

Abstract for ICES Conference 2016

Title: Development of Carbon Dioxide Removal Systems for Advanced Exploration Systems 2015-2016

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A long-term goal for NASA is to enable crewed missions to Mars: first to the vicinity of Mars, and then to the Mars surface. These missions present new challenges for all aspects of spacecraft design in comparison with the International Space Station, as resupply is unavailable in the transit phase, and early return is not possible. Additionally, mass, power, and volume must be minimized for all phases to reduce propulsion needs. Mass reduction is particularly crucial for Mars surface landing and liftoff due to the challenges inherent in these operations for even much smaller payloads. In this paper we describe current and planned developments in the area of carbon dioxide removal to support future crewed Mars missions. Activities are also described that apply to both the resolution of anomalies observed in the ISS CDRA and the design of life support systems for future missions.