

Return to the Moon (02)  
Lunar Surface Outposts and Enabling Technologies (4)

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TEST BEFORE YOU FLY - HIGH FIDELITY PLANETARY ENVIRONMENT SIMULATION

**Abstract**

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The lunar surface environment will present many challenges to the survivability of systems developed for lunar habitation and exploration. Obstacles will include issues pertaining especially to the radiation environment (solar plasma and electromagnetic radiation) and lunar regolith dust. The Planetary Environments Chamber is one piece of the MSFC capability in Space Environmental Effects Test and Analysis. Comprised of many unique test systems, MSFC has the most complete set of SEE test capabilities in one location allowing examination of combined space environmental effects without transporting already degraded, potentially fragile samples over long distances between tests. With this system, the individual and combined effects of the lunar radiation and regolith environment on materials, sub-systems, and small systems developed for the lunar return can be investigated. This combined environments facility represents a unique capability to NASA, in which tests can be tailored to any one aspect of the lunar environment (radiation, temperature, vacuum, regolith) or to several of them combined in a single test.