Ballistic Missile Defense Update For The 11th AUSA Tactical Missile Conference

19 MAY 09

LTG Patrick J. O’Reilly, USA
Director
Missile Defense Agency
“Current trends indicate that adversary ballistic missiles, with advanced liquid- or solid-propellant propulsion systems, are becoming more flexible, mobile, survivable, reliable and accurate while also presenting longer ranges.”

LTG Michael Maples, Director, DIA

Missile Defense Goals

- Provide a balance of capabilities, requirements, and risks to deter aggression, project power, and protect U.S. and allied interests

- Respond to war fighter requirements to counter the most pressing near-term regional threats

- Pursue cost-effective and operationally effective missile defense capabilities to hedge against future threat uncertainties
FY10 Missile Defense Program Strategy

- Enhance protection of our deployed forces, allies and friends against existing threats
  - Field more THAAD and SM-3 interceptors
  - Begin conversion of 6 additional Aegis ships
- Maintain a ground-based midcourse capability to defeat rogue state threats or accidental launch against the United States
  - Complete emplacement of 26 GBIs at Ft. Greely and 4 at VAFB
  - Complete procurement of 14 GBIs
    - Backfill oldest GBIs
    - Refurbish and test removed GBIs
    - Maintain 4 operational spares
- Enhance rigorous BMDS testing
- Balance Midcourse R&D with Ascent Phase Intercept (API) R&D
  - Terminate midcourse Multiple Kill Vehicle
  - Terminate Kinetic Energy Interceptor program
  - Leverage emerging API technologies to hedge against threat growth, increase operational effectiveness and efficiency
  - Cancel ABL Tail #2 and focus program on R&D
- Continue plans to deploy a European Capability to defeat longer-range threats to the extent allowed by law
- Increase size and qualification of MDA government workforce and efficiency of operations

<table>
<thead>
<tr>
<th>TY$ in Millions</th>
<th>FY10</th>
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<tbody>
<tr>
<td>Development</td>
<td>4,153.3</td>
</tr>
<tr>
<td>Test</td>
<td>1,458.0</td>
</tr>
<tr>
<td>Fielding</td>
<td>1,509.2</td>
</tr>
<tr>
<td>Sustainment</td>
<td>705.9</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>7,826.4</strong></td>
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The PB10 BMDS

PB10 Sustains Midcourse Defense (ICBMs) While Emphasizing Terminal (SRBMs) And Efficient And Operationally – Effective Ascent Intercepts (MRBMs, IRBMs)
Why Ascent Phase Intercept?

• Ascent Phase intercept will help us achieve key operational- and cost-efficiencies
  - Chance to kill before countermeasures deploy with easier intercepts than boost phase
  - Greater chance to shoot-look-shoot (doubles inventory efficiency)
  - Optimized asset locations to maximize standoff distances
  - 2002 Defense Science Board Report recommended it for emphasis

• What’s changed since 2002: Leveraging Today’s Technologies
  - Interceptors with substantial burnout velocities
  - Rapid closure of fire control loops demonstrated with hardware-in-the-loop
  - Over-the-horizon sensors for netted coverage
  - Affordable, continuously-available sensors
## New Initiatives

<table>
<thead>
<tr>
<th>DSA Infrastructure</th>
<th>Transportable VLS</th>
<th>Precision Tracking Satellite System Planning</th>
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<tr>
<td>Models and Simulations</td>
<td>Land-Based SM-3</td>
<td>Land-Based SM-3</td>
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- **Risk Reduction For Extended Range THAAD**
- **Ascent Phase C2BMC**
- **Airborne Infrared System To Support BMD**

- **Engage on STSS Demo Satellites**
- **Engage on Airborne Infrared (sea-based SM-3)**
- **Engage on Airborne Infrared (land-based SM-3)**

- **Airborne Laser Lethal Shootdown**

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System Configuration
End Of FY 2009 → End Of FY 2010

- AN/TPY-2
  - Shemya, AK
  - Hawaii

- SBX
  - Shariki, Japan

- GBI
  - (25 → 26)

- UEWR
  - Thule, Greenland
  - Fylingdales, UK

- UEWR
  - C2BMC
  - Ramstein, GE

- C2BMC
  - Fylingdales, UK
  - Vandenberg AFB
  - Ft. Greely

- UEWR
  - AN/TPY-2
  - Israel

- C2BMC
  - Aegis Ships
    - (19 → 21)
  - SM-3 Interceptors
    - (35 → 81)
  - SM-2 Interceptors
    - (≈ 58 → 70)

