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S&T Stakeholders Conference

Counter-MANPADS Programs

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PARTNERING FOR A SAFER NATION

DHS MANPADS* Threat Summary

- MANPADS are readily available worldwide and capable of destroying aircraft
- Civilian aircraft are easy targets: slow and predictable, with large signatures
- Aircraft are most susceptible near airfields and when traveling below 15,000 – 20,000 feet
- Danger zone of MANPADS attack is large
 - Largely outside airport boundaries (greater than 60 nm)
 - Attack corridor may be up to 8 nm wide



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*Man-Portable Air Defense Systems

National Strategy: A Multi-Layered Approach

- Department of State – Non-Proliferation
 - Global weapons stockpile
 - Global export controls
 - MANPADS destruction program
- DHS/Transportation Security Administration – Tactical Operations
 - Airport vulnerability assessments and mitigation plans
 - Guidelines for identifying and reporting threats
 - Elevated alert guidelines
- DHS/Science and Technology (S&T) – Technical Countermeasures
 - Commercial transport survivability of MANPADS attack
 - Directed Infrared Countermeasure (DIRCM) systems for commercial transport protection
 - Emerging countermeasure technology (ECMT)
 - Innovative concepts – CHLOE (Kerry Wilson briefing)



Counter-MANPADS DIRCM Program

- Phase I - Jan - July 2004 - 6 months
 - Feasibility and preliminary design - three contracts
 - BAE Systems Team - distributed DIRCM
 - Northrop Grumman Corp Team - DIRCM pod
 - United Airlines Team - decoy flares
- Phase II - Aug 2004 - Mar 2006 - 18 months
 - Adapted DoD technology for commercial transport protection
 - Evaluated performance through simulations and flight tests
 - Obtained FAA Supplemental Type Certification (STC)
 - B-767 with BAE system
 - B-747 and MD-11 with NGC system
 - Developed operations, maintenance and supply procedures
 - Performed initial manufacturing/installation rate assessment
 - Completed preliminary ownership and life-cycle cost analysis
- Phase III - Mar 2006 - Mar 2009 - 3 years
 - Conducting in-service evaluations with FedEx MD-10 cargo aircraft
 - Plan to start passenger in-service evaluations early 2008
 - Assessing system performance and reliability
 - Completed live fire tests at White Sands Missile Range Fall 2007
 - Goal to certify performance of both systems



