



AEGIS

BALLISTIC

MISSILE

DEFENSE

***Aegis Ballistic Missile Defense System
Briefing to NDIA MDD***

**RDML Brad Hicks, USN
Aegis BMD Program Director**

14 April 06

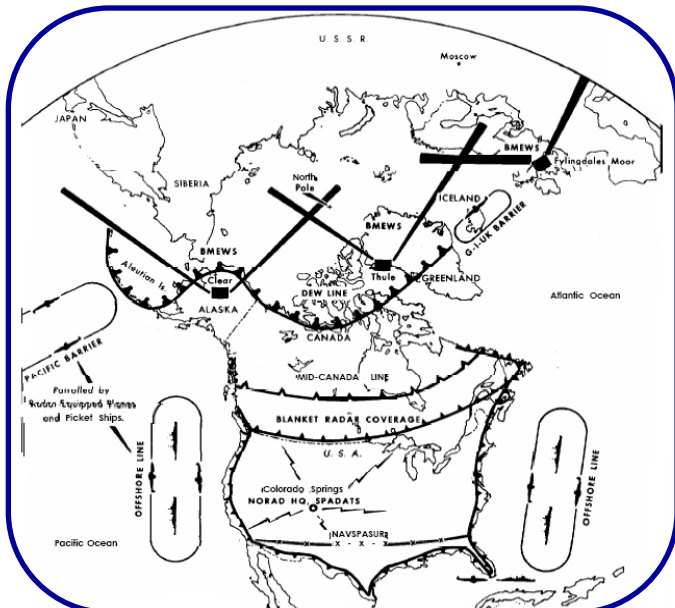
Agenda

- Where We've Been for Sea-Based Homeland Defense
- Missile Defense Agency and Aegis BMD
- Where Aegis BMD is Now

Sea Based Strategic Defense

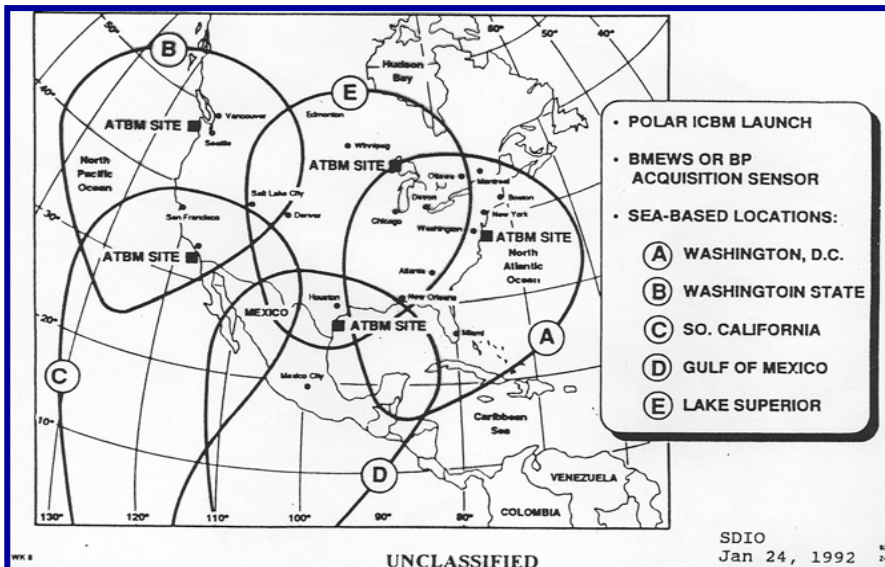
Cold War Sea-Based Strategic Defense of Homeland

Heritage



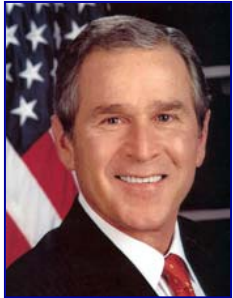
The Early Warning Picture Circa 1962

- First Defensive Line Established in 1951 With Pinetree Line in Southern Canada
- By 1954, Soviet Long-Range Bomber Development Led to Increased Funding for Early Warning September 1954, COMNAVFORCONAD (Commander Naval Forces Continental Air Defense) Established
 - Atlantic Barrier HQ: Argentia, Newfoundland
 - Pacific Barrier HQ: Barber's Point, HI
 - Between 1951 and 1957, 36 WWII Destroyer Escorts Were Converted to Radar Picket Ships for Support of CONAD (Then NORAD)
- DEW Line Established in 1957
- In the 1960's, the Growing Threat of Ballistic Missiles and Increased Capability of Early Warning Radars Lessened the Importance of Sea-Based Radar Defense
 - Picket Ships Stopped Patrolling in September 1965



