ABSTRACT

Current short term NASA planning calls for the development of a Crew Exploration Vehicle, Crew Launch Vehicle, Cargo Launch Vehicle, and Lunar Surface Access Module by 2018. The use of this exploration architecture to build a permanent, sustainable lunar base is investigated. Basic requirements for initial base modules are outlined, and a set of base modules which fulfill those requirements is presented. Mining and processing of in-situ lunar materials, and methods by which they can be used to expand the base and provide cost effective transportation throughout the Earth-Moon system are addressed. A project timeline and estimated budget are developed based on current technology readiness levels and the history of past space construction projects. Potential uses for the completed, self sufficient base are discussed.