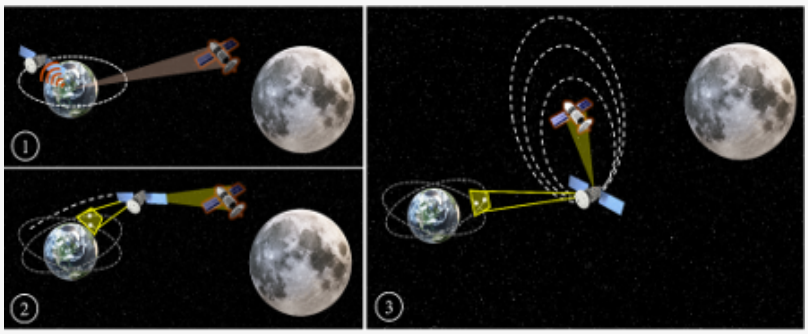
Rhea Space Activity Nets U.S. Space Force Contract to Enhance AutoNav for Sustained Space Maneuvers

VANGUARD Enables US Spacecraft to Perform Autonomous, GPS-Denied Rendezvous and Proximity Operations



A VANGUARD-equipped satellite (1) receives instructions from the ground, (2) autonomously calculates a rendezvous trajectory to a resident space object (RSO), and (3) enters harmonic orbits to observe the RSO with passive, optical navigation.

WASHINGTON, DC, UNITED STATES, January 9, 2026 /EINPresswire.com/ -- The U.S. Space Force has awarded Rhea Space Activity, Inc. (RSA) a contract to enhance its autonomous navigation software, AutoNav, through a project known as VANGUARD: Vision-based Autonomous Navigation and Guidance for Unassisted Approach, Rendezvous, and Deployment. The contract was won under SpaceWERX's Sustained Space Maneuver (SSM) Challenge, exploring innovative technologies for satellite mobility.

VANGUARD adds additional capability to AutoNav, specifically enabling autonomous rendezvous and proximity operations (RPO) in Earth-centric orbits. AutoNav, in combination with a camera and flight computer, provides GPS-denied navigation and guidance by imaging the sky and cross-referencing the presence of stars and satellites with known positions in the U.S. Space Force's Unified Data Library (UDL). RPOs are flight sequences allowing spacecraft to approach, operate near, or dock with other spacecraft, and rely on advanced guidance, navigation, and control (GNC) capabilities to be successful.

"One of the main outcomes of this project is a hardware-in-the-loop simulation environment to prove out the system capabilities," says RSA's Jake Singh, a Missile System GNC Engineer and the Principal Investigator of VANGUARD. "We are running our flight software on representative hardware through simulated RPO scenarios in Low-Earth and geostationary orbits to evaluate and improve its GNC capabilities, and developing tools for operators to automate missions."

This autonomous maneuverability is key to many space-based procedures, like On-Orbit

Servicing (OOS) - or the assembly and repair of satellites in space. It also powers active debris removal (ADS), the increasingly needed practice of shifting the orbit of space junk such as spent rocket bodies and other components to avoid collisions with operational satellites. More complex functions, including surveillance and reconnaissance, also rely on RPO.

“Suppose the U.S. Space Force wants to rendezvous with a resident space object (RSO) - a man-made object in geostationary orbit. VANGUARD will allow Guardians to quickly plan a mission for one of our satellites to rendezvous with the object, and have it autonomously approach it, characterize it, and service it if needed,” says RSA’s Co-Founder and COO Cameo Lance.

Whether the goal is to repair spacecraft already in orbit, monitor unknowns between the Earth and the Moon, or even move satellites out of the path of other space objects, VANGUARD provides an essential and advanced operational capability for any RPO mission. With rising threats to GPS and expanding operations into the cislunar regime, VANGUARD will increase the security, resilience, and sustainability of the U.S. space infrastructure for years to come.

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About SpaceWERX: As the innovation arm of the U.S. Space Force and a unique division within AFWERX, SpaceWERX inspires and empowers collaboration with innovators to accelerate capabilities and shape our future in space. Headquartered in Los Angeles, SpaceWERX employs military, civilian and contractor personnel executing an annual $457 million budget. Additionally, SpaceWERX partners with Space Systems Command's Commercial Space Office (COMSO) as a collaborative program. Since it was aligned under AFRL in Aug. 2021, SpaceWERX has awarded over 1,470 contracts worth more than $1.46 billion to strengthen the U.S. defense industrial base and drive faster technology transition to operational capability. For more information, visit: spacewerx.us.

Rhea Space Activity, Inc. (RSA) is a team of brilliant minds applying advanced and disruptive tech to solve the world’s security challenges. RSA specializes in innovative solutions for secure communication and reliable navigation in challenging environments. The company is headquartered in Washington, DC, with subsidiaries in the United Kingdom and Australia.

For more information, please visit www.rheaspaceactivity.com.

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