Ballistic Missile Defense Update

To: Center for Strategic & International Studies and U.S. Naval Institute
Maritime Security Dialogue

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Missile Defense Agency Video
POTUS, 23 August 2017: “We are committed to expanding and improving a state of the art missile defense system to shoot down missiles in flight. And we are getting better and better at it. It’s actually incredible what’s taking place. We will develop better surveillance and long-strike capabilities to prevent our enemies from launching them in the first place.”

SECDEF statement, 20 September 2017: "...if we fail to adapt at the speed of relevance, our forces will lose...“

CJCS, 3 October 2017: "Based on the current capacity of the North Korean threat, both the type and the amount of missiles that they possess, we can protect Hawaii today against an ICBM. We can protect the continental United States against an ICBM... As the capacity of the threat increases - that is the size, not just the lethality, of missiles that they may possess - we need to be concerned about ensuring that our ballistic missile defense capability keeps pace with that threat. We do think an increase is warranted."

USD (AT&L), 10 October 2017: “It’s all about velocity. We are trying to get stuff downrange quickly.”
Missile Defense Agency

**Missile Defense Agency Mission**

To develop and deploy a layered Ballistic Missile Defense System to defend the United States, its deployed forces, allies, and friends from ballistic missile attacks of all ranges and in all phases of flight.
Increasing Threat Complexity

North Korea: Commitment to Long-Range Missile Technology

10 IRBM (3,500-5,500 km) Launches 2016-2017
Canister for probable solid propellant long-range missile 2017
Three Probable ICBM Launches 2017
3 Sea-Launched Ballistic Missile Launches in 2016

Iran: Developing Advanced Capabilities

Iranian Emad MRBM 2016
Ashura 2-stage solid MRBM (2,000 km/1,200 mi)
Simorgh Space Launch Vehicle launch, July 2017

Emerging Threat

Hypersonic Glide Vehicle

Increasing Capability at All Ranges – Maneuvering Threats
Missile Defense Agency Priorities

- Continue focus on increasing system reliability to build warfighter confidence
- Increase engagement capability and capacity
- Address the Advanced Threat

BMDS Meets Today’s Threat but Requires Additional Capacity and Advanced Capability to Stay Ahead of the Evolving Threat
Aegis BMD’s Role in the BMDS

Homeland and Regional Defense
- Long Range Surveillance & Track Function Detects and Tracks in Early Ascent Phase Providing Forward Based BMDS Sensor Support

Regional Defense
- Ascent and Midcourse Engagement Capability Defeats Short, Medium & Intermediate Range Ballistic Missiles
- Terminal Defense Capability Defeats Shorter Range Missiles

Defending Against Homeland and Regional Threats in all Phases of Flight
Aegis BMD Program

Autonomous (2004) ✓
Launch on Remote (Ship to Ship) (2006) ✓
Launch on Remote (STSS-D) (2013) ✓
Launch from Ashore (2014) ✓
Engage on Remote (2018)
SPY-6 Integration (U.S. DDG Flight III at sea only) (2023)
Future Aegis Baseline Upgrades (2025)

Recent Flight Missions
SM-3 Blk IIA (SFTM-01) February 2017
SM-3 Blk IIA (SFTM-02) June 2017
SM-6 (FTM-27 Event 2) August 2017
SM-2 (FS-17 Event 3) October 2017
SM-3 Blk IBTU (FS-17 Event 4) October 2017
SM-6 (CTV-03) October 2017

Aegis Ashore
Hawaii Test Site (2014) ✓
Romania (2015) ✓
Poland (2018)
Aegis BMD Concepts of Operation
- Exploiting Off-Board Sensors -

Organic SPY and Cued SPY
SPY detects, tracks and provides fire control throughout threat flight

Launch on Remote (LoR)
Off-board sensor detects and provides fire control quality data to initiate engagement
Aegis SPY detects and tracks before intercept

Engage on Remote (EoR)
Off-board sensor detects, tracks and provides updates throughout threat flight – no organic SPY track
Aegis Ashore

Aegis Ashore Site
Deveselu, Romania

Aegis BMD Transition From Sea To Ashore

Aegis Ashore Site
Redzikowo Base, Poland
2018

Aegis Ashore Romania

AAMDTC, Pacific Missile Range Facility, HI

Poland Site Under Construction

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DDG 51 Flight III
AEGIS Baseline 10 Combat System
BMDS Baseline 6

Link 16 J3.4 Subsurface & Cooperative Engagement Capability with NIFC-CA

Forward & Aft Vertical Launch System

SPY-6 AMDR

4 - 14' Arrays

MK 160 Gun Fire Control System

BMD 6.0
- Discrimination with SPY-6
- SM-3 Block IB/IIA; SM-6
- Expanded Threat Space
- Raid Defense: Capacity, Density, Force-Level Coordination

Next Generation IAMD Capability
Concurrent Raids of Air & Ballistic Missile Threats

Close In Weapons System
Sensor Integration

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NIFC-CA: Naval Integrated Fire Control - Counter Air
Air and Missile Defense Radar (AMDR)

AN/SPY-6(V)1
Air and Missile Defense Radar (AMDR)

- Kill Assessment Support
- BMD Gued Acquisition
- Midcourse Track & Discrimination
- Terminal Track & Discrimination
- Threat Evaluation
- BMD Autonomous Search
- Electronic Protection
- AAW Area Defense
- Surface Warfare

- Integrated Air and Missile Defense (IAMD)
- Dedicated Track
- Non-Cooperative Target Recognition (NCTR)
- Anti-air warfare (AAW) Self-Defense
- 4-Face AAW Volume Search with DBF
- Surface Search and Track

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Ballistic Missile Defense Advanced Technologies

- Ground-Based Midcourse Defense Reliability
- Kill Assessment
- Multiple Kill Vehicles
- Enhanced Radar Coverage
- Advanced Discrimination
- Advanced Sensors
- Boost Phase Intercept

Improving Cost Effectiveness versus Complex Threats

Increasing Capability

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17-MDA-9434 (1 Dec 2017)
International Cooperation

**Asia / Pacific**
- THAAD deployment to ROK
- US-Japan SM-3 IIA Program
- Joint Analysis Activities

**Europe**
- NATO BMD IOC Declaration
- EPAA Phase III (2018)
- Formidable Shield-17

**Middle East**
- UAE THAAD FMS Execution
- Israeli Programs Cooperative Development, Testing & Coproduction
- Future FMS Engagement

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17-MDA-9432 (29 Nov 17)
Multinational Joint Integrated Air and Missile Defense Exercise – 8 nations, 14 ships, 3,300 personnel
Summary – MDA Priorities

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• Increase engagement capability and capacity

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