

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Life Support, habitats and EVA Systems (7)

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NASA ADVANCED EXPLORATIONS SYSTEMS: 2019 ADVANCEMENTS IN LIFE SUPPORT
SYSTEMS**Abstract**

The NASA Advanced Exploration Systems (AES) Life Support Systems (LSS) project strives to develop reliable, energy-efficient, and low-mass spacecraft systems to provide environmental control and life support systems (ECLSS) critical to enabling long duration human missions beyond low Earth orbit (LEO). Highly reliable, closed-loop life support systems are among the capabilities required for the longer duration human space exploration missions planned in the mid-2020s and beyond. The LSS Project is focused on three life support areas: air revitalization, wastewater processing/water management and environmental monitoring. Building upon the International Space Station (ISS) LSS systems (where applicable), the three-fold mission of the LSS Project is to address discrete LSS technology gaps, to improve the reliability of LSS systems, and to advance LSS systems toward integrated testing aboard the ISS. This paper is a follow on to the AES LSS development status at the SPACE 2018 conference and provides additional details on the progress made since that publication with specific attention to the status of the Spacecraft Atmosphere Monitor (SAM) Flight Experiment, the Brine Processor Assembly (BPA) Flight Experiment, planning for ground integrated testing as well as the progress of the development of air, water and environmental monitoring technologies for both spacecraft and surface applications.