SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS (D2)
Upper Stages, Space Transfer, Entry and Landing Systems (3)

Author: Mr. Harry A. Cikanek
National Oceanic and Atmospheric Administration (NOAA), United States, harry.cikanek@noaa.gov

Mr. Frank Gati
National Aeronautics and Space Administration (NASA), United States, Frank.Gati-1@nasa.gov
Mr. James Free
National Aeronautics and Space Administration (NASA), United States, james.m.free@nasa.gov
Ms. Kathleen Schubert
National Aeronautics and Space Administration (NASA), United States, Kathleen.E.Schubert@nasa.gov

ORION CREW EXPLORATION VEHICLE DEVELOPMENT

Abstract

The Orion Crew Exploration Vehicle was planned to serve as the next generation human carrying spacecraft for the United States. The purpose was to provide crew transportation beyond low earth orbit for future space exploration missions. The Orion is a centerpiece of the Constellation Program under the United States National Aeronautics and Space Administration (NASA) Exploration Systems Mission Directorate. Although Constellation has been proposed for cancellation in the President's Fiscal-Year 2011 budget, a substantial body of Orion work has been accomplished enabling successful Preliminary Design Review, development planning, and initiation of detailed design. Extensive testing has also been completed. Planning for the Orion began as a result of the Vision for Space Exploration announced in January 2004. Preliminary Design Review was completed in August 2009. The design efforts have drawn from a national team of NASA, Lockheed Martin, its subcontractors, and many supporting organizations. Certification of the vehicle design was planned for 2015. The requirements, design features and mission of this vehicle required a wide range of analysis and testing for development and certification. In order to conduct the development and certification in the most efficient and risk effective manner, a unique approach was established. Noteworthy features and attributes of the Orion development approach as established during the early phases of detailed design are documented in this paper.