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North American Defense Advanced Technology Solutions

DIVISION OF AEROS

EARLY WARNING SYSTEM

FOR BORDER SURVEILLANCE, EQUIPMENT MOVEMENT OBSERVATION & IDENTIFICATION

PERSISTENT ELEVATED SURVEILLANCE

The Early Warning System for Border Surveillance, Equipment Movement Observation, and Identification includes a multi-mode surveillance radar and a full HD multi-spectral imaging camera system, a shooter detection system (option), and a Ground Control System (GCS)

Integrated Technologies:

- Full HD multi-spectral imaging camera system
- State-of-the-art Active Electronically Scanned Array (AESA) multi-mode radar
- Shooter detection system (option)
- Payload mounting system
- Ground Control System with 2 operating stations (4 monitors,
- 2 CPUs), server/NAS, enterprise Ethernet, and controller

Capabilities:

The multi-mode radar, interfaced with the multi-spectral camera system, provides surface surveillance, navigation, beacon detection, target imaging and classification, ground mapping, and moving target detection.

The shooter detection system (SDS) locates a shooter by using state-of-the-art passive acoustic detection, computer-based signal processing, and, both, auditory and visual indications to detect and report relative shooter azimuth and elevation information.
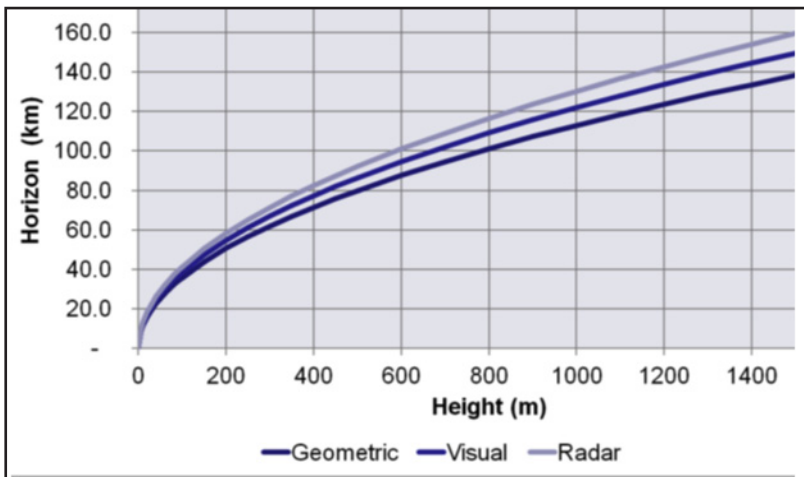

LINE OF SIGHT

The Ground Control System (GCS) is housed in a climate controlled operations shelter (size: 6m x 2.4 m) and is supplied with:
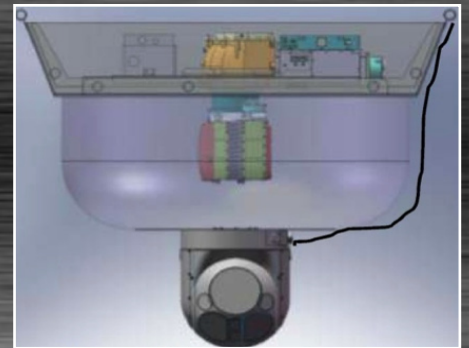- (2) Operating station that includes a computer and monitor
- EO/IR control console with software
- Mapping system that offers geo-location map overlays

Power Requirements:

- Shore Power and Generator Switchable
- Primary Power Input - 380 VAC – 3 ph. 60 Hz.

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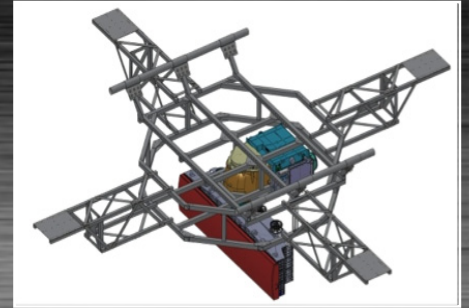
PAYLOAD MOUNTING SYSTEM

PAYLOAD MOUNTING SYSTEM

EARLY WARNING RADAR - E/O SYSTEM
Border Surveillance
Tactical Movement Observation
Multi-Mode Surveilance Radar
Full HD Multi-Spectral Imaging Camera System
Shooter Detection System
Ground Control System

CAMERA FEATURES
HD Color Camera with 5-FOV Matched Optics
ESLRF Eye Safe Laser Rangefinder
LP Laser Pointer / Target Marker (100mW)
Central Electronics Unit (CEU)
Automatic Video Tracker
Laptop Control Unit (LCU)

MULTI-MODE SURVEILLANCE RADAR

The Border Security System is integrated with a multi-mode surveillance radar system and includes a mounting radome.

