



NEWS RELEASE

FOR IMMEDIATE RELEASE	Paul Zamprelli
September 26, 2012	Orbital Technologies Corporation (ORBITEC)
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ORBITEC Has Real “*Vision*” For Its New AUSEP Rocket Engine

Madison WI-based **Orbital Technologies Corporation (ORBITEC™)** recently conducted several key rocket engine technology demonstrations at its large engine test facility in Baraboo, Wisconsin. Under observation by representatives from both NASA and the US Air Force, ORBITEC successfully completed a series of tests on its *Vision* flight rocket engine that enhances the maturation of ORBITEC’s advanced technology acoustic igniter, vortex/cold wall combustion chamber, and carbon-carbon lightweight nozzle extension technologies. The *Vision* engine will be flight-demonstrated later this year launched out of Mojave, CA.

These technologies will also be incorporated into ORBITEC’s new 30,000 lbf VR-3A *Vision* engine to address the US Air Force Advanced Upper Stage Engine Program (AUSEP) and potentially all in-space and planetary propulsion systems to include NASA’s SLS. ORBITEC was just announced as an award recipient of the NASA SLS NRA for its Advanced Manufacturing Technology.

The VR-3A liquid rocket engine can be used on upper stages of medium- and heavy-class launch vehicles, including the Evolved Expendable Launch Vehicle (EELV) family of launch vehicles and would be available to future launch vehicle providers. The VR-3A *Vision* Engine utilizes innovative, modern manufacturing approaches to reduce costs and improve performance. ORBITEC has assembled a team of experts in various aspects of liquid rocket engine technologies that bring substantial knowledge and experience to enhance scalable performance, reliability, and affordability of the VR-3A engine. The VR-3A *Vision* engine is a vortex-cooled, liquid propellant rocket engine. This state-of-the-art technology eliminates the need for regenerative cooling of rocket combustion chambers, dramatically reducing the cost of fabrication and resulting in simple, rugged thrust chambers that are not subject to severe thermal fatigue and, as a result, are highly reusable.

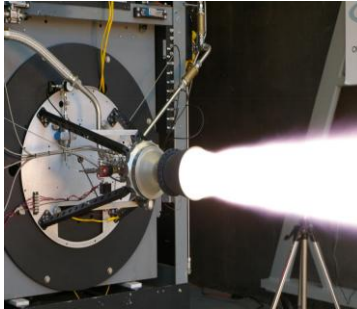
“We are very excited about the maturation of our *Vision* engine components and owe a large thanks to our subs and advisors for their contributions, including ATK, MOOG, Barber Nichols, Concepts NREC, Milwaukee School of Engineering and Boeing,” said Paul Zamprelli, ORBITEC Business Director. “We look forward to supplying the Air Force, NASA and Commercial Markets with all of our affordable advanced engines and technologies.”

ATK’s Advanced Technologies and Products team has been developing affordable carbon-carbon components for aerospace applications. Working with the ORBITEC team, including Dr. Martin Chiaverini and J. Arthur (Chip) Sauer, ATK has applied this technology to develop a lightweight nozzle skirt extension for the VR-3A *Vision* engine. The design leverages ATK’s experience with advanced solid rocket motor nozzles to create the technology for joining and sealing technology the hot carbon-carbon component to an actively cooled metal housing. Included in the design is an oxidation protection system



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for the flame-side surface of the skirt. Technology demonstrated on this engine is scalable to meet the AUSEP program requirements and other large liquid engines.



20 September 2012 carbon-carbon test—full duration

These advanced liquid propellant rocket propulsion technologies are expected to revolutionize space transportation delivery for the DOD and NASA and significantly reduce the operational costs of all propulsion systems.

About Orbital Technologies Corporation (ORBITEC)

ORBITEC is a leading high technology development company based in Madison, Wisconsin. ORBITEC offers commercially mature solutions and strong capabilities in five distinct areas: Next Generation Propulsion, Propellant, and Power Systems; Life Support and Environment Control; Bio-based products and production systems; Fire Suppression; ORBITEC has won more than \$250 million in contracts to develop state-of-the-art technologies and products. The company has been able to convert research and development initiatives into leading technologies and mature the technologies to valuable products in their respective markets that provide significant cost advantages, superior functionality, and high reliability. ORBITEC is led by an experienced management team with over one hundred years of industry experience.

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