Lockheed Martin Completes Primary Structure Of NASA'S MAVEN Spacecraft

Photograph Shows Structure of Next Mars Orbiter

DENVER, Sept. 26, 2011 /PRNewswire/ -- Lockheed Martin (NYSE: LMT) has completed building the primary structure of NASA's MAVEN spacecraft at its Space Systems Company facility near Denver. The Mars Atmosphere And Volatile EvolutioN (MAVEN) spacecraft is scheduled to launch in November 2013 and will be the first mission devoted to understanding the Martian upper atmosphere.

Photo: http://www.lockheedmartin.com/news/press_releases/2011/0926_ss_maven.html

In the photo taken on Sept. 8, technicians from Lockheed Martin are inspecting the MAVEN primary structure following its recent completion at the company's Composites Lab. The primary structure is cube shaped at 7.5 feet x 7.5 feet x 6.5 feet high (2.3 meters x 2.3 meters x 2 meters high). Built out of composite panels comprised of aluminum honeycomb sandwiched between graphite composite face sheets, the entire structure only weighs 275 pounds (125 kilograms). At the center of the structure is the 4.25 feet (1.3 meters) diameter core cylinder that encloses the hydrazine propellant tank and serves as the primary vertical load-bearing structure. The large tank will hold approximately 3,615 pounds (1640 kilograms) of fuel.

"It's always a significant milestone when the project moves from a paper design to real hardware and software," said Guy Beutelschies, MAVEN program manager at Lockheed Martin Space Systems Company. "Seeing the core structure reinforces the fact that MAVEN is no longer just a set of ideas that scientists and engineers have come up with, it is starting to become a spacecraft."

In mid October, the structure will be moved to Lockheed Martin's Structures Test Lab and undergo static load testing, which simulates and tests the many dynamic loads the spacecraft will experience during launch.

Despite the primary structure's light weight, it's designed to support the entire spacecraft mass during the launch, which applies an equivalent axial force at the launch vehicle interface of approximately 61,000 pounds when including accelerations up to 6 Gs. After completion of the static tests, the structure will be moved into a clean room to start propulsion subsystem integration. The Assembly, Test and Launch Operations (ATLO) phase begins July 2012.

"There's still a lot of work to go before we have the complete spacecraft, but this is a major step in getting us to the launch pad in two years. All of the team's hard work now will pay off when we get to Mars and see the science results," said Bruce Jakosky, MAVEN principal investigator from the Laboratory for Atmospheric and Space Physics at the University of Colorado (CU/LASP) at Boulder.

The goal of MAVEN is to determine the role that loss of atmospheric gas to space played in changing the Martian climate through time. MAVEN will determine how much of the Martian atmosphere has been lost over time by measuring the current rate of escape to space and gathering enough information about the relevant processes to allow extrapolation backward in time.

NASA Goddard manages the project and will also build some of the instruments for the mission. In addition to the principal investigator coming from CU-LASP, the university will provide science operations, build instruments, and lead education/public outreach. Lockheed Martin of Littleton, Colo., is building the spacecraft and will perform mission operations. The University of California-Berkeley Space Sciences Laboratory is also building instruments for the mission. NASA's Jet Propulsion Laboratory, Pasadena, Calif., will provide navigation support, the Deep Space Network, and the Electra telecommunications relay hardware and operations.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 126,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation's 2010 sales from continuing operations were $45.8 billion.

More information about MAVEN is online at:

- http://www.nasa.gov/maven
- http://lasp.colorado.edu/home/maven/

MEDIA CONTACTS:
Gary Napier, Lockheed Martin Space Systems Company
(303) 971-4012; gary.p.napier@lmco.com

SOURCE Lockheed Martin

---

https://news.lockheedmartin.com/2011-09-26-Lockheed-Martin-Completes-Primary-Structure-of-NASAS-MAVEN-Spacecraft