The multi-mode surveillance radar system is equipped with the following modes: Surface MTI, Air MTI, Air to Air Intercept Mode, Long Range Search, Priority Track, Small Target Mode, AES and Weather Mode. Coupled with the Ground Control Station, the system enables an operator to control the radar modes and alerts to potential threats through clear visual displays to enable a quick response. The Ground Control Station has been designed to enable one operator to control the radar and observe dual displays from a single keyboard and mouse.

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SYSTEM PERFORMANCE

Multi-Mode Surveillance Radar	
Ground moving targets up to 90 KM	
Air-to-air targets up to 140 KM	
Full HD Multi-Spectral Imaging Camera System	
Day up to 30 KM	
Night up to 20 KM	

MULTI-MODE RADAR SPECIFICATIONS

Characteristics

Frequency	X Band
Scan Coverage	360°
Maximum range	320 NM
Mean Time Between Fail (MTBF)	2,000 hours
Cooling	Unconditioned Air
Weight	100 kg

Dimensions

Scanner	565 mm height
Swept volume	154 mm diameter 306 mm height
Interfaces	Ethernet plus Mil Std 1553B, ARINC 419, RS422, RS232, USB, and Synchro
Video outputs	RGB Stanag 3350, VGA, Digital Video

Functions

Track While Scan	Automatic
Track Identification	AIS Integration
Mode Interleaving	Simultaneous dual mode operation

Capabilities

Suface Surveillance	Longe Range Search Priority Track Small Target Mode
Navigation	Real Beam Ground
Map	Weather Detection Turbulence Detection
Beacon Detection	Search and Rescue Transponder (SART)

Target Imaging/Classification	ISAR
	   -Range Profiling
	Spot ISAR
	   -High resolution
	    ground mapping
	Strip SAR
	    - Medium resolution wide area ground mapping
	   -Oil Slick detection
	   - Iceberg detection

Moving Target Detection	GMTI

DISPLAY

HD MULTI-SPECTRAL IMAGING CAMERA SYSTEM

HD MULTI-SPECTRAL IMAGING CAMERA

- Stabilized Turret Unit (TFU)
- Infrared Imager 640 x 512 Detector with enhanced High Definition
- HD Color Camera with 5-FOV Matched Optics
- ESLRF Eye Safe Laser Rangefinder
- LP Laser Pointer / Target Marker (100mW)
- Central Electronics Unit (CEU)
- Automatic Video Tracker
- Laptop Control Unit (LCU)
- Radar Interface

MULTI-SPECTRAL CAMERA SYSTEM TECHNICAL SPECIFICATIONS

Thermal imager

Sensor type	640 x 512 InSb focal plane array
Resolution	720/1080 and NTSC/PAL
Wavelength	3-5 µm response
FOVs	30° to 0.25 °/Zoom ration 120X

Color high definition camera

Sensor type	Color CCD-TV, Progressive scan
Resolution	720/1080 and NTSC/PAL
FOV's	29° to 0.25° / Zoom ration 120X

Low-light high definition camera

Sensor type	Color NIR CCD, Progressive scan
Resolution	720/1080 and NTSC/PAL
FOVs	55° to 1.5°/Zoom ration 36X

Laser Payloads

Rangefinder	Max. range	20Km +/-5m/
	Classification	Class 1
Illuminator	Power	1W or 2W
	Classification	CLASS 3b
Pointer	Power	100mW
	Classification	Class 3b

Digital IMU/GPS (Optional)
Tightly-couped, fully-integrated, IMU & GPS for geo-pointing and target geo-location capabilty

System type	4 axis stabilization
Az. coverage	360° continuous
El. coverage	+30° to -120°
Digital video	SMPTE292M
Analog video	NTSC/PAL
Control	RS-232, RS-422, Ergonomic Laptop or Hand-held
Data	RS-232, Rs-422, ARINC 419/429, MIL-STD1553B
Standards	MIL-STD-810E&MIL-STD-461F
Operating temp.	-40°C to 55°C

