

**AEGIS
BALLISTIC
MISSILE
DEFENSE**



***Aegis BMD Overview for the
Annual Missile Defense Small Business Programs Conference
RDML Joe Horn
21 July 2011***



U.S. Phased Adaptive Approach

Contributes To NATO Missile Defense

Aegis BMD

Phase 1 (By 2011)

Initial capability against SRBMs, MRBMs, and IRBMs, enhanced homeland defense



Aegis BMD 3.6.1 with SM-3 IA



AN/TPY-2 (FBM)



C2BMC AOC Ramstein

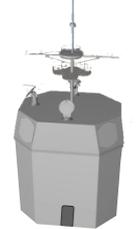
ALTBMDC Interim Capability

Phase 2 (By 2015)

Robust capability against SRBMs and MRBMs



Aegis Ashore 5.0 with SM-3 IB (one site)



Aegis BMD 4.0.1/5.0 with SM-3 IB



AN/TPY-2 (FBM)



C2BMC Updates

ALTBMDC Lower Tier

Potential EPAA Enhancements



THAAD

Phase 3 (By 2018)

Robust capability against IRBMs



Aegis BMD 5.1 with SM-3 IIA



Aegis Ashore 5.1 with SM-3 IB/IIA (two sites)



AN/TPY-2 (FBM)



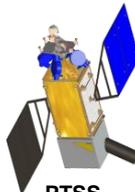
C2BMC Updates

ALTBMDC Upper Tier

Potential EPAA Enhancements



THAAD



PTSS



ABIR

Phase 4 (By 2020)

Early intercept capability against MRBMs and IRBMs; and ICBMs from today's regional threats



Aegis BMD 5.1 with SM-3 IIA



Aegis Ashore 5.1 with SM-3 IIB (two sites)



AN/TPY-2 (FBM)



Enhanced C2BMC

Potential EPAA Enhancements



THAAD



PTSS



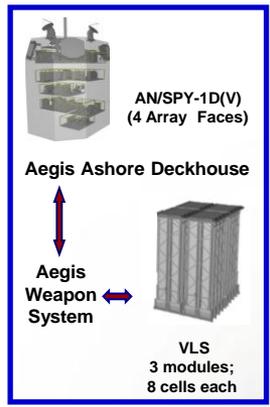
ABIR



Aegis BMD Program

Aegis BMD

- Autonomous (2004)
- Launch on Remote (Ship to Ship) 2006
- Launch on Remote (BMD Sensors) 2008
- Engage on Remote

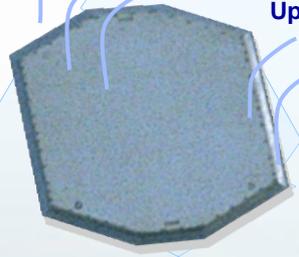


Aegis Ashore 2015
Hawaii Test Site 2013

Open Architecture 2012



Aegis Ballistic Missile Defense Signal Processor (BSP) Upgrade 2010 (Testing)