BAE and NGC Counter-MANPADS

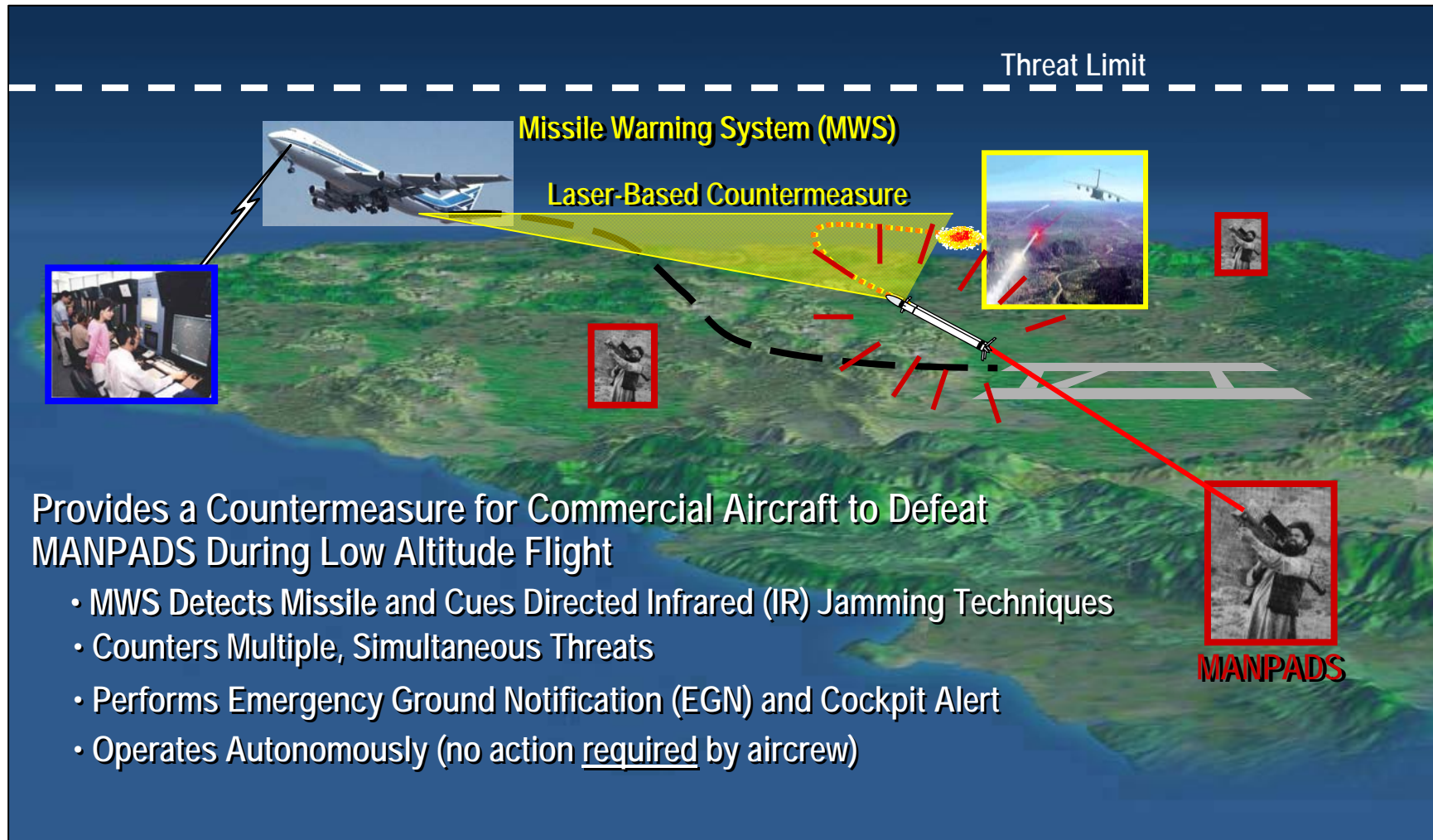


- Evolved from U.S. Army Advanced Threat Infrared Countermeasures (ATIRCM) Program
- Utilizes distributed component approach
- Commercialized version consists of 12 Line Replacement Units (LRU)

- Evolved from U.S. Air Force Large Aircraft Infrared Countermeasures (LAIRCM) Program
- External pod contains most components
- Commercialized version consists of 4 LRUs



CONOPS: Detect and Counter-MANPADS



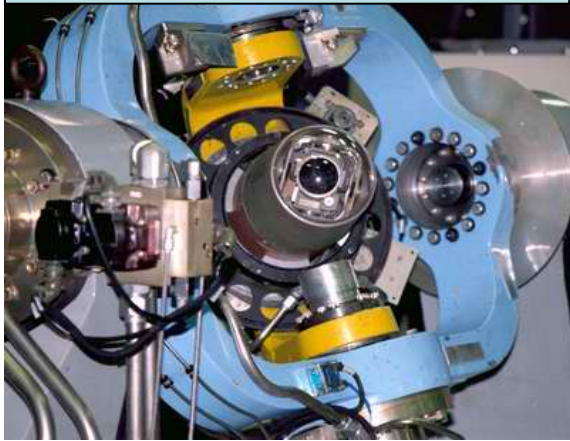
Rigorous Evaluation and Verification Process

- Digital simulations - more than one million MANPADS launches
- Hardware-in-the-loop simulations – over 4,100 tests for each system with actual missile seekers and DIRCM jammers
- Flight test – over 50 hrs of flight tests with simulated missile shots
 - B-767 for BAE system
 - MD-11 for NGC system
- Comprehensive functional configuration audit to verify compliance with system functional requirements
- Live fire tests Fall 2007
 - Over 7,100 additional hardware-in-the-loop simulations to prepare for live fire tests



Missile/Countermeasure Simulation

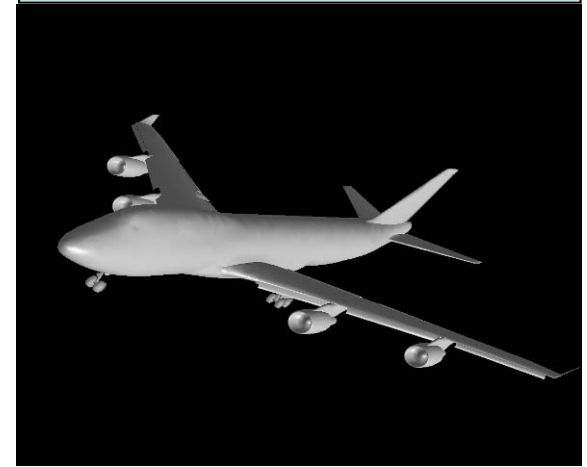
Motion Table With Seeker



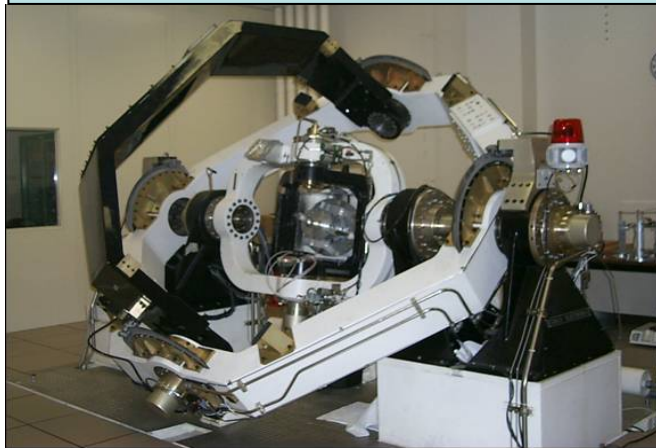
Actual Threat Seekers



Detailed Aircraft Models



Full Motion Flight Simulator



- Flight Motion Simulator
- Laser Countermeasure
- Target Projector
- Simulation/Control
- Data Acquisition
- Data Display
- Analysis Station

