



Areté  
Associates



## ***AROSS*** ***Airborne Remote Optical Spotlighting System***



### **AROSS POC:**

Robert Madson  
Areté  
703.413.0290  
madson@arete-dc.com

### **ONR POC:**

Doug Todoroff  
MCM FNC S&T  
Program Manager  
703.696.2485  
todorod@onr.navy.mil

AROSS is comprised of a digital camera that is mounted in a stabilized turret that is installed on a small manned unmanned aerial vehicle (UAV) surrogate aircraft. The camera collects time series data on a target of interest by pointing at a geodetic location and utilizing the location and attitude of the turret to perform the stabilization. The innovative aspects are in the details in how the turret attitude is measured and is actively controlled, and in the algorithms for retrieving information from the image data that are collected. To date, AROSS has demonstrated excellent performance in missions that emulate those expected of the future Navy/USMC Vertical Takeoff Unmanned Aerial Vehicle (VTUAV). These include, but are not restricted to, mine countermeasures (mine-like object detection), environmental measurements (littoral zone bathymetry and currents) and precision targeting of land targets (to better than 2 meters). The system meets VTUAV payload size, power and weight limitations.

USE: Mine-like object and navigational hazard detection, determination of littoral zone bathymetry and currents, and precise tactical targeting.

### **Physical Characteristics**

14" Wescam Turret (Predator Skyball)  
Weight <175 lbs (78.75 kg)  
Volume <2.5 ft<sup>3</sup> (75 cm<sup>3</sup>)  
Total power <1 KW  
54 Gbyte data storage (3 hours continuous collection at 2 Hz frame rate)

### **Sensor System**

Dalsa DA-D7-1024T digital camera (1024 x 1024 pixels, 12 bits, 8 Hz)  
Kowa 75mm 2:1 anamorphic lens (18 degree AZ by 9 degree EL (FOV))  
Boeing (Rockwell) C-Migits II integrated IMU/GPS with Omnistar DGPS receiver  
Digital data acquisition and system control (Windows NT operating system; Matrox frame grabber)