Radar System AN/SPY-1

SM-3



Bik I / IA / IB
2004/2006/2013



Bik IIA
2018



Bik IIB
2020

Sea-Based Terminal



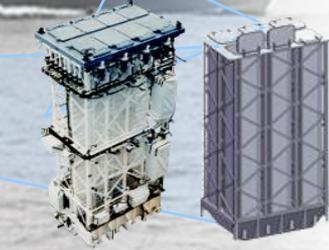
SM-2
Bik IV
2008
Near Term



SM-6
Missile
2015
Incr 1



SM-6
Missile
2018
Incr 2



Vertical Launching System Mark 41

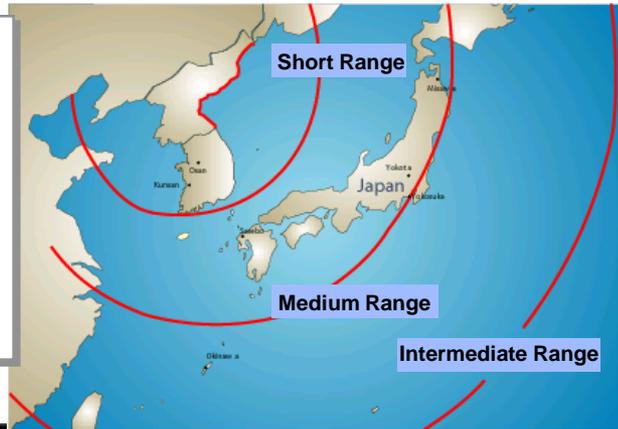
SM-3 Block IIB VLS Concept



Aegis BMD's Role In The BMDS

Aegis BMD

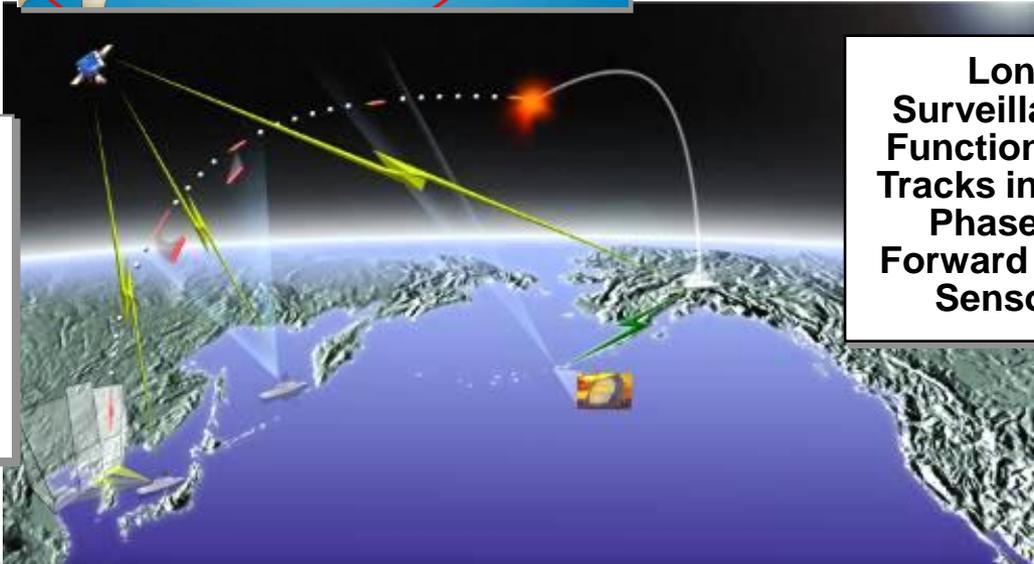
Ascent/Midcourse Engagement Capability Defeats Short, Medium & Intermediate Range Ballistic Missiles



Terminal Defense Capability Defeats Shorter Range Ballistic Missiles

Future Adding Early Intercept Capability

Anti-ICBM w/SM-3 Blk IIB (Aegis Ashore)



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

Proven Against Single Salvo, Dual Salvo & Separating Targets



Aegis BMD Fleet Today (July 2011)

Aegis BMD

| SM-3 Bk I Deliveries | |
|-----------------------|--|
| CY04 USA | FM-7 FM-8 PB 08 |
| CY05 USA | |
| SM-3 Bk IA Deliveries | |
| CY06 USA | FTM-10 |
| CY07 USA | FTM-11 FTM-11a FTM-12 FTM-13 (2) Burnt Frost |
| CY08 USA | |
| CY09 USA | FTM-17 |
| CY10 USA | |
| CY11 USA | FTM-15 SM-3 Block IA SM-3 Block IB |

| SM-2 Bk IV Deliveries (75) | |
|-------------------------------|--|
| FTM-14 (2) Stellar Daggers | |

| Norfolk BMD Ships | |
|-------------------|--|
| VELLA GULF | |
| MONTEREY | |
| RAMAGE | |
| STOUT | |
| *COLE | |
| *LABOON | |

| | |
|----------------------|--|
| BARRY (FY11) | |
| MAHAN (FY12) | |
| ROSS (FY12) | |
| ARLEIGH BURKE (FY12) | |
| DONALD COOK (FY12) | |



