Department of the Navy SBIR/STTR Transition Program

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Topic # N221-016
Autonomous Onboard Processing Hostile Fire Sensor System
TRITON SYSTEMS, INC.

WHO

SYSCOM: NAVAIR

Sponsoring Program: Naval Air Systems Command

Transition Target: Navy and Marine Corps Small Tactical Unmanned Aircraft Systems (UAS) Program (PMA-263)

TPOC: (301) 342-3728

Other Transition Opportunities: Unmanned aircraft systems (UAS) Program Offices within Army and Air Force and civilian law enforcement and security

Notes: Ultra-low size, weight, and power (SWaP) hostile fire sensor mounted to small unmanned aerial vehicle (UAV) detects, identifies, and locates hostile fire.

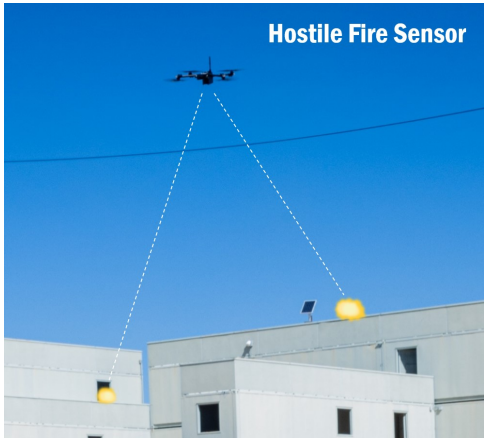

Image adapted from photo by Cpl. Jonathan Wilcox, VIRIN: 231011-M-QU139-1215, URL: https://www.dvidshub.net/image/8070816/3-4-demonstrates-capabilities-emerging-technology-during-exercise-apollo-shield

WHAT

Operational Need and Improvement: It is often difficult for soldiers and commanders to ascertain the origin of hostile fire when first engaged, and there exists no solution that can quickly identify and relay the location of hostile fire. The Navy seeks a chip-scale optical sensor that can be mounted on a small, battery-operated UAV to surveil, detect, verify, and locate hostile fire.

Specifications Required: The system will be able to determine and relay the relative position of hostile fire with 5 deg. angular (azimuthal) resolution, 500-1000 meters of operating range, and less than 50 ms delay time. Size, weight, and power consumption must be minimized to allow operation on small UAVs with maximum flight time.

Technology Developed: Triton has developed a system that uses light-weight, flat lenses; wavelength-selective multi-channel infrared photodetectors; and a high-speed signal-processing chain to detect muzzle flashes and analyze their spectral and temporal signatures. This system meets the above specifications, and uses advanced machine learning techniques to perform weapon identification using minimal computational power.

Warfighter Value: This technology will enhance the situational awareness and save the lives of soldiers in hostile areas by providing instant identification and bearing of hostile fire.

WHEN

Contract Number: N68335-23-C-0512 **Ending on:** Jul 14, 2025

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Assembled prototype, with traditional (vs. flat) lenses, records first muzzle flashes	N/A	Muzzle flash can be clearly seen in recorded signal	4	3rd QTR FY24
Flat lenses fabricated, verified, and incorporated into prototype	Low	Muzzle flashes identified and firing position determined by prototype ground test	5	4th QTR FY24
Complete prototype assembled in UAV-mountable housing	Low	Live fire test with prototype mounted on UAV, system identifies and locates muzzle flashes	6	3rd QTR FY25
If Phase II Option awarded , UAV-mounted system demonstrated at government-sponsored technology showcase	Medium	System performs to specification at UAV height of 500 m, Triton connects with government and commercial partners	7	3rd QTR FY26

HOW

Projected Business Model: Triton will manufacture the sensor system and sell to manufacturers of UAVs and UAV payloads through low-rate production. As sales grow, we will consider transitioning the business to a dedicated UAV payload manufacturer.

Company Objectives: Triton Systems develops and demonstrates advanced technology solutions to critical government and commercial challenges. The hostile fire sensor is a great fit with our business strategy, and once it has reached transition, the value we derive through sales and licensing will be reinvested in developing the next high-value technical solutions.

Potential Commercial Applications: Our system will be valuable for security and surveillance efforts, and could therefore aid law enforcement, security contractors, and non-military government entities such as FBI, DEA, CBP, and others.

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