Post Cold War Sea-Based Strategic Defense of Homeland-Concepts

Missile Defense Leadership



**Missile
Defense Agency**



Navy

“Today I am giving formal notice ... that the **United States of America is withdrawing** ... I have concluded the **ABM treaty hinders our government’s ability** to develop ways to protect our people from future terrorist or rogue state missile attacks.”

President Bush, 14 Dec 2001

Mission

Develop an Integrated Layered Ballistic Missile Defense System that Defends US, Deployed Forces, Allies, and Friends Against All Ranges of Missiles in All Phases of Flight

Goals

- Complete Development, Initial Fielding and Verification of Block 2004
- Provide Sustainment and Warfighter Support
- Develop a Totally Integrated Capability for Block 2006 and Beyond
- Execute an Increasingly Complex Test Program
- Establish a Robust International Foundation

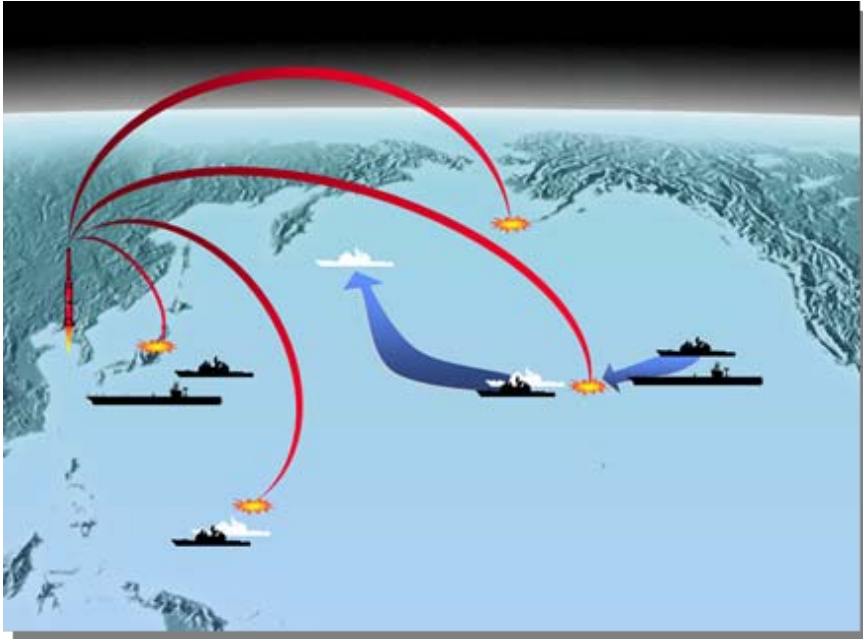
*Lt Gen Henry A. Trey Obering, III
Presented to MDA All Hands
30 November 04*

“Yes, Missile Defense is a Core Navy Mission. If Confirmed, I Will Ensure That the Navy Continues to Work with the Missile Defense Agency (MDA) to Develop and Field This Important Capability Aboard Naval Vessels.”

*Adm. Michael G. Mullen,
Nominated to be Chief of Naval Operations,
In Response to Questions from the
Senate Armed Services Committee
19 Apr 05*