| SDGO BMD Ships | |
|-----------------|--|
| DECATUR | |
| BENFOLD | |
| MILIUS | |
| HIGGINS | |
| JOHN PAUL JONES | |

| Mayport Based BMD Ship | |
|------------------------|--|
| THE SULLIVANS | |
| CARNEY (FY12) | |

| Japan Maritime Self Defense Force | |
|-----------------------------------|--|
| KONGO | |
| CHOKAI | |
| MYOKO | |
| KIRISHIMA | |

| YOKO BMD Ships | |
|----------------|--|
| SHILOH | |
| STETHAM | |
| CURTIS WILBUR | |
| JOHN S. MCCAIN | |
| FITZGERALD | |

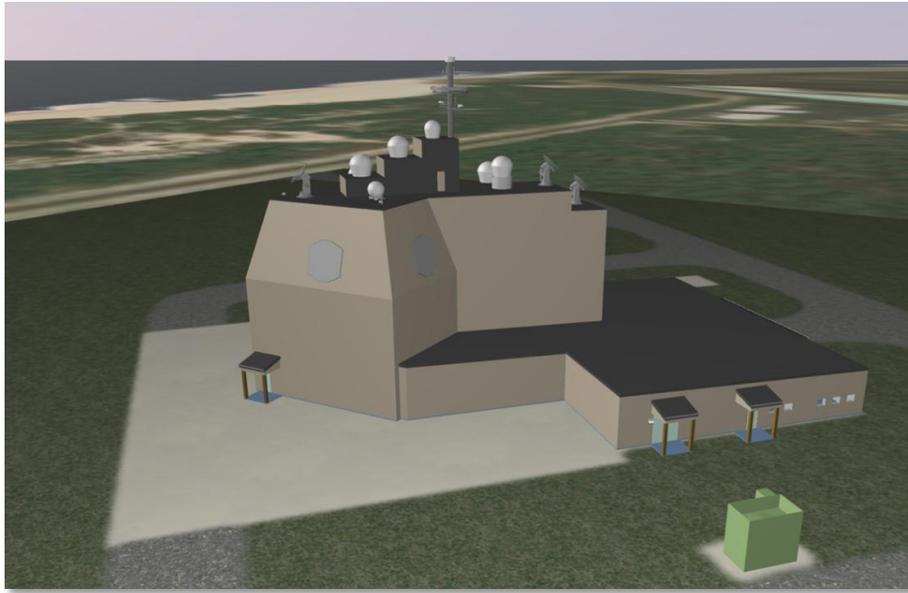
| PHBR BMD Ships | |
|-----------------------|--|
| LAKE ERIE (4.0.1 EDM) | |
| PORT ROYAL | |
| RUSSELL | |
| O'KANE | |
| PAUL HAMILTON | |
| HOPPER | |

