Navy SBIR/STTR Success

Development of an EO Wave Imaging System on the *Pelican* Aircraft

Fueled by AROSS algorithms and software integrated into COBRA, the enhanced littoral ISR capabilities achievable on unmanned aircraft give the warfighter an essential edge in amphibious assault breaching missions.

Topic Number: N96-150

SBIR Investment (Phase I and II):
$3,723,861

Phase II Investment (non-SBIR funds):
$2,170,000

Phase III Revenue:
$34,788,682

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About the Technology:

Areté Associates' "Airborne Remote Optical Spotlight System (AROSS)" began its development by providing remote environmental monitoring of the near-shore ocean, utilizing digital electro-optical (EO) sensors installed on the Pelican aircraft. By collecting high-resolution, time series image data of the water surface from above, Areté was able to utilize its innovative, physics-based algorithms to extract operationally critical information such as bathymetry, surface currents and channel and sandbar locations. Post-Phase II efforts included experiments and fleet exercises to evaluate additional mission-specific algorithms, alternative concepts of operations, and the benefits of infrared, multi-spectral, and multi-polarimetric variants of the original panchromatic system. These efforts established that AROSS was capable of providing enhanced littoral ISR capabilities, including near-surface sea mine detection and precision localization of land targets and obstacles, allowing Marines to precisely locate and avoid threats.

Naval Benefit

The detection of land mines is essential for Marines to land safely on the beach and to give them assured access to their targets. The AN/DVS-1 Coastal Battlefield Reconnaissance and Analysis - (COBRA) system is designed to conduct unmanned aerial tactical reconnaissance in the littoral battlespace for detection and localization of mine fields and obstacles in the surf and beach zone prior to an amphibious assault, while allowing operators and personnel to remain at a safe distance. With the incorporation of AROSS algorithms and software, COBRA now enhances the execution of assault breaching missions by providing bathymetry and currents in littorals, estuaries, and rivers of denied areas. It also provides remote situational awareness to support military operations while eliminating the need for the deployment of manned assets. This system is presently being fielded for Navy missions in Mine Warfare.

Transition

The transition strategy was to integrate the SBIR-developed AROSS algorithms and software into the COBRA system, while preserving and enhancing both COBRA's airborne sensor hardware and its Post Mission Analysis (PMA) ground station. The goal was to provide COBRA with advanced Littoral ISR capabilities in addition to its core mine-field detection mission. Following successful demonstration of the combined capabilities using the actual COBRA system, Areté was awarded an SBIR Phase III contract on a Sole Source basis to serve as the Prime Contractor on the COBRA Block I LRIP program and deliver operational systems to the fleet.

Areté Associates

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