Aegis BMD Contribution to the BMDS

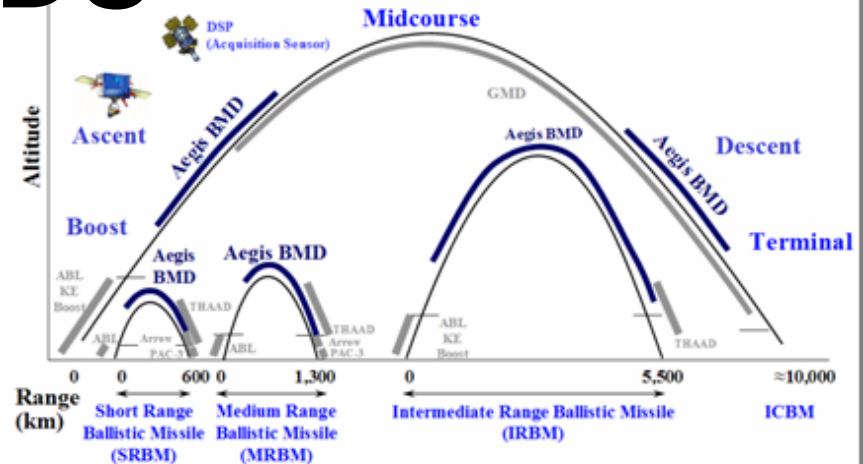
Flexible Forward Defense vs. Ballistic Missile Threats



- Autonomous Operations in International Waters Moves Ballistic Missile Defense Forward from U.S.
- Counter-Ballistic Missile Strike, Forward Presence, and Multi-Mission Capabilities
- Surge Capability Scalable by Force Level and Geographical Considerations

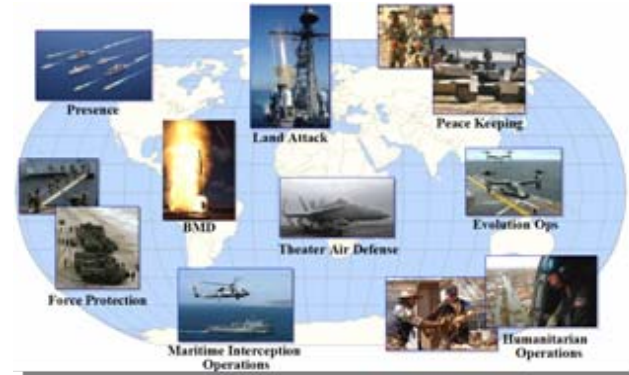
BMDS

Layered Defense



- Engagement
 - SM-3 Blk I (SRBM, MRBM, IRBM)
 - SM-3 Blk IIA (MRBM, IRBM, ICBM)
- Long Range Surveillance & Track (LRS&T)
 - Fire Control Quality Track Data for Other BMDS Engagement Elements

Global Presence



Aegis BMD Today - Block 04

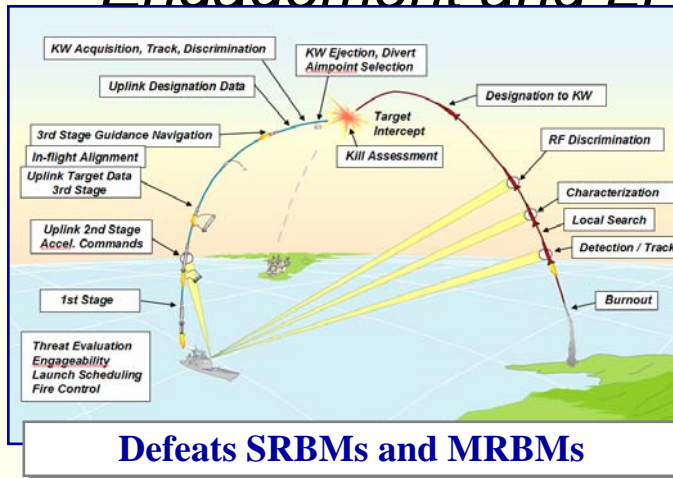
Engagement and LRS&T

- Preliminary Capability Spring 05**

- Cruiser (USS LAKE ERIE)
- Aegis BMD 3.0
- SM-3 BLK I

- Block 04 Capability Spring 06**

- Cruiser (USS SHILOH)
- Destroyer (End CY 06)
- Aegis BMD 3.6
- SM-3 BLK IA



BMD 3.0 - Initial Engagement

USS LAKE ERIE (CG 70)

USS PORT ROYAL (CG 73)