* Not Yet Certified



Aegis Ashore Missile Defense Site

Aegis BMD



Aegis Ashore Conceptual Drawing

Aegis Ashore Proposed Laydown at Romanian Site

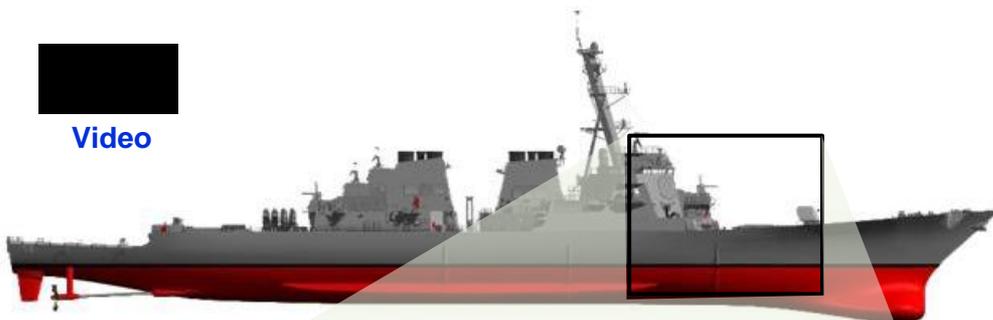




Aegis BMD Transition From Sea To Ashore

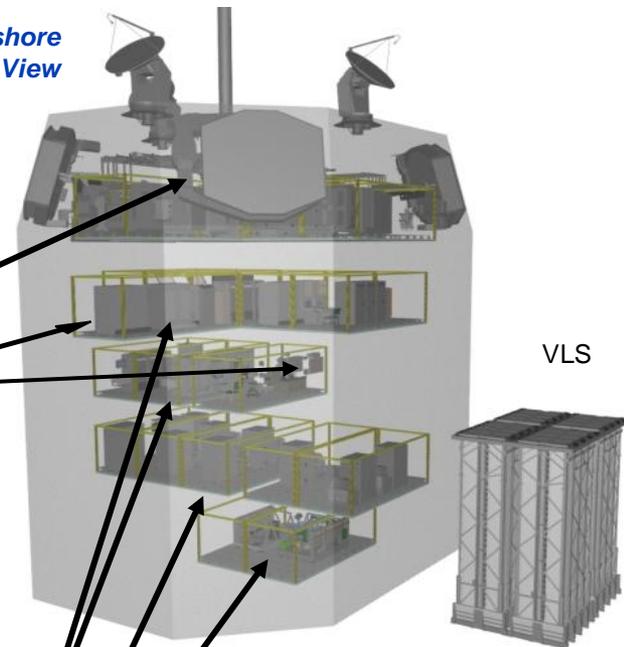
Aegis BMD

Video



U.S. Navy Destroyer (DDG 113)

Aegis Ashore
Conceptual View



VLS

SPY Radar and FCS

CSMC

CIC

VLS

Processors

Power Supplies

Water Coolers

Acronyms:

