

Challenges of Life Support - Medical Support for Manned Space Exploration (9)
Challenges of Life Support - Medical Support for Manned Space Exploration (1)

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RESEARCH PROGRESS AND THE PLANS OF BIOREGENERATIVE LIFE SUPPORT SYSTEMS FOR LUNAR PALACE 1

Abstract

Lunar Palace 1 is a ground-based experimental Bioregenerative Life Support Systems (BLSS) platform for long-term crewed missions to the moon or Mars. In the present report, the results of the 105-day, multicrew, closed integrative Lunar Palace 1 experiment (stage-1) is introduced. Material exchange, overall closure coefficient and the operation effects among high-efficiency plant cultivation, animal protein production and waste treatment are analyzed. Moreover, the composition and structure characteristics of the upgraded Lunar Palace 1 (stage-2), which will develop a 1-year BLSS experiment is also reported. The purpose is to test the effects of BLSS operation, analyze the disturbance robustness of crew replacement, emergency, etc and realize the stable operation of the BLSS under high closure coefficient.