FORESTER

An airborne radar system that provides stand-off, persistent, wide-area **FOPEN surveillance, detection and tracking** of people and vehicles

OBJECTIVE

U.S. Forces want to deny enemies the ability to conceal their location and movements under foliage or during darkness and adverse weather conditions. A stand-off capability is needed to persistently scan large wooded areas for potential threats to provide actionable user intelligence for military operations.

troops on the ground. It has been successfully tested on the A160 Hummingbird unmanned aircraft system and Black Hawk helicopter. FORESTER has also been considered for installation on the U.S Army's Long Endurance Multi-intelligence Vehicle (LEMV).

FORESTER DENIES ENEMY SANCTUARY UNDER FOLIAGE, DURING DARKNESS, OR IN ADVERSE WEATHER

SOLUTION

The Foliage Penetration (FOPEN) Reconnaissance, Surveillance, Tracking and Engagement Radar, or FORESTER, is an airborne radar system that provides stand-off, persistent, wide-area surveillance for situational awareness of foliage covered areas. With real-time onboard processing, the ground moving target indicator (GMTI) radar uses ultra-high frequency (UHF) to penetrate double canopy foliage to detect people and vehicles. It then sends the surveillance data to a ground station via a data link for tracking, target exploitation, and report generation. From 15,000 ft (~5 km), FORESTER has an area coverage of 90 mi2 (145 km2) and a maximum range of ~9 mi (15 km) to detect people under foliage. It provides continuous coverage over a 90-degree sector and has mechanical and electronic antenna steering to cover all 360 degrees.

FORESTER installs on a helicopter, which is able to maintain near-zero ground speed, enabling the radar to detect very slow-moving low radar cross-section targets such as

FORESTER system mounted on an unmanned aircraft system (UAS)

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The FORESTER system was designed and developed by SRC through the sponsorship of the Defense Advanced Research Projects Agency, the U.S. Army, and the U.S. Special Operations Command.

ENHANCED DETECTION AND DISCRIMINATION

Enhanced data-processing tools are being developed by SRC under DARPA's FOPEN GMTI Radar Exploitation and Planning program, also known as FOPEN-GXP. These tools will exploit FORESTER data to discriminate and characterize human activity under foliage in order to assist in the development of actionable intelligence.

BELOW: User Display from YMQ-18A Demo in Single-Canopy Foliage - Fort Stewart, GA (September 2009)

Dots are radar detections
- ● = Detections moving toward the radar
- ● = Detections moving away from the radar
- ○ = 700m diameter; named area of interest (NAI) locations

APPLICATIONS

- Denying enemy sanctuary under foliage, during darkness, or in adverse weather
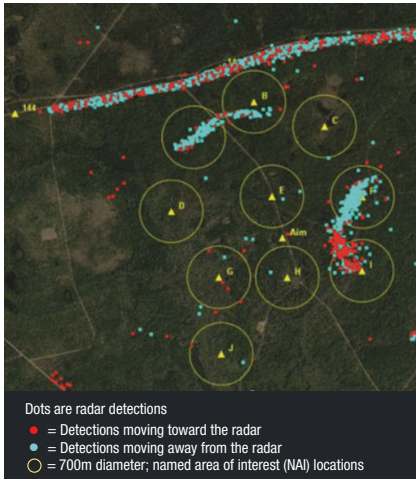- Identification of ambush sites

BENEFITS

- Excellent small and slow target sensitivity
- Real-time situational awareness in dense foliage areas
- Actionable user intelligence

FEATURES

- ➤ Stand-off, persistent, wide-area FOPEN surveillance
- ➤ All-weather, day/night detection
- ➤ UHF GMTI/AMTI/SAR capability
- ➤ Real-time, onboard processing
- ➤ 360 degree surveillance coverage with electronic beam steering to search 90-degree sector

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