FCS

Fire Control System

CSMC

Combat System Maintenance Central

CIC

Combat Information Center

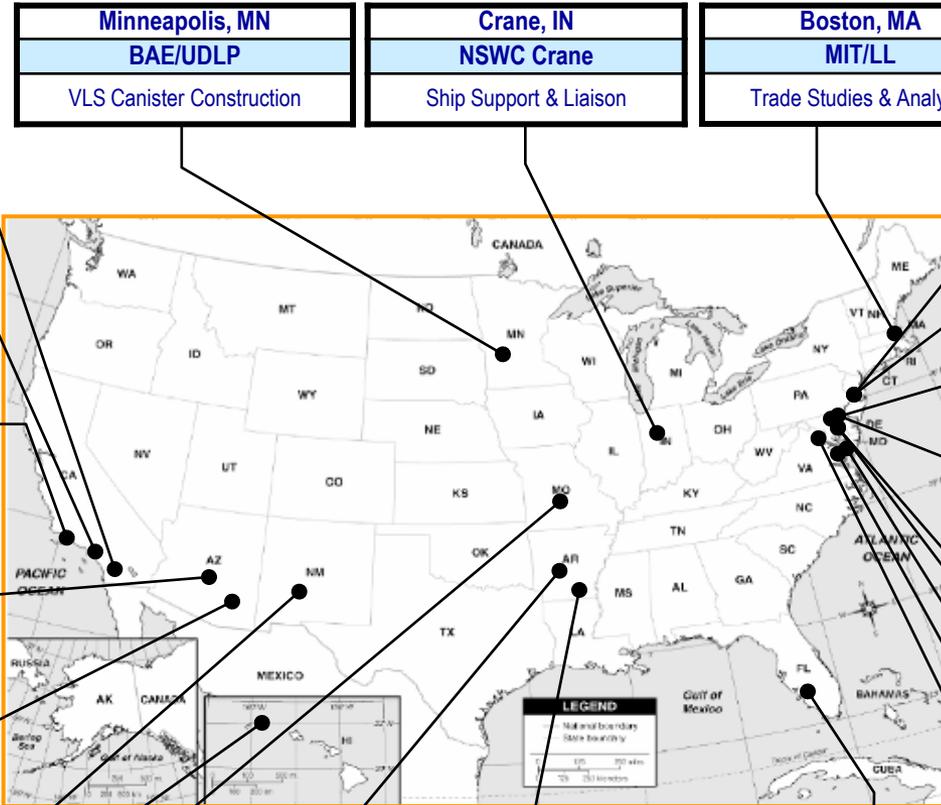
VLS

Vertical Launch System



Major Field Activity / Contracting Activity

Aegis BMD



Canoga Park, CA
Boeing
Kinetic Warhead Assembly

Corona, CA
NSWC Corona
Operational & Test Analysis

Port Hueneme, CA
NSWCPHD
Live Fire Test Support, Fleet Logistics, Fleet Operations

Tempe, AZ
Honeywell
Inertial Nav Units for SM-3 & Other Components

Tucson, AZ
Raytheon
SM-3 Missile Dev. Upper Stage Assembly

White Sands, NM
WSMR
T&E CONUS Support

Barking Sands, Kauai
PMRF
Live Fire Test Shore Support

Joplin, MO
Eagle Picher
SM-3 Microelectronics Including Batteries

Camden, AR
Raytheon
SM-3 Assembly

Camden, AR
Aerojet
MK72 / MK19

Minneapolis, MN
BAE/UDLP
VLS Canister Construction

Crane, IN
NSWC Crane
Ship Support & Liaison

Boston, MA
MIT/LL
Trade Studies & Analysis

Moorestown, NJ
MSC
Combat System Software Development

Moorestown, NJ
LM/MS2
Combat System Engr. Agent, Weapon System Development

Elkton, MD
ATK
TSRM /SDACS Development

Laurel, MD
APL
Technical Direction Agent for the Program Office

Baltimore, MD
LM/MS2
VLS Engr. Development & Support

Indian Head, MD
NSWC Indian Head
EXCOM Support

Wallops Island, VA
SCSC
Weapon Systems Checkout & Certification

Dahlgren, VA
NSWCDD AB
Lifetime Support Engr. Agent & Certifying Authority Program Office

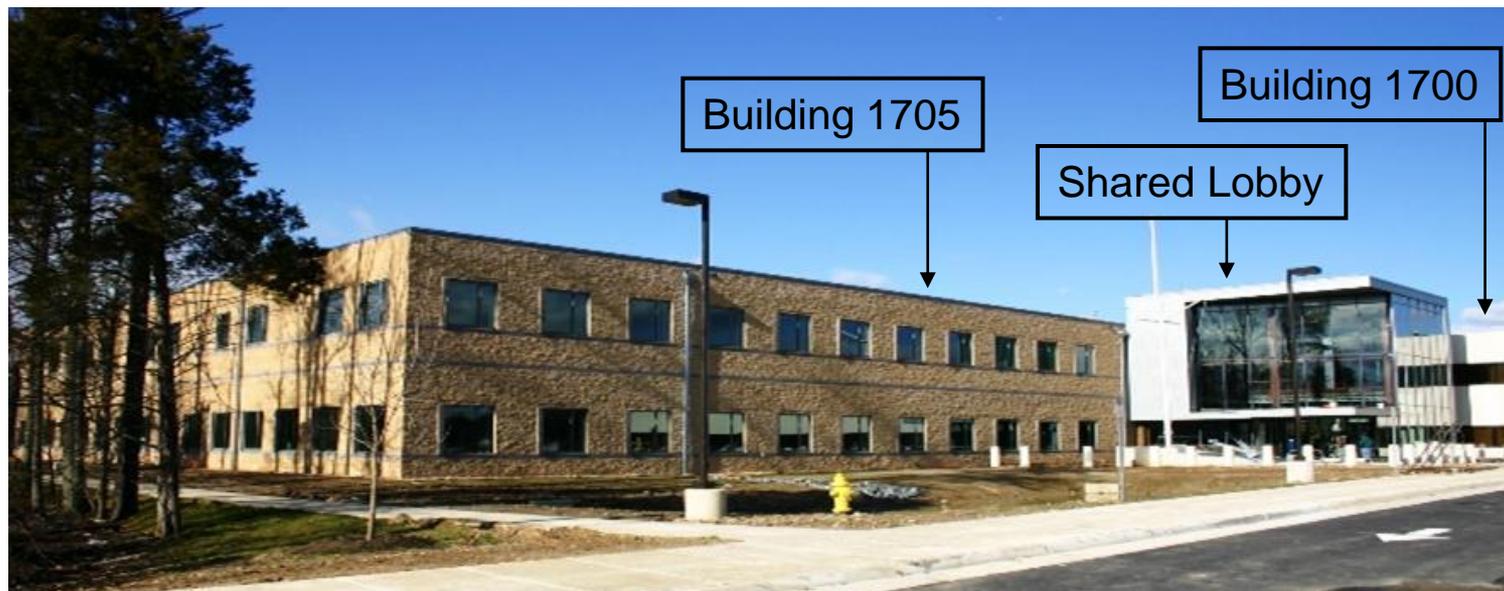
Clearwater, FL
LM
Defense Computer Systems, Navigation & Guidance Systems, Radar & Sonar Systems, Electro Optics

