

HUMAN SPACEFLIGHT SYMPOSIUM (B3)
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DESIGN STATUS OF THE LIFE SUPPORT RACK ACLS FOR ACCOMMODATION ON THE ISS
AND BEYOND

Abstract

The Life Support Rack ACLS does comprise a regenerative life support system for closed habitats. With regenerative processes the ACLS covers the life support functions of CO₂ removal, oxygen generation and CO₂ reprocessing. ACLS will be installed and operated in the International Space Station's Destiny module, which offers all interfaces needed for its extended operation.

The fully integrated ACLS Engineering Model (EM) is in performance testing and the Flight Model (FM) is actually being manufactured and assembled, with FM performance testing to start in mid-2016. A Delta Phase-II Safety Review was held on the late allocation of ACLS to the Destiny module. The operations concept and associated ground segment infrastructure are being established.

As per the recommendation of NASA System Maturation Team (SMT) the Life Support Rack ACLS shall be operated on the ISS for a cumulative period of one year to demonstrate the maturity of ACLS technologies for future exploration missions.

Besides heading for such technology demonstration onboard the ISS, ACLS ground operations data are being evaluated and, well respecting the requirements for future exploration missions beyond the ISS, technology enhancements and amendments to the ACLS are being developed.

The paper summarizes the development and hardware status.