Accessories
Long-wave IR (LWIR) imager, Automatic Video Tracker, Navigation/Radar Interfaces, Quik-Disconnect

SHOOTER DETECTION SYSTEM (OPTION)

The Shooter Detection System (SDS) assists in locating a shooter by using state-of-the-art passive acoustic detection, computer-based signal processing, and, both, auditory and visual indications to detect and report relative shooter azimuth and elevation information. The SDS provides protection for warfighter operations, law enforcement, surveillance, search and rescue operations, and is a key defense asset.

The SDS is a cost-effective, fully scalable option that deploys shooter detection and localization, improving awareness and protecting against small arms attacks.

Capabilities
- Superior detection of single shots, burst fire, multiple bursts, or multiple shooters
- Reports relative shooter range, azimuth, and elevationfor first round fired
- Reports threat weapon cliassifcation
- 360° field of view
- Operated while cruising, landing, hovering and in all tactical situations
- Alert suppression for outgoing fire
- Platform independent: adaptable installation
- Low false alarm rate
- Simple operation
- No calibratation required

Features
- Visual display sensors and shot detection locations
- Intuitive, easy-to-use mapping interface
- Dynamic load and display of map data (RPF, CIB, CADRG)
- Advanced map tools, such as distance measuring
- Event history replay with "snap back" feature if new events are detected
- Fusion of shot events from multiple systems
- Ruggedized laptop included
- Display and report hostile shooter within one (1) second
- Processes up to 3,600 shot events per hour
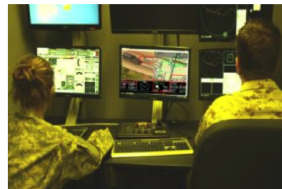- Shot file storage: 90 days

Performance
- Close Bullet Miss Detection Range: .0.25 M
- Wide Bullet Miss Detection Range: >50 M
- Response Time: <1.5 second
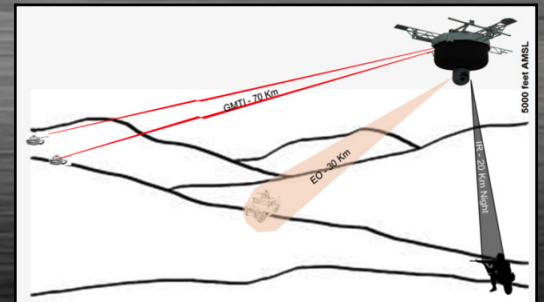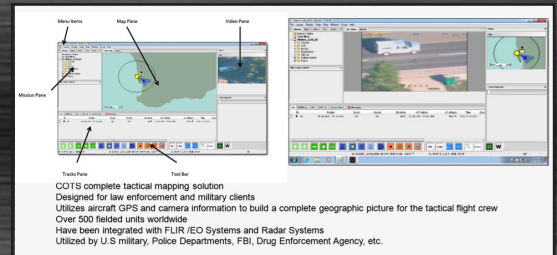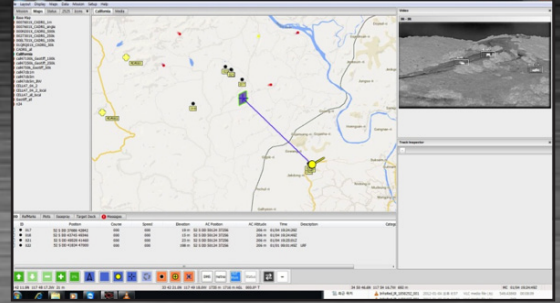
PAYLOAD MOUNTING SYSTEM

GROUND CONTROL SYSTEM

The Ground Control System includes 2 operating stations (4 monitors, 2 CPU's, server/NAS, enterprise Ethernet, and controller).

COTS complete tactical mapping solution
Designed for law enforcement and military clients
Utilizes aircraft GPS and camera information to build a complete geographic picture for the tactical flight crew
Over 500 fielded units worldwide
Have been integrated with FLIR /EO Systems and Radar Systems
Utilized by U.S military, Police Departments, FBI, Drug Enforcement Agency, etc.