Arlington, VA
GDIT
Program Office Support



Aegis BMD HQ Building #1705, Dahlgren

Aegis BMD



- **Aegis BMD has occupied Building 1705 since August 2007; additional building under construction with completion in 2012**
 - Some Aegis functions still housed in temporary facilities at Dahlgren
- **FY11 Manpower**
 - Program Office size: 456
- **Aegis BMD Huntsville Footprint increasing**



Economic Impact to Community

Aegis BMD

- **Aegis BMD's Annual Budget ~ \$2B per year**
 - Annual Payroll - \$100M in the Program Directorate
 - Prime Contractors – Lockheed Martin and Raytheon
 - Engineering tasking to NSWC Dahlgren ~ \$100M per year
 - New building under construction – 60,000 sq. ft / \$16M





Huntsville Manufacturing Capability Implementation

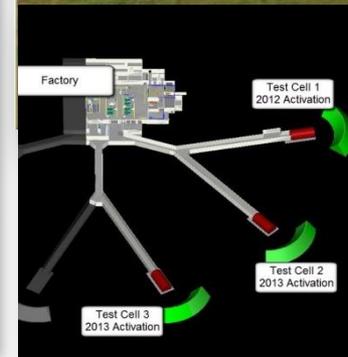
Aegis BMD

- **Standard Missile evolution drives need for new facility**
- **Mission Assurance enhancements and Safety are the primary focus of facility design**
- **Redundant capability will be maintained until full process maturity is demonstrated**
- **Time phased activation of SM-3 capability based on completion of Knowledge Points**



Notional

Facility Concept



SM-3 Block IIA



Sea-Based Ballistic Missile Defense International Activities

Aegis BMD

United Kingdom (UK):



- MDA Framework MOU
 - RDT&E Annex
- Exploring potential for Link-16 Implementation and Test on Type 45 Destroyer
- Conducted US/UK BMD Workshops (2010/2011)

Netherlands:



- LCF Frigates (3) SMART-L (L-Band) APAR, MK 41 VLS
- Conducting Ballistic Missile Defense Capability Feasibility Studies. Phase I completed
- Liaison Officer onsite at Aegis BMD

Japan:



- Upgraded 4 KONGO DDGs to JB1.X; Equivalent BMD Capability to USN BMD 3.6
- First Engagement Capable Ally in Dec 07
- Largest BMD Co-Development - SM-3 BIK IIA Co-Development – Flight Test in 2016/17
- JFTM-4 successfully completed in Oct 2010
- Liaison Officer onsite at Aegis BMD

Spain:



- 4 Aegis (F-100) Ships: B/L 5.3, SPY-1D, MK 41 VLS
- 2 Additional Aegis Ships w/B/L 7.1
- F-104 participated in FTM-12 and Detected and Tracked a Ballistic Missile

Denmark:



- Plan to Build 3 Patrol Frigates
- SMART-L/MK 41 VLS

South Korea:



