



Snapshot of The Aerospace Corporation's Capabilities in Rendezvous, Proximity Operations, and On-Orbit Servicing

The Aerospace Corporation has a long history of supporting rendezvous, proximity operations, and formation flying missions for the U.S. Government. Aerospace leverages an extensive team of scientists and engineers from a variety of disciplines to solve complicated technical problems ranging from early concept definition to technology development, risk retirement, and operational support. Additionally, through inhouse labs, Aerospace has explored innovative architectures and technologies that further on-orbit servicing and assembly capabilities.

Aerospace supported DARPA's Orbital Express program from initial concept through successful flight test. This support included both programmatic and technical across all aspects including bus design, integration, and test; R&D sensors; propellant transfer system; robotics; software; anomaly resolution/tiger teams; and flight operations. Aerospace was also a key participant in the joint NASA/DARPA Manned Geosynchronous Servicing Study, which explored crewed and robotic servicing in geosynchronous and other orbital regimes. This included defining vehicle elements/architectures; crew and cargo transport; orbital analysis/mechanics; robotics; power generation; business case; technology; and final report generation which set a foundation for the formation of the Robotic Servicing of Geosynchronous Satellites (RSGS) program.

Aerospace has studied the feasibility of servicing to enhance the capabilities of specific DOD satellites as well as the overall national security space architecture. These studies covered the development of conceptual servicers; methods of performing rendezvous, capture, and servicing functions; and technical assessments of near-term servicing platforms such as Restore-L, RSGS, and Mission Extension Vehicle. Aerospace is also emphasizing the use of on-orbit servicing in current efforts to improve the resiliency of DOD space assets.

As part of its earlier Launch Architecture Analysis, Aerospace examined the feasibility of on-orbit servicing for Air Force applications and evaluated the use of servicing to help the launch program office transition from providing launch services to providing logistics services. Core components of this analysis were spun off into the Space Maneuver and Servicing concept of operations, which was formally adopted by Air Force Space Command in late 2017. As an extension of this effort, Aerospace is helping the Air Force understand servicing technologies, demonstration options, and cost trades and is fostering development of servicing-based architectures to help revamp the overall DOD space enterprise.

Through its Center for Space Policy and Strategy, Aerospace also provides independent, technically based insight into policy formulation and strategic analysis. The Center has released a number of publications focused on rendezvous and proximity operations, on-orbit servicing, and on-orbit assembly.

The Aerospace Corporation

Aerospace is a nonprofit corporation that operates a federally funded research and development center (FFRDC) for the United States Air Force. This FFRDC spans the entire space domain for government as well as civil space and other federal agencies. With a world-class workforce of roughly 3,000 engineers and scientists, Aerospace is able to respond with agility to the unique challenges posed by national security space requirements, delivering well-defined, innovative solutions that assure mission success.