

Ballistic Missile Defense Overview



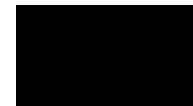
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To: Center For Strategic And International Studies

**By: Brigadier General Kenneth Todorov, USAF
Deputy Director
Missile Defense Agency
April 7, 2015**



The Increasing Ballistic Missile Threat



Taepo Dong-1 Launch, August 1998



***North Korean Taepo Dong-2
SLV Launch, December 2012***



***Missile Launches in Iranian
Noble Prophet III Exercise 2009***



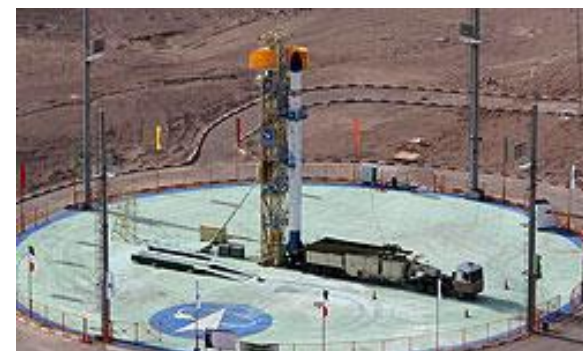
***Iranian Ashura
2-stage solid
MRBM launch
2012***



***North Korean Mobile IRBM
on Parade, April 2012***



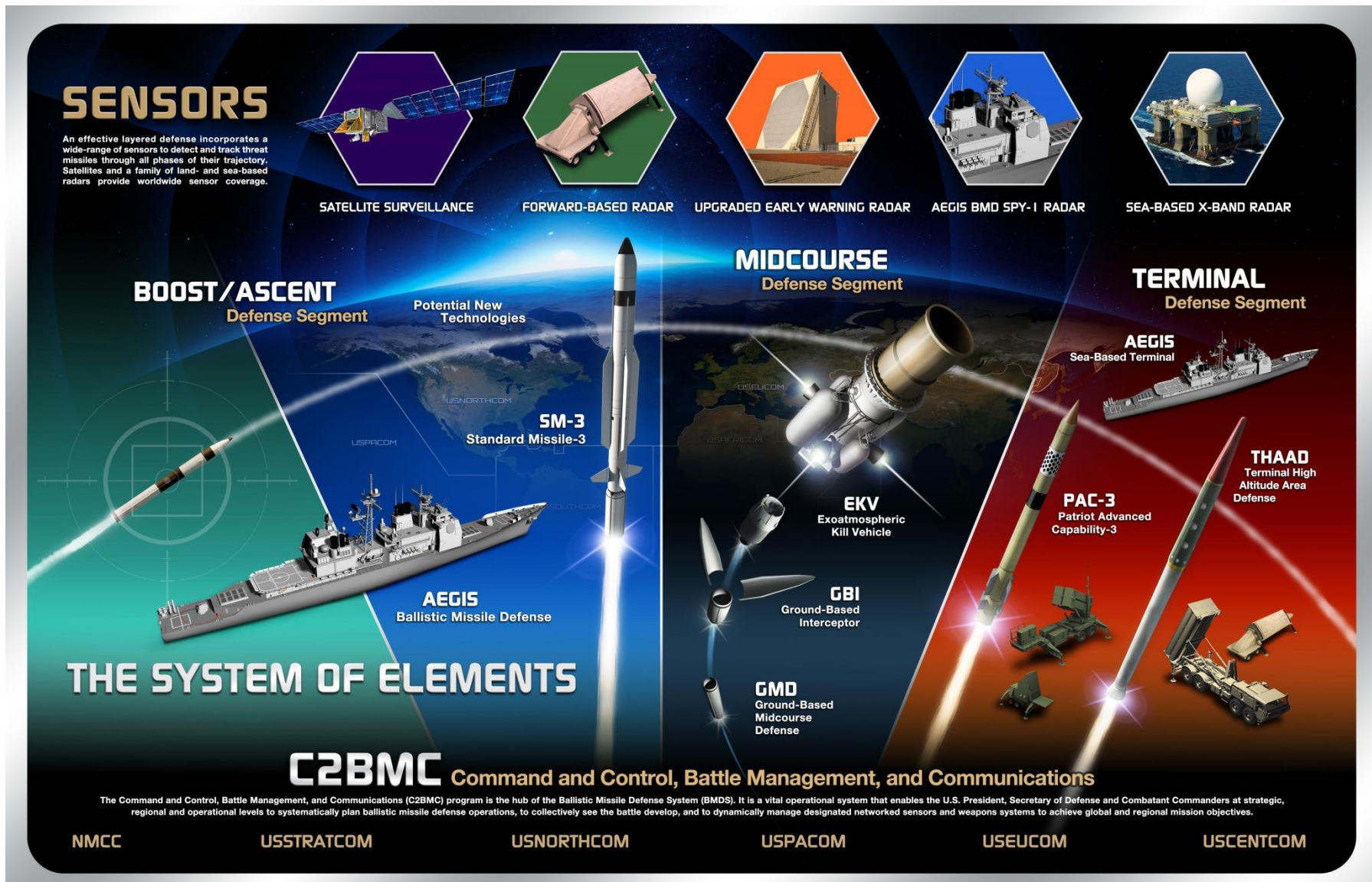
***North Korean KN08 ICBM
Launcher on Parade, 2012***