2 Ships

- "Ready for Fleet Issue" - 17 Nov 2004

IDR 6-11

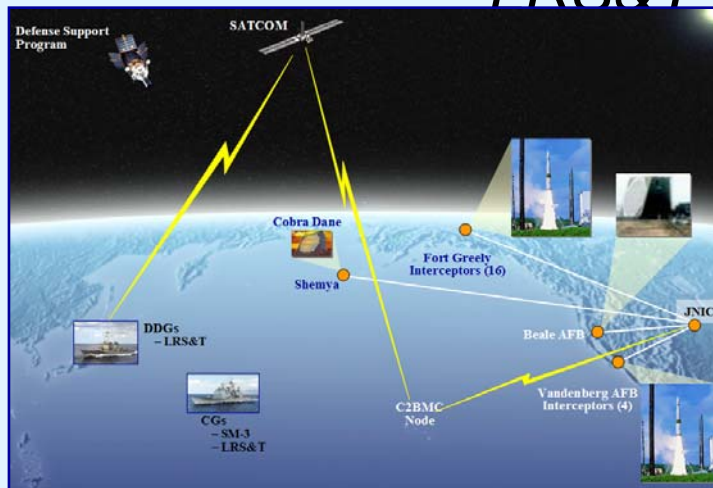
LRS&T

- Preliminary Capability Sep 04**

- Destroyers "On Alert"
- Aegis BMD 3.0E

- Block 04 Capability Spring 06**

- Cruiser Aegis BMD 3.0 and 3.6 (USS CURTIS WILBUR)
- Destroyer (End of CY06) Aegis BMD 3.6



Forward Based BMDs Surveillance

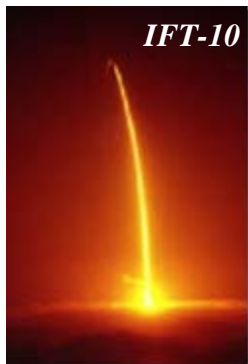
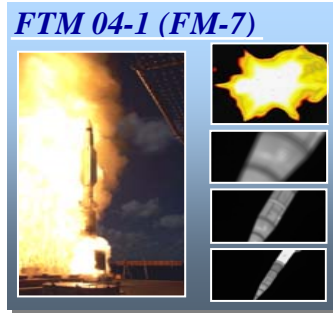
BMD 3.0E - LRS&T

11 Ships

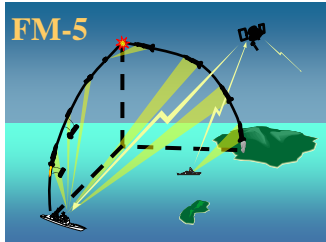
- Detect and Track ICBMs
- Transmit Target Data to GMD Via Satellite Link 16
 - Generate Target Acquisition Cue for GMD Radar
 - Support GMD Interceptor Weapon Task Plan (WTP) Initialization

Flight Testing to Date

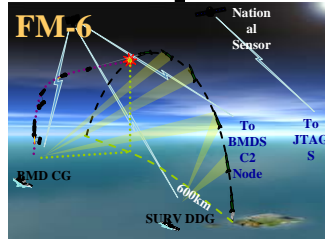
6 Out of 7 Successful Intercepts



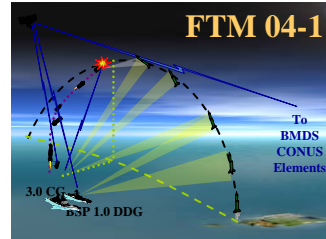
Progressively Increasing Operational Realism



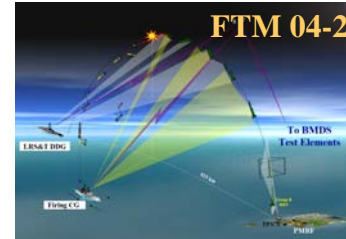
- Mission Conducted By Navy Crew on Operational Aegis CG & DDG
- Threat Rep Target/Trajectory/Payload
- Tactical Mission Timeline
- Ship Maneuver During Engagement Process, SPY Array Face Transition
- Satellite Link-16 w/ BMDS



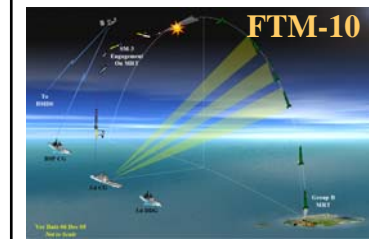
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- Satellite Link-16 w/ BMDS
- No Notice Target Launch
- Ship Patrol Areas
- Tactical Voice Communications with BMDS
- Cued Acquisition Doctrine
- Kill Assessment
- National Sensor Participation
- Operational / Intel Scenario Overlay