Simulation Computers and Control Room



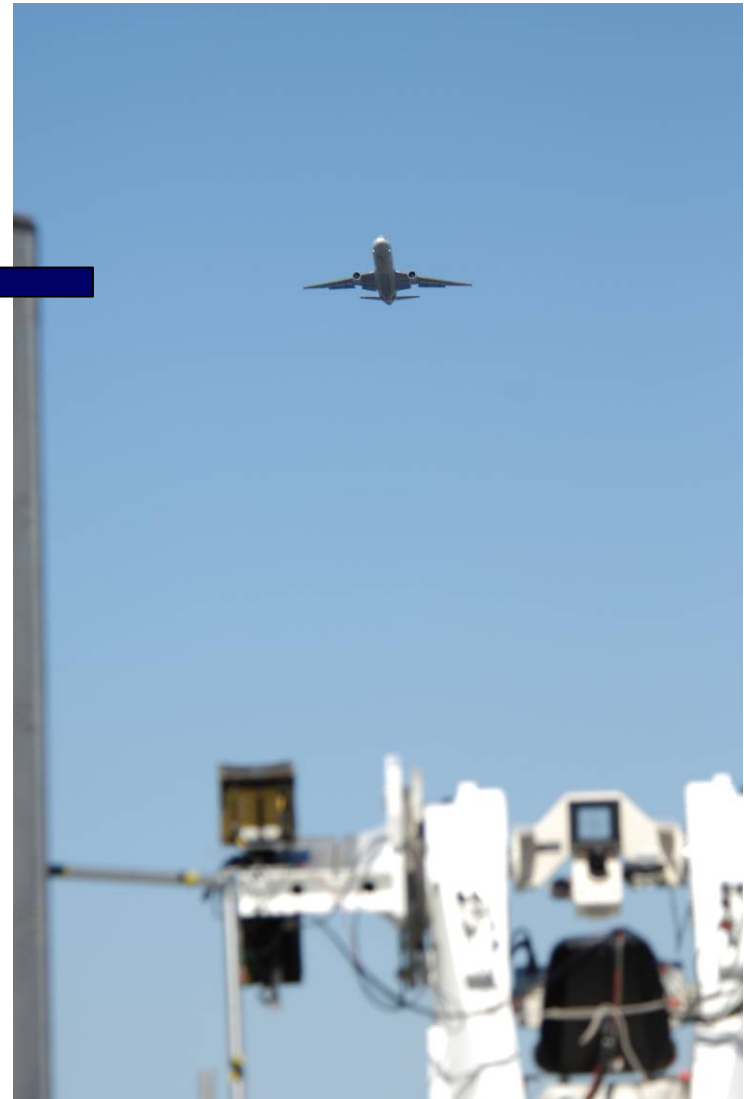
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*Hardware-in-the-loop simulations at
Guided Weapons Evaluation Facility – Eglin AFB, FL*

Aircraft on Flight Range



IR View



- Simulated missiles “fired” at aircraft
 - MWS detects “missile”
 - DIRCM defeats “missile”
 - Range provides data for performance evaluation



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Live Fire Tests of BAE & NGC Systems

White Sands Missile Range – Aerial Cable Range

- 29 missiles fired at DIRCM systems on gondola-emulated B-747 IR signature
- Demonstrate ability to defeat MANPADS
- Provides data on effectiveness and performance
- Identify potential anomalies
- Objectives were met



Counter-MANPADS Live Fire Tests



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Phase III In-Service Operational Evaluations

- Cargo revenue service evaluation by FedEx
 - Initiated January 2007
 - Up to 10 MD-10s operating with NGC C-MANPADS
 - About 6,000 system operating flight hours through January 2008 flying domestic routes only
- Passenger Airline revenue evaluation by American Airlines
 - Congressional direction
 - Up to three B-767s with BAE C-MANPADS
 - Up to 7,000 hours flying JFK to LAX and SFO by March 2009
- Suitability Working Group following operational evaluations
 - FAA, airlines, Boeing, Airbus, Airline Professional Associations, Passenger-Cargo Security Group, NGC, BAE, and others invited
 - Understand and contribute to evaluation approach
 - Understand and improve cost estimation approaches
- Results to be briefed to Congress and aviation community late 2009



DIRCM Counter-MANPADS

Summary

- Preliminary results:
 - Both systems capability of protecting commercial transports with some limitations that require further analysis and testing
 - System reliability still well below that required for a cost-effective solution
 - Four different FAA-certified prototype installations
- Phase III to improve performance, reduce risks, & estimate ownership costs
- Performance certification process established
- No decision to deploy



Questions?



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