Raytheon

Relocatable Over-the-Horizon Radar (ROTHR) for Homeland Security

ROTHR provides high reliability and cost effective wide area coverage from 500 miles inland out to 1,500 miles off the U.S. Coastline.

Benefits

- Tracks aircraft at all altitudes in all weather
- Tracks ships longer than 100 feet
- Reduces airborne surveillance requirements
- Supports drug interdiction and homeland defense missions
- High reliability; maximum up-time
- Cost effective site preparation, installation, and O&M
- Readily available COTS hardware
- In-place logistics system
- Fully documented

Raytheon's Relocatable Over-the-Horizon Radar (ROTHR) is a long range, land based, wide area surveillance system that reliably detects aircraft and ships, within designated surveillance zones off the U.S. coastline. Designed to operate without violating other nations' sovereignty, ROTHR tracks each target's speed, course, and position with high probability. The system then immediately reports detected surface and air traffic to U.S. tactical forces responsible for defending locations of national interest.

ROTHR's superior far-ranging coverage substantially increases the effectiveness of surface and airborne surveillance activities, resulting in considerable savings in terms of crew, ship, and support costs.

ROTHR is also fully capable of providing comprehensive wide area coastal surveillance in support of evolving tactical, strategic, and intelligence missions for homeland defense.

Integrating a network of ROTHR radars using proven ROTHR command, control and communications, can provide surveillance of the entire U.S. coastline out to 1,500 miles.

Detecting and tracking 8,000 targets per day (nearly three million per year), the current ROTHR network has a proven track record in support of the U.S. Government's counter drug mission in the Caribbean Sea and South America.

Raytheon and the U.S. Government have been continuously upgrading the ROTHR hardware and taking advantage of operational experience, combined with advanced processing, to maintain state-of-the-art ROTHR performance.

Three Sites Fully Operational Since 1993 - located in Texas, Virginia, and Puerto Rico

Each system includes:

- Coverage of more than 2.5 million square nautical miles per radar
- Continuous operation 24/7/365
- Extremely low operational costs
- Highly reliable - more than 175,000 tactical operational hours
- Networked command and control with JIATF South

Consolidated Operations Control Center at Virginia Receive Site

Continuous System Upgrades Enhance Capability

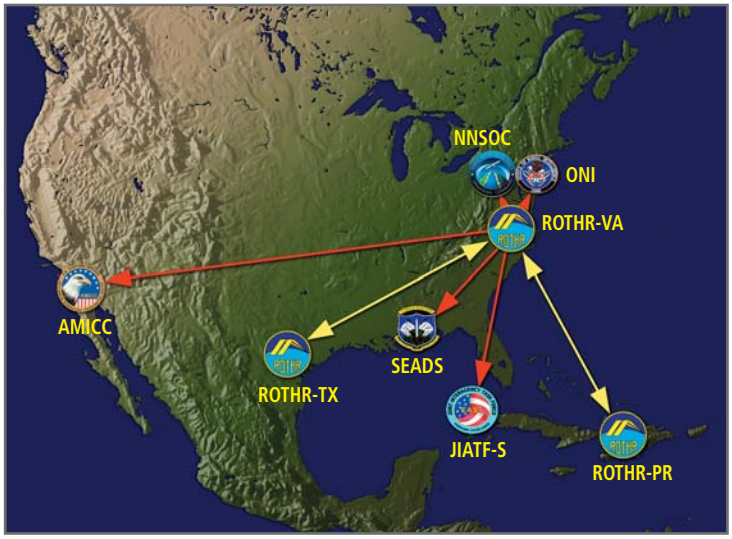
- Latest generation COTS computers and displays
- Open architecture to facilitate replacement of special purpose hardware
- Software upgrades to meet evolving requirements
- 500% increase in computer throughput

