

SUCCESS STORY

TOPIC NUMBER:
A14-032

SBIR INVESTMENT:
\$915,000

PHASE III FUNDING:
\$22,000,000



ANTI-JAM ANTENNAS FOR GPS PSEUDOLITES AND BLUE FORCE ELECTRONIC ATTACK (BFEA) INTERFERENCE SOURCES

Mayflower Communications' Multi-Platform Anti-Jam Global Positioning Navigation Antenna provides Navy platforms with GPS protection, enabling the warfighter continued access to GPS during operations.

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THE CHALLENGE

The DoD relies on GPS for successful missions including those in contested environments. In a Broad Agency Announcement (BAA), the Navy, Air Force and Army sought a next-generation GPS system that would operate in contested environments, capable of protecting both civilian and military signals simultaneously. The desired system needed to meet reduced size, weight and power (SWaP) requirements in order to be compatible with multiple platforms. In addition, the solution needed to address the challenges posed by the issue of rotor blade modulation where aircraft blades reflect jammer signals at varying angles and interfere with the GPS signal. GPS systems were not designed or agile enough to adapt to these changes.

THE TECHNOLOGY

Mayflower Communications developed Multi-Platform Anti-Jam Global Positioning System Navigation Antenna (MAGNA), which provides GPS protection for ground, air and sea platforms. MAGNA is available in two variants: MAGNA-Federated (MAGNA-F) designed for fixed-wing, rotary aircraft and unmanned aircraft systems (UAS), and MAGNA-Integrated (MAGNA-I), developed for smaller UAS and other platforms.

THE TRANSITION

In 2015, the Navy awarded Mayflower a Phase III contract.

As the program progressed, the U.S. Army Combat Capabilities Development Command (DEVCOM) C5ISR picked up and further developed this project. Both the Army and Navy conducted full qualifications under the GAJAS program. Army PEO Aviation awarded Mayflower a hybrid contract (cost-no-fee, cost-plus-fixed fee, firm-fixed price) for the MAGNA system. This open contract was used to purchase the MAGNA-I for UAVs, fixed wing and rotary aircraft.

THE NAVAL BENEFIT

MAGNA reduces the effect of interfering signals before they can disrupt the system, ensuring continuous access to GPS provided (position, navigation and timing) PNT data for the warfighter. The system is platform-agnostic, making it easily adaptable to ground, air and sea platforms. A critical design element in all of Mayflower's GPS systems is their backward compatibility, allowing existing antennas to be replaced without the need for drilling additional holes in the platform.

THE FUTURE

Since 2020, Mayflower has sold over 4,000 MAGNA units across the DoD and commercial vendors, delivering GPS systems for a range of Naval aircraft that operate in contested environments. MAGNA is the only GPS receiver system that has passed the Federal Aviation Administration (FAA) Technical Standard Orders (TSO) process, making it suitable for use on commercial aircraft as well as for military operations.