IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Human Space & Exploration (8)

Author: Mr. Neeraj Gupta
Sierra Space, United States, neeraj.gupta@sncorp.com

THE FUTURE OF HUMAN EXPLORATION STARTS NOW - SNC'S KEYS TO ENABLING SUSTAINABLE HUMAN SPACE EXPLORATION

Abstract

SNC has been highly active and is a strong supporter of the human exploration activities including commercialization of Low Earth Orbit (LEO), the Gateway development and lunar surface operations, and the challenges and technologies needed to go to Mars. Through our multiple NASA Next Space Technologies for Exploration Partnership (NextSTEP-2) contracts we are continuing development of technical, programmatic and operational concepts for the overall Gateway system. Additionally, we are developing many of the specific technologies needed to achieve these multiple exploration goals. We have completed initial studies and prototype build for our LIFE habitation system and are furthering development of human habitation systems for Gateway, lunar surface and Mars transit. Our proposed Gateway Logistics Service leverages our technologies developed for the Commercial Resupply Services (CRS2) effort. Furthermore, we are heavily involved in both human and autonomous landing systems and are developing cutting edge technologies and services to address the needs of both the Human Landing Systems and the Commercial Lunar Payload Services.

SNC considers operations in cis-lunar space to be essential for qualification, demonstration, and, in certain cases, development of the technologies critical for human planetary exploration and sustained exploration of the Moon. NASA's existing plans for the Gateway in Near Rectilinear Halo Orbit (NRHO) provide essential opportunities for long life demonstration of these technologies in relevant deep space environments. Additionally, in developing this new human exploration model a unique opportunity exists to create a broad and robust commercial market both in on-orbit service providers and technology development to support long deep space human missions as well as both human and autonomous surface missions. In this paper we present specific technical challenges and the enabling technology and infrastructure development necessary to sustain lunar and Mars exploration. Both short and long-term program planning for missions and technology are presented along with proposed solutions for the logistics and scheduling challenges to meet the multiple exploration objectives.