

Orion Crew Exploration Vehicle Passes Key NASA Milestone

Phase 1 Safety Review Meets Critical Human Space Flight Requirements

The Orion crew exploration vehicle has successfully completed the Phase 1 Safety Review of NASA's Human Rating Requirements for space exploration in low Earth orbit and beyond. The NASA/Lockheed Martin Orion team earned the approval from NASA's Constellation Safety & Engineering Review Panel (CSERP) upon completion of the review, an essential requirement for the Orion program to move forward to the Critical Design Review and Phase 2 Safety Review.

The safety review process is a rigorous and exhaustive look at the design and operational concepts to assure that all requirements have been adequately met. System safety requirements address potentially catastrophic failures that could result in loss of crew or loss of mission during launch, ascent to orbit, approach and docking to the International Space Station, re-entry, landing, and recovery operations. Thoroughly reviewing spacecraft designs and operations for possible causes of such catastrophic failures, and designing appropriate mitigations for them, is a critical part of NASA's human rating program.

"Completing this significant safety review puts Orion well down the road in satisfying the requirements to minimize the nation's gap in human space flight," said Paul Benfield, Lockheed Martin Integrated Reliability & Safety Manager for the Orion Program. "NASA's current human rating standards include stringent requirements and thorough procedures developed from the best practices of NASA's past 50 years of human spaceflight."

Benfield noted that human rating a vehicle for beyond low Earth orbit (LEO) is particularly challenging given the greater autonomy of such a mission, the extended mission durations, and increased time to return to Earth. This Phase 1 Safety milestone covers the requirements for Orion missions in LEO as well as sortie missions to the moon. The design enables a six-month on-orbit duration which is vital to assure return capability of the space station crew, as well as support autonomous lunar orbit operations. This long duration design far exceeds the one- to two-week capabilities offered by other potential providers.

"Human rating a spacecraft is not a feature you can just simply add on once the vehicle is designed," explained Benfield. "It is a process that requires endurance and attention to detail to ensure that safety is driven into every aspect of the vehicle design and operations from the beginning. Optimal safety and reliability is strategically and systematically incorporated into the vehicle from day one, concurrent with critical trade decisions considering vehicle mass and cost."

Lockheed Martin is the prime contractor to NASA for the Orion crew exploration vehicle - the nation's next generation spacecraft for future exploration throughout our solar system. The Orion spacecraft is comprised of a crew module for crew and cargo transport; a service module for propulsion, electrical power and fluids storage; a spacecraft adapter for securing it to the launch vehicle, and a launch abort system that will significantly improve crew safety.

The Orion crew exploration vehicle is at the peak of its development phase, which has spurred several new technologies and innovations in composites, structures, avionics and thermal protection systems. The spacecraft is on schedule to complete the Critical Design Review in 2011 which will put Orion on the path for flight to low Earth orbit as early as 2013, provided appropriate funding is approved in the near future.

The Lockheed Martin Orion Project office leads the industry team that includes major subcontractors as well as a network of minor subcontractors and small businesses working at 88 facilities in 28 states. In addition, the program contracts with more than 500 small businesses across the United States through its expansive supply chain network.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 136,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation reported 2009 sales of \$45.2 billion. <http://www.lockheedmartin.com/>

Media Contacts:

Linda Singleton 832-526-8089 or 281-283-4219 or
linda.singleton@lmco.com
Marion LaNasa 504-220-2072 or 504-257-1307 or
marion.a.lanasa@lmco.com

Images and information about Orion can be found at
www.lockheedmartin.com/orion

First Call Analyst:
FCMN Contact:

SOURCE: Lockheed Martin

Web Site: <http://www.lockheedmartin.com/>

<https://news.lockheedmartin.com/2010-07-06-Orion-Crew-Exploration-Vehicle-Passes-Key-NASA-Milestone>