

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

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MOON BASE LIFE SUPPORT DESIGN DEPENDS ON LAUNCH COST, CREW SIZE, AND MISSION
DURATION**Abstract**

Space exploration used storage life support for brief missions such as Apollo and shuttle but changed to recycling life support systems for the decades long space station. The first upcoming moon visits will probably be brief with few crew but in the future there may be a long term or even permanent moon base with a larger crew. The initial life support system will probably use storage and Earth resupply, but it may be replaced later by recycling, especially if material launch costs are high. A Moon base life support design approach is developed based on systems engineering trade-offs including requirements, performance, reliability, cost, and risk. The launch cost, crew size, and mission duration are variable parameters that affect the design approach. Greater launch cost, crew size, and mission duration all tend to make recycling more cost-effective.