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- Mission Planner Utilization
- COMTHIRDFLT in Tactical Command



- Mission Conducted By Navy Crew on Operational Aegis CG & DDG
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- Operational / Intel Scenario Overlay
- Mission Planner Integrated
- COMTHIRDFLT in Tactical Command
- SM-2 Engagements
- PACOM/STRATCOM Participation

“Test events were conducted under increasingly operationally realistic conditions with the involvement of the Navy Operational Test Agency”

- DOT&E FY05 Annual Report

Progressively Increasing Operational Realism

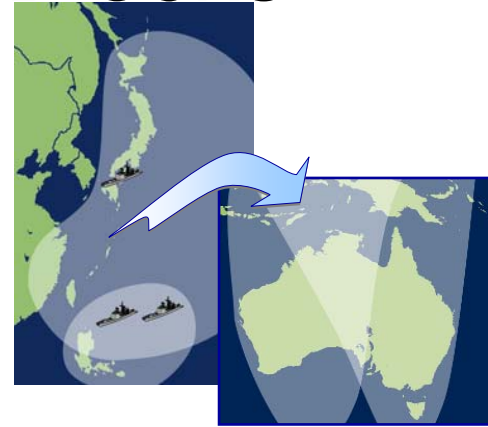
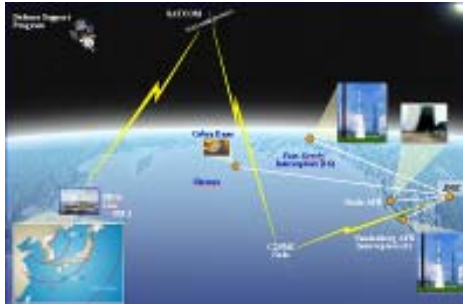
Added Test Objectives From Previous Test

- Supports An Increasingly Capable BMDS -



Where Aegis BMD is Going

- By Development Blocks -



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Block 2004

- Defeat SRBMs and MRBMs
- Surveillance Support to BMDS

- Long-Range Surveillance and Tracking (BMD 3.0E)
- Preliminary Engagement Capability (BMD 3.0)
- Launch on TADIL
- Block 2004 (BMD 3.6)
- SM-3
 - Block I
 - Block IA

- 4 JMSDF Aegis Ships Engagement Capability
- JCR Missile Component Testing

Block 2006/08

- Enhanced Use and Support of BMDS ESGs
- SRBM, MRBM & Limited IRBM Defense

- Improved Feature Extraction, Object Classification, Automated Designation and Kill Assessment
- Improved Engagement Capability
- Improved BMDS C2, BM&C Performance
- Increased Battlespace
- SM-3
 - Block IA
 - Block IB

- 4 JMSDF Aegis ships engagement capability
- U.S. / Japan Radar and OA Co-Research

Block 2010/12/14

- Enhanced Use and Support of BMDS ESGs
- SRBM, MRBM Limited IRBM & Some ICBM Defense

- Convert Program for Broader US and International Ship Population
 - Open Architecture
- Enhanced Feature Extraction, Object Classification, Automated Designation and Kill Assessment
- Improved Intercept Capability
 - Increased Divert Utilizing TDACS (SM-3 Blk IIA KW)
 - Larger Diameter KW
 - 21" Propulsion
- Improved BMDS C2, BM&C Performance
- Increased Battlespace
 - SM-3 Blk IIA
 - Engage on Remote

- 4-6 JMSDF Aegis Ships Engineering Capability
- SM-3 Block II / IIA (21" Missile) Missile Co-Developed
- U.S. / Japan Radar and OA Co-Research

Japan SM-3 Cooperative Development Program

- The 21" SM-3 Missile (SM-3 Block II / IIA) in Combination with Remote Data Provided by BMDS Sensors Upgrades will

- Increase the Area That Can be Defended
- Increase the Probability of Kill Against a Larger Threat Set

