

The Single Habitat Module Concept for Exploration - Mission Planning and Mass Estimates

Joe Chambliss¹

NASA Johnson Space Center, Houston, TX, 77058

The Single Habitat Module (SHM) concept approach to the infrastructure and conduct of exploration missions combines many of the new promising technologies with a central concept of mission architectures that use a single habitat module for all phases of an exploration mission. Integrating mission elements near Earth and fully fueling them prior to departure of the vicinity of Earth provides the capability of using the single habitat both in transit to an exploration destination and while exploring the destination. The concept employs the capability to return the habitat and interplanetary propulsion system to Earth vicinity so that those elements can be reused on subsequent exploration missions. This paper provides a review of the SHM concept, the advantages it provides, trajectory assessments related to use of a high specific impulse space based propulsion system, advances in mission planning and new mass estimates.

¹ Technology Development Engineer, Crew and Thermal Systems Division, 2101 NASA Parkway, Houston, Texas 77062/EC8 and AIAA Associate Fellow