near earth missions such as space station or lunar exploration. Extended human exploration missions must provide a healthful environment and will either require huge quantities of consumables be launched or must provide for in situ resupply or recycling. Open and closed loop life support scenarios are examined and the impact of life support and a healthful environment on mission requirements are considered.