Performance Upgrades

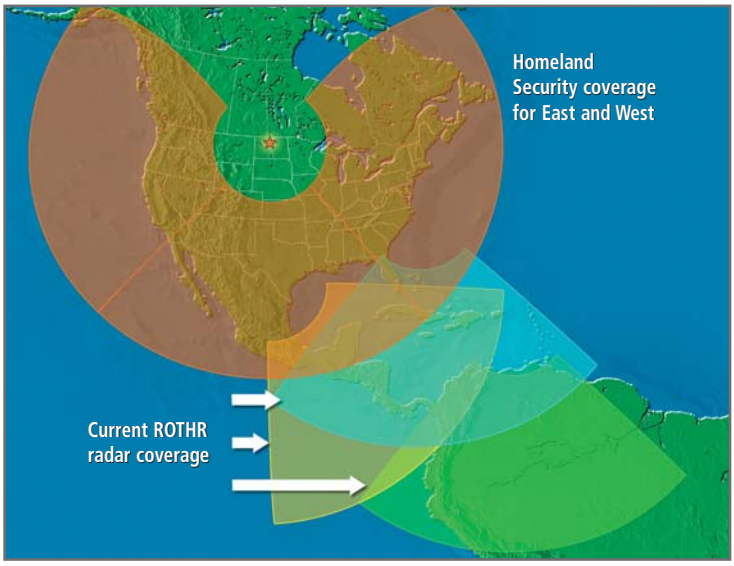
- Improved tracking accuracy
- Small aircraft and ship tracking
- Higher performance over wide range of ionospheric conditions
- Increased system angular coverage from 64° to 100°
- Increased range from 1,600 to 2,500 nautical miles

ROTHR is Optimized for Homeland Security

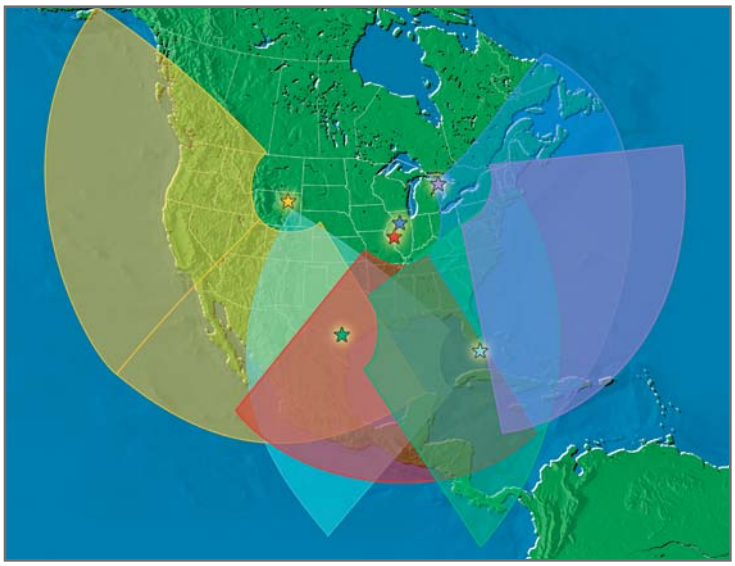
- 3 Homeland Security ROTHRs complement existing Caribbean coverage to provide initial capability
- Additional ROTHRs provide Defense in Depth to critical areas
- Significant siting flexibility due to large coverage area
- Operations Control Center located at user's facility
- Existing command, control and communications easily integrated into Homeland Defense Network



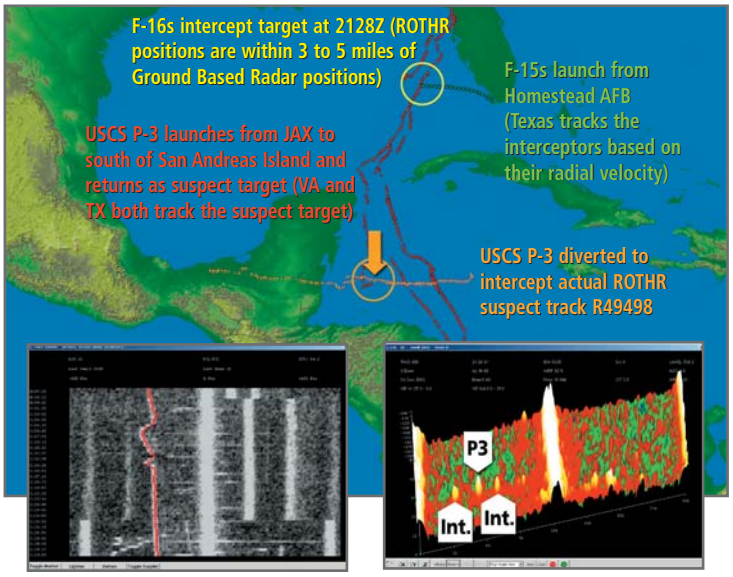
Existing Secure ROTHR Communications Network