Iranian Safir SLV on launch pad, 2011



Today's Ballistic Missile Defense System





Ground-Based Midcourse Defense



Upgraded Early Warning Radars



Exoatmospheric Kill Vehicle



Ground-Based Interceptor (GBI)



Ft Greely, AK

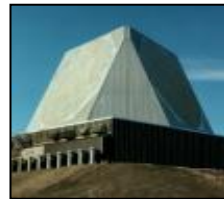


Vandenberg AFB, CA

Missile Fields



Cobra Dane



Thule



Beale AFB



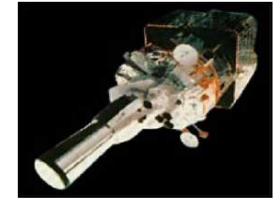
**Clear AFS
2017**



Fylingdales



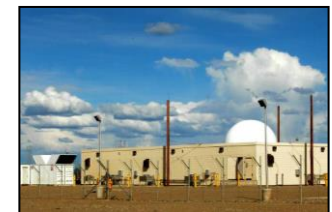
**Cod Radar
2018**



**Space-based
Infrared Sensor**



**Missile Defense
Integration Operations
Center, C2BMC**



**Ft. Drum IFICS Data Terminal
(IDT) Construction (2015)**



**CTV-01
26 January 2013**

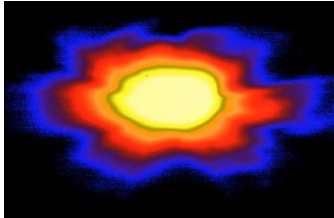


**FTG-06b
22 June 2014**

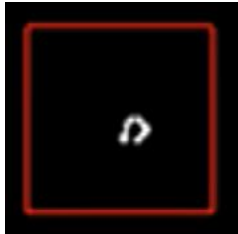
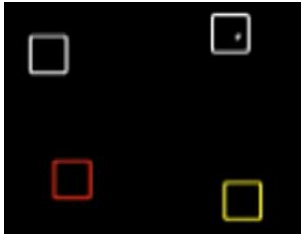


