Lockheed Martin Advanced Technology Center Delivers Flight Hardware For NASA's Magnetospheric Multiscale Mission

PALO ALTO, Calif., June 13, 2012 /PRNewswire/ -- Engineers and scientists at the Lockheed Martin [NYSE: LMT] Space Systems Advanced Technology Center (ATC) have completed delivery of key hardware subsystems for NASA's Magnetospheric Multiscale mission (MMS). The delivery comprised four flight subsystems and one flight spare unit. The prime contractor Southwest Research Institute (SWRI) partnered with Lockheed Martin to develop and build the Hot Plasma Composition Analyzer (HPCA) as part of the MMS instrument suite.

When it launches in 2014, the MMS mission will provide unprecedented insights into a little-understood physical process at the heart of all space weather. This process, known as magnetic reconnection, sparks solar flares, coronal mass ejections, and other phenomena that can imperil Earth-orbiting spacecraft and terrestrial power grids. High-resolution data from MMS will provide researchers much greater clarity into the mechanisms involved in magnetic reconnection and associated phenomena.

"Magnetic reconnection at the Earth's magnetopause is the mechanism by which magnetic fields in different regions – in this case, from the Interplanetary Magnetic Field (IMF) carried by the solar wind, and the Earth's magnetic field – change topology to open magnetospheric field lines. This connection allows energy and momentum to flow from the solar wind into the magnetosphere," said Dr. Karlheinz Trattner, Lockheed Martin ATC space plasma physicist, and co-investigator on MMS.

The MMS mission is a Solar Terrestrial Probes mission comprising four identically instrumented spacecraft that will use Earth's magnetosphere as a laboratory to study the microphysics of magnetic reconnection and two other fundamental plasma processes: energetic particle acceleration, and turbulence. These processes have implications for many space science research areas since they occur in all astrophysical plasma systems but can be studied in situ only in our solar system and most efficiently only in Earth's magnetosphere, where they control the dynamics of the geospace environment and play a significant role in space weather.

The four satellites of the MMS mission will be deployed in an orbit to skim the boundary layer between the magnetosphere and the interplanetary magnetic field where magnetic reconnection is known to exist. The MMS spacecraft are being developed at NASA's Goddard Space Flight Center (GSFC) in Greenbelt, Maryland. GSFC is also responsible for the overall management of the MMS mission and mission operations.

The ATC is the research and development organization of Lockheed Martin Space Systems Company (LMSSC) and creates the technology foundation for the company's business. In addition, the ATC conducts basic research into understanding and predicting space weather and the behavior of our Sun, including its impacts on Earth and climate. It has a five-decade-long heritage of spaceborne instruments.

LMSSC, a major operating unit of Lockheed Martin Corporation, designs and develops, tests, manufactures and operates a full spectrum of advanced-technology systems for national security and military, civil government and commercial customers. Chief products include human space flight systems; a full range of remote sensing, navigation, meteorological and communications satellites and instruments; space observatories and interplanetary spacecraft; laser radar; ballistic missiles; missile defense systems; and nanotechnology research and development.

Headquartered in Bethesda, Md., Lockheed Martin is a global security and aerospace company that employs about 123,000 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 net sales for 2011 were $46.5 billion.

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