- OPIR
- EWR
- SBX
- AN/TPY-2
- UEWR
- UEWR
- UEWR
- UEWR
- UEWR

- C2BMC
- AN/TPY-2
- UEWR
- UEWR
- UEWR

- Patriot Fire Units
  - (44 → 58)

- PAC-3 Interceptors
  - (727 → 831)

- THAAD Fire Units
  - (1 → 2)

- THAAD Interceptors
  - (8 → 32)

C2BMC = Command, Control And Battle Management Network
EWR = Early Warning Radar
OPIR = Overhead Persistent Infrared
SBX = Sea-based X-Band Radar
SM-2 = Standard Missile-2 Terminal Interceptor
SM-3 = Standard Missile-3 Interceptor
UEWR = Upgraded Early Warning Radar
THAAD = Terminal High Altitude Area Defense
BMDS Test Review

• Phase 1 (January 2009) – determined data needed to validate BMDS Modeling and Simulation (M&S) and evaluate operational effectiveness, suitability, survivability, supportability
  - 101 critical variables and parameters (Critical Engagement Conditions and Empirical Measurement Events) that must be tested to validate M&S

• Phase 2 (March-May 2009) – determine test venues and scenarios to acquire the data identified in Phase 1
  - 6 test campaigns to conduct approximately 144 tests (including 56 flight tests involving 37 tests where threat targets are intercepted)

• Phase 3 (June 2009) – Identify the resources and the planning infrastructure, including targets and test ranges, to execute those scenarios identified in Phase 2
  - Work in progress
FY10 Test Campaign

- ABL Boost Phase SRBM Negation (Q1)
- Int’l SM-3 SRBM Intercept with U.S. TrackEx. Int’l/U.S. SRBM TrackEx (2) with Simulated Intercepts (Q1)
- First Aegis BMD 4.0.1 SRBM TrackEx (4) with Simulated Intercepts (Q1)
- THAAD Simultaneous MRBM/SRBM Intercept with Simulated Mass Raid (Q1)
- ABL Negation with Different Geometries (Q1)
- ABL Negation with Different Geometries (Q2)
- First THAAD Intercept of MRBM with CMs (Q2)
- First Aegis BMD SM-3 Blk 1B SRBM Intercept with TrackEx (Q2)
- Under Review
- First STSS SRBM Target Tracking Exercise (Q2)
- First 2-stage GBI IRBM Intercept (Q3)
- CD tracking Exercise of MRBM with simulated engagement (Q4)
- First THAAD Intercept of MRBM with CMs (Q3)
- First Aegis BMD SM-3 Blk 1B SRBM Intercept with TrackEx (Q4)
- Under Review

GT-04 exercises
1. SSF Increment 1 integration
2. Upgrades to SBIRS Rep
3. Tactical Software Availability (Begins Q1)

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International Activity Highlights

R&D Cooperative Efforts

**UK**: Fylingdales UEWR, Joint Project Arrangements for Cooperative Projects

**Italy**: MEADS partner

**Denmark**: Upgrade Thule Early Warning Radar

**Australia**: Advanced technology cooperation

**Japan**: Forward-based X-Band radar siting, 21" Missile Development

**Czech Republic**: Agreed to host midcourse radar; some RDT&E cooperation

**NATO**: Completed tasking to explore architectures to supplement European Site. Working with ALTBMD to demonstrate connectivity between NATO and U.S. systems

**Kuwait**: Expressed interest in missile defense

**Saudi Arabia**: Requested BMD requirements analysis

**United Arab Emirates**: Request for THAAD

**Bahrain**: Request for BMD requirements analysis

**Qatar**: Expressed interest in missile defense

**Russia**: Strategic cooperation/transparency dialogue

**India**: Have had discussions on RDT&E

**Poland**: Agreed to host Ground Based Interceptors, potential RDT&E cooperation

**France**: Cooperative project potential

**Netherlands**: PAC-3, Maritime BMD Cooperation

**Germany**: MEADS partner, laser cross-link technology

**Israel**: Arrow Deployed, Arrow System Improvement Program; development of short-range BMD, Upper Tier program

**UK**: Fylingdales UEWR, Joint Project Arrangements for Cooperative Projects

**ROK**: Missile Defense discussions, Request for BMD requirement analysis

**Ukraine**: Conducting a missile defense project; RDT&E agreement being staffed

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Summary

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