

News Release

FOR IMMEDIATE RELEASE

SBIR Funded Research Project Helps Jumpstart NASA's LCROSS Lunar Mission.

Mountain View, CA, Oct 7 2009 - CSA Engineering a wholly owned subsidiary of Moog Inc. announced today that its ESPA (EELV Secondary Payload Adapter) is expected to impact the lunar surface on Oct 9, 2009 as part of NASA's Lunar CRater Observation and Sensing Satellite (LCROSS) mission.

The innovative use of CSA Engineering's ESPA ring by the LCROSS designers has resulted in a considerable savings to the taxpayer. Utilizing the ESPA as a satellite structural backbone demonstrates its ability to help minimize cost and shorten satellite development schedules.

"We are pleased that CSA's reconfigurable ESPA has allowed the NASA/Northrop-Grumman team to achieve their LCROSS mission objectives," remarked Eric Anderson, Vice President of CSA Engineering. "The use of our ESPA ring as the primary structure for LCROSS demonstrates how this technology can be applied to a wide range of missions with low risk. We also expect to see a wide range of new low-cost ESPA based designs in the future, as innovative applications like LCROSS provide evidence of the flexibility of ESPA in the small and mid-range satellite markets."

Additional Information

The ESPA ring was originally developed by CSA Engineering as part of a Small Business Innovation Research (SBIR) contract, as a means to address two major problems currently facing the industry: the vibration environment of launch and the high cost of putting satellites into space. The original team for the ESPA development project included CSA Engineering, the Air Force Research Lab/Space Vehicles Directorate (AFRL/VS), and the DoD Space Test Program (STP). The first on-orbit mission for ESPA was STP-1 in 2007 aboard an Atlas V launch vehicle. The ESPA Standard Launch Service approach was used to deploy six spacecraft into two different LEO orbits.

CSA Engineering is currently pursuing a number of different applications for their ESPA product line with both US Military and civilian customers. This includes the use of up to six secondary "piggyback" payloads when extra capacity exists when the primary payload utilizes less than 100% of the booster's full capacity. Additionally, the company also offers an integrated vibration isolation system called "SoftRide" to reduce the stresses imposed on the payload during launch. CSA Engineering has also developed multi-payload adapters for smaller launch vehicles, targeting government agencies, universities and commercial space organizations with limited budgets.

ESPA's Role in the LCROSS Mission

The 125 kg., 62 inch diameter x 24 inch high ESPA ring for the LCROSS mission is the primary structure for the LCROSS Shepherding Spacecraft (S-S/C) and is part of a co-manifested payload. ESPA in the LCROSS mission serves as a mounting platform or bus for the science instruments, solar array, power control electronics, batteries,

News Release

attitude control and data handling/communications modules. Once the LCROSS S-S/C has directed the 2,000kg Earth Departure Upper Stage (EDUS) into the lunar surface the S-S/C decelerates and observes the EDUS impact dust plume using several onboard instruments to look for water on the moon. The S-S/C with the integral ESPA adapter then becomes a 700kg secondary impactor by striking the lunar surface. This secondary impact will then be analyzed by both the Lunar Reconnaissance Orbiter (LRO) and earth based instruments. The design philosophy behind the ESPA was to be as transparent as possible to the primary payload and to facilitate rideshare missions. In keeping with this objective, the LRO itself was actually launched sitting on top of the LCROSS/ESPA shepherding satellite during liftoff.

US Air Force ESPA Policy Directive and ORS missions

On February 13th of 2008 the Office of the Secretary of the Air Force released a recommendation stating that "ESPA be made as a low-cost, highly reliable, standardized service for small payloads when technically feasible and consistent with overall mission assurance." The memorandum further declares that, "This policy is an important milestone in our efforts to provide routine and affordable access to space for scientific, research, development, and Operationally Responsive Space (ORS) missions."

About CSA Engineering

CSA Engineering - located in Mountain View, California is a world leader in structural dynamics, vibration suppression and precision motion control technology. CSA Engineering became a wholly owned subsidiary of Moog Inc. in 2008. To learn more, please visit the company's website at www.csaengineering.com.

About Moog

Moog Inc. is a worldwide designer, manufacturer, and integrator of precision control components and systems. Moog's high performance systems control military and commercial aircraft, satellites, launch vehicles, missiles, automated industrial machinery, wind energy, marine and medical equipment. Additional information about Moog can be found at www.moog.com

Contact:

Greg Fountain, New Business Development
CSA Engineering, Mountain View, CA. 94043
1 650 960-4237

###