



# NEWS RELEASE

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## **ORBITEC's Rocket Engine Soars Above the Mojave Desert**

Madison, Wisconsin based Orbital Technologies Corporation (ORBITEC™) has successfully flight-tested its new rocket engine and technologies in Mojave, CA. ORBITEC integrated its Vortex Liquid Rocket Engine into a launch vehicle airframe designed and built by Garvey Spacecraft Corporation (GSC) of Long Beach, California and California State University at Long Beach. The team conducted the launch of the vehicle to demonstrate ORBITEC's patented Vortex Liquid Rocket Engine and other advanced and unique technologies, including its acoustic igniter and lightweight composite nozzle extension with the composite nozzle being provided by ATK of Salt Lake City, Utah. The 100% successful demonstration indicates readiness of ORBITEC's engines for future applications of space and boost propulsion for military, NASA, and commercial customers.

The test demonstrates integrated success of the Vortex Propulsion Flight Demonstration (VPFD) program that ORBITEC conducted for the US military. The ORBITEC vortex liquid propellant rocket engine eliminates the need for regenerative cooling of rocket combustion chambers that provide the same or better performance while making the engine smaller, more manufacturable, and much more cost effective. The engine configuration also dramatically reduces the cost of fabrication and results in simple, rugged, reusable thrust rocket engines that are not subject to severe thermal fatigue. These classes of engines are immediately applicable to upper stages that deliver satellites to orbit, smaller systems for vehicle and spacecraft maneuvering, and larger systems to assist with launch. The high performance, high reliability and robustness, combined with the potential cost savings are anticipated to be significant contributions to more cost effective access and operations in space.

ORBITEC with a significant team of experts is integrating a specific configuration for a new 30,000 lb<sub>f</sub> VR-3A *Vision* engine for the US Air Force Advanced Upper Stage Engine Program (AUSEP) and for NASA in-space and planetary propulsion systems including the Space Launch System. ORBITEC's 10-year effort has elevated the readiness level of the vortex cooled liquid propellant thrust chamber, igniter, and subcontractor ATK's carbon-carbon nozzle extension to what NASA and the military call a "TRL of 6", demonstrating the system in a relevant flight environment. These efforts will pave the way for new, significantly safer, low-cost space access.

Representatives from NASA, ATK, MOOG and the US Air Force were present to observe and witness the operation and successful flight test engine system. "ORBITEC, in collaboration with the AFRL, designed, developed, and demonstrated the vortex engine. The next step is to demonstrate the performance at a larger scale and ensure that future launch vehicle requirements are captured in our design," said Paul Zamprelli, Business Director at Orbital Technologies Corporation. "ORBITEC is ready and excited to compete for any future rocket engine and propulsion applications."



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This success contributes to ORBITEC's schedule of maturation necessary to show readiness, application, and value for the Advanced Upper Stage Program for the USAF. ORBITEC's core advisors and subcontractors include ATK, MOOG, Barber Nichols, Concept NREC, and The Boeing Company. "We look forward to supplying the Air Force, NASA, and commercial markets with all of our affordable advanced engines and technologies," said Zamprelli. "The ORBITEC Engineering Team, consisting of Dr. Martin Chiaverini, J. Arthur (Chip) Sauer, Scott Munson, Ryan Cavitt, and Chad Walker, have dedicated their time and dreams in making this a reality. ORBITEC, as a company, is committed to reducing costs and increasing the accessibility and utilization of space for the betterment of humans on Earth, for cost-reduction of our exploration programs, and for expansion of a commercial space economy."

ORBITEC, with further funding, will be developing systems to support the propulsion needs of the AUSE Program and future customers. The company is very interested in strategic partnering for synergistic value and accelerated advancement of its products. The partnership with Garvey Spacecraft, which has an established record of conducting such technology demonstration flight tests, is a visible example of this philosophy.

Watch full Test and ride with the rocket: [http://www.orbitec.com/video/P-15\\_Flight\\_Compilation\\_A.mp4](http://www.orbitec.com/video/P-15_Flight_Compilation_A.mp4)





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### **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 four distinct areas: next generation propulsion, propellant, and power systems; life support and environment control; bio-based products and production systems; and 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 those technologies into valuable products that provide significant cost advantages, superior functionality, and high reliability in their respective markets. ORBITEC is led by an experienced management team with over one hundred years of industry experience.

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