FTG-06b Mission Overview

– Successful Intercept –



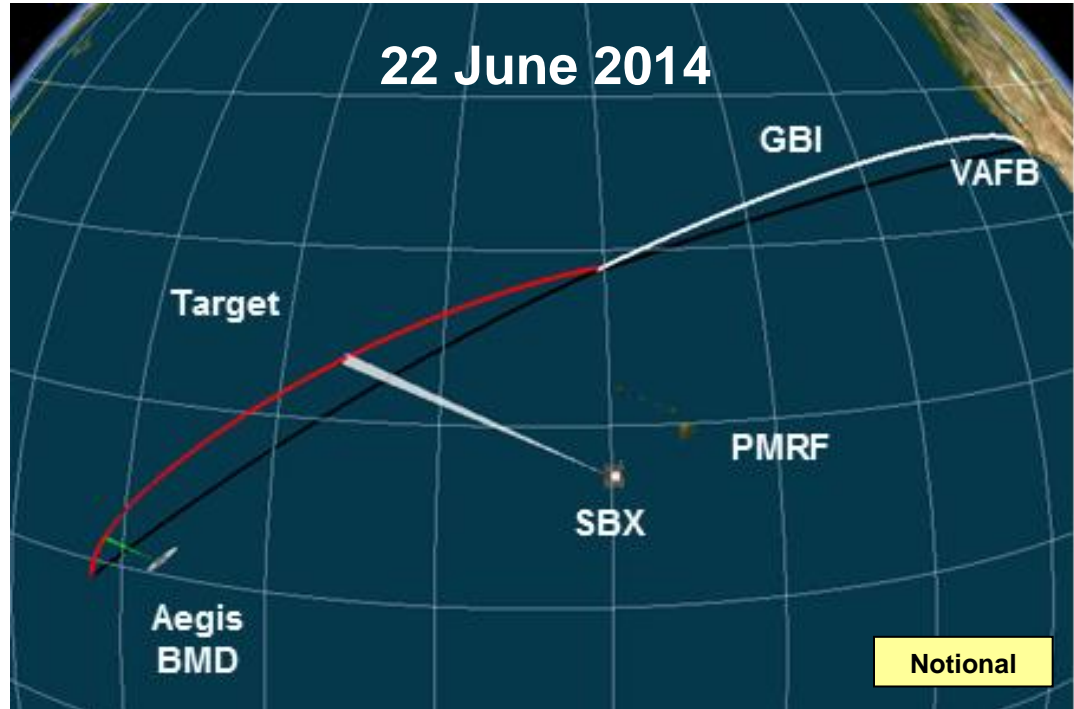
Intercept



Exo-atmospheric Kill Vehicle Target Scene



GBI Launch from Vandenberg AFB

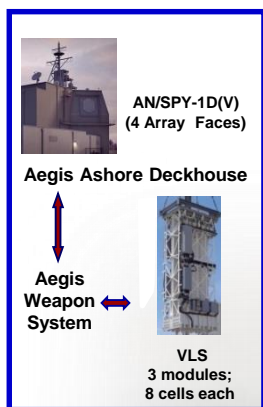


- ✓ Capability Enhancement-II , Exo-atmospheric Kill Vehicle Intercepted a long-range target
- ✓ USS Hopper (Aegis BMD ship) acquired the target and sent track data to the Command, Control, Battle Management, and Communications (C2BMC) system
- ✓ C2BMC forwarded Aegis BMD track data to GMD Fire Control
- ✓ Sea-Based X-band Radar provided track data on the target complex to the GFC



Aegis BMD Program

- Autonomous (2004) ✓
- Launch on Remote (Ship to Ship) 2006 ✓
- Launch on Remote (BMD Sensors) 2008/2011/2013 ✓
- Launch on Remote (STSS-D) 2013 ✓
- Launch from Ashore (2014) ✓
- Launch in Integrated Air and Missile Defense (IAMD) Priority Mode (2014) ✓
- Engage on Remote



Aegis Ashore
Hawaii Test Site 2014 ✓
Romania (2015)
Poland (2018)

Open
Architecture 2014 ✓

Aegis Ballistic Missile
Defense Signal
Processor (BSP) Upgrade
2012 ✓

Aegis Ballistic Missile
Defense Multi-Mission
Signal Processor
(MMSP) Upgrade
2014 ✓