Initial Homeland Security Coverage



Layered Coverage for Defense in Depth



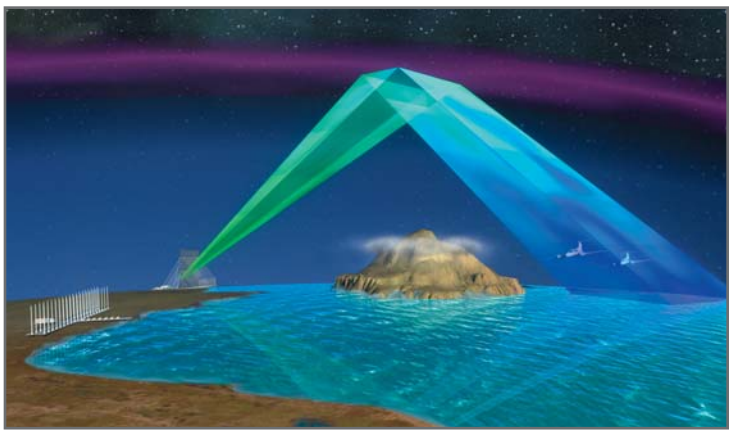
ROTHR – A Key Player in Homeland Defense Exercises

Operation Federal Virgo, January and March 2004

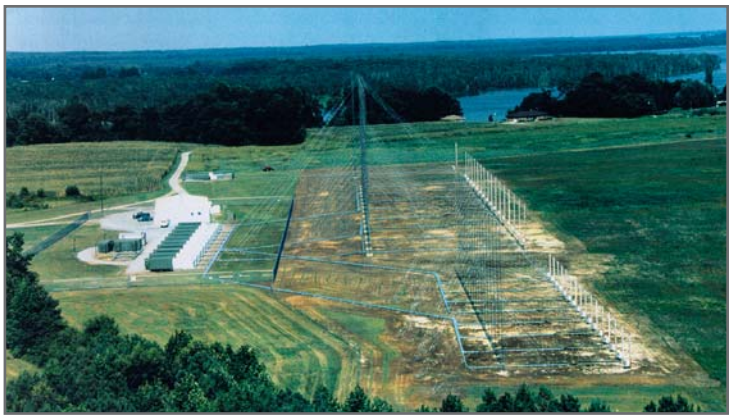
- U.S. Customs aircraft simulates terrorist attack on Florida
- ROTHR detects and tracks "attacker"
- Existing command, control and communications system used to successfully vector F-15 and F-16 interceptors
- Helicopters tracked for 8 hours in similar exercise March 2004

How ROTHR Operates

- Transmitted signal bounces off ionosphere to track targets over the horizon
- Operators select transmitted frequency and waveform to optimize performance to target range and type
- Target tracks from all radars fused with other sensors at Consolidated Operational Control Center
- System performance unaffected by weather or terrain



Receive Site



Transmit Site

Raytheon: The U.S. Government's ROTHR Industrial Partner for Over 20 Years

- **Design** – Raytheon designs and manufactures ROTHR
- **Installation** – Raytheon installed all three ROTHR systems
- **Upgrade** – Raytheon partners with the U.S. Government for 10 years on continued upgrades to the installed ROTHR systems
- **Operation** – Raytheon, under U.S. Navy direction, operates all ROTHR radars and the integrated system for the last 12 years
- **Logistics** – Raytheon developed and operates the complete ILS system for the U.S. Navy
- **Maintenance** – Raytheon maintains all ROTHR systems

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Customer Success Is Our Mission