- 3 Aegis Ships under construction
- KDX-III Destroyers
 - B/L 7.1
 - Have requirement for Sea Based Terminal Capability

Germany:



- F 124 Frigates (3)
 - SMART-L (L-Band) & APAR
 - MK 41 VLS
- Plan to implement LRS&T Capability
- Liaison Officer onsite at Aegis BMD

NATO ALTBMD:



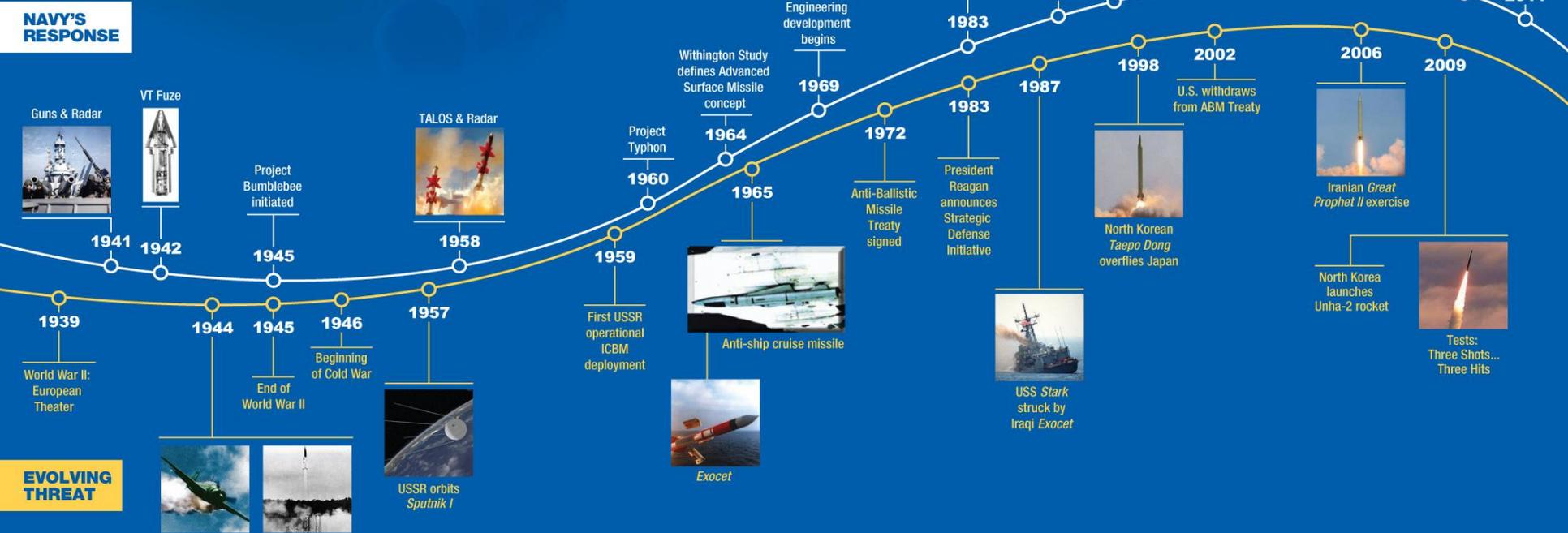
- Aegis BMD provided Sensor Support to Initial Lower Tier Efforts
- Ensemble Test 1 successfully completed Dec 2010
 - First Multi-Nation Test

Australia:



- 3 Aegis Ship Procurement (DDG 101-103)
 - ACB-08
 - Planning to conduct study to Investigate Path to BMD Capability
- MDA Framework MOU
 - 07 July 2004

- Aegis BMD capability is at sea
- Aegis BMD is operationally suitable and effective
 - Demonstrated ability to defeat short, medium and intermediate range ballistic missiles
 - EPAA Phase I architecture demonstrated
- Force structure capacity and capability increases rapidly over the next 5 years



This success story began in the 1940s, and we are just getting started ...



Aegis Ballistic Missile Defense

Aegis BMD

Video

Forward...At Sea...On Patrol

Enabling Capabilities, Providing Options for U.S. and Allies