ISS REGENERATIVE LIFE SUPPORT: CHALLENGES AND SUCCESS IN THE QUEST FOR LONG-TERM HABITABILITY IN SPACE

Abstract

The International Space Station's (ISS) Regenerative Environmental Control and Life Support System (ECLSS) was launched in 2008 to continuously recycle urine and crew sweat into drinking water and oxygen using brand new technologies. This functionality was highly important to the ability of the ISS to transition to the long-term goal of 6-crew operations as well as being critical tests for long-term space habitability. Through the initial activation and long-term operations of these systems, important lessons were learned about the importance of system redundancy and operational workarounds that allow Systems Engineers to maintain functionality with limited on-orbit spares. This presentation will share some of these lessons learned including how to balance water through the different systems, store and use water for use in system failures and creating procedures to operate the systems in ways that they were not initially designed to do.