- Aegis BMD Performance Upgrades will

- Exploit the Capability of the SM-3 Block II / IIA
 - Modifications will First Increase Velocity Then Increase Divert
- Exploit Use of Threat Track Data From BMDS Sensors

- Biggest Joint DoD Program - Ever

- PB06 Program Assumes Japan Participation at 50%

- PB06 Program Assumes Development Commences FY07



Potential Coalition Naval BMD Opportunities

Opportunities



UK

- BMD Framework MOU & Annex
- Type 45 Destroyers (12)
- S1850M (L-Band) & APAR



Germany

- F 124 Frigates (3)
- SMART-L (L-Band) & APAR



Republic of Korea

- KDX-III



Netherlands

- LCF Frigates (3)
- SMART-L (L-Band) & APAR



Spain

- MK 41 VLS
- F-100 Aegis Frigates (4)



Japan

- BMD Framework MOU & Annexes
- Kongo Aegis Destroyers (4)



Italy

- Horizon Frigates (6)
- S1850M (L-Band) & SAMPSON (S-Band)
- SYLVER VLS



NATO

- Phase 2 of NATO BMD Study



Australia

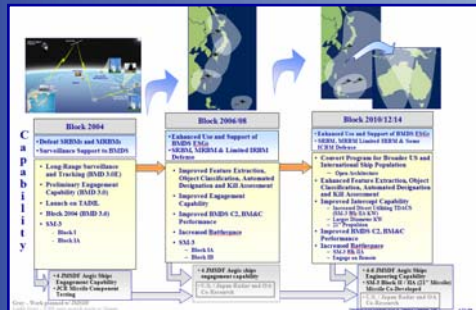
- BMD Framework MOU & Annexes

- Planned Purchase of 3 Aegis Based Air Warfare Destroyer

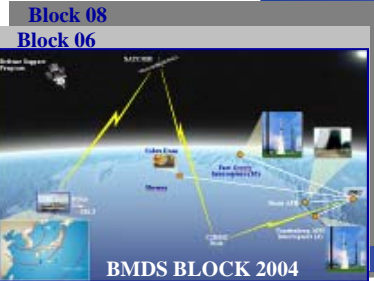


Summary

- **Aegis BMD is at Sea Today**
 - Aegis BMD Destroyers Conducting Missile Defense Patrol Operations
 - SM-3 Block I Delivered, Aegis BMD Cruisers Ready for Emergency Activation Order
 - Aegis BMD 3.6 Certifies Aug 06. Six Ships by End of CY06
 - SM-3 Blk IA Delivery Starts Sep 06
- **Aegis BMD will Become More Capable Through Block Upgrades**
 - Able to Engage Increasingly Longer Range and More Sophisticated Ballistic Missiles
 - Next Upgrade is Aegis BMD 4.0.1 Which Includes BSP
- **Japan is Our First Ally to Pursue Aegis BMD and SM-3 Missiles**
 - Japan and the United States Plan to Pursue Cooperative Development of a 21 Inch Diameter SM-3, the SM-3 Block II/IIA
- **Interest in Maritime Ballistic Missile Defense is Growing in a Number of European and Pacific Rim Nations**



Block IA	Block IB	Block II	Block IIA
<p>Block 2004</p> <ul style="list-style-type: none"> • 1 Color Seeker • Pulsed DACS 	<p>Block 2008</p> <ul style="list-style-type: none"> • 2 Color Seekers • Increased IR Acquisition • Improved Discrimination • TDACS • Increased Divert • Lower ALR Cost • AB Reflective Optics (ARDO) • Advanced Signal Processor (ASP) 	<p>Block 2010-2012</p> <ul style="list-style-type: none"> • High Velocity Variant • Block II Seeker • 21" Propulsion • 204 #5 Stage • Increased Missiles • V_{max} = 9.8 • 21" Nosecone • MK 41 VLS Compatible 	<p>Block 2012-2014</p> <ul style="list-style-type: none"> • Large Diameter KW • Air Divert Seeker • High Divert DACS • 21" Propulsion • 204 #5 Stage • Increased Missiles • V_{max} = 13 • 21" Nosecone • MK 41 VLS Compatible
<p>Legend: ■ Fulfilled Since FY06 ■ Capability Change From Previous Block</p>			



“AEGIS BMD - WE DELIVER”