Radar System
AN/SPY-1

SM-3



Blk I / IA / IB
2004/2006/2014



Blk IIA
2018

Sea-Based Terminal



SM-2
Blk IV
2008
Near
Term ✓



SM-6
2015



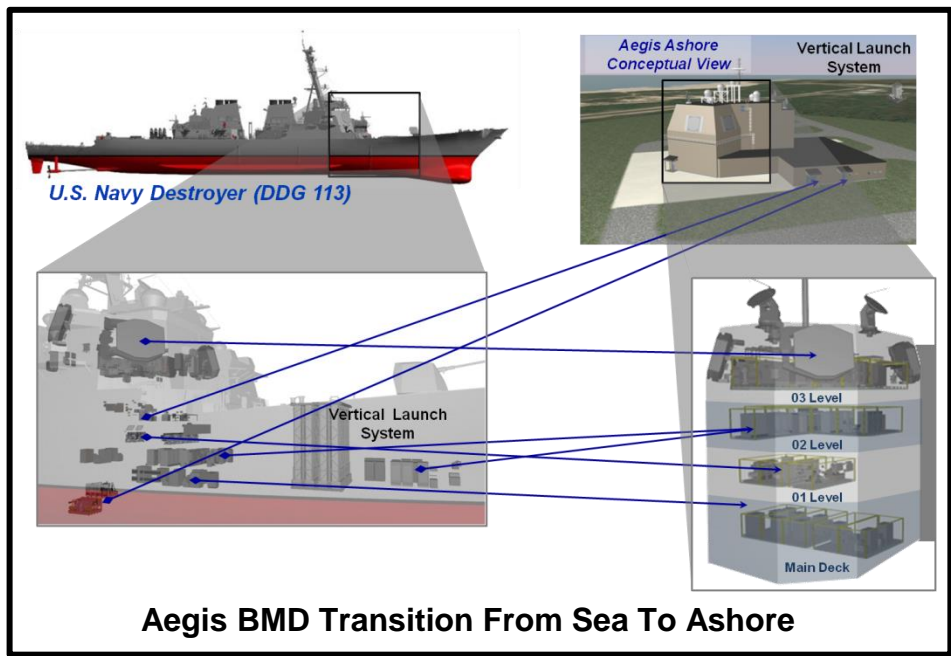
Vertical
Launching
System Mark 41



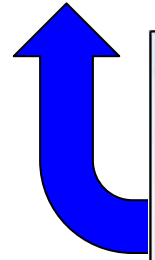
Aegis Ashore



Aegis Ashore Site
Deveselu, Romania
2015



Aegis Ashore Site
Redzikowo Base, Poland
2018



Aegis Ashore - Moorestown, NJ



Deckhouse



Vertical Launch System

**Aegis Ashore
Missile Defense Test Complex, Hawaii**



Terminal High Altitude Area Defense (THAAD)

Army Deployment Plan

- Requirement: 9 THAAD Batteries
- MDA to field 7 Batteries by 2019
- Army Fielding Plan
 - 3 Batteries Forward Deployed with Regional Combatant Commands
 - 3 Batteries Stateside in Rotational / Sustainment Force
 - 1 Battery Global Response Force

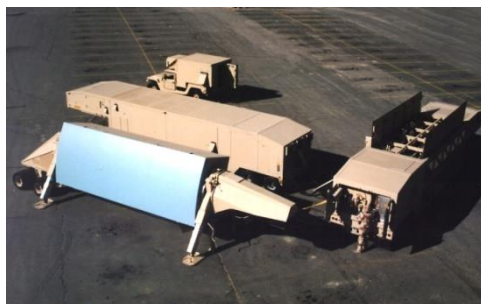
Interceptor



Launcher



Radar*



***Also can function as a forward-based radar**

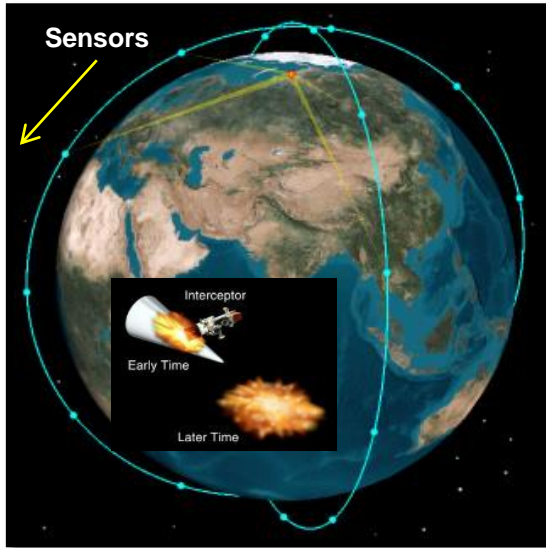
THAAD Fire Control and Communications (TFCC)



THAAD: 11 for 11 Intercepts



Technology



MDA Space Center



**Common
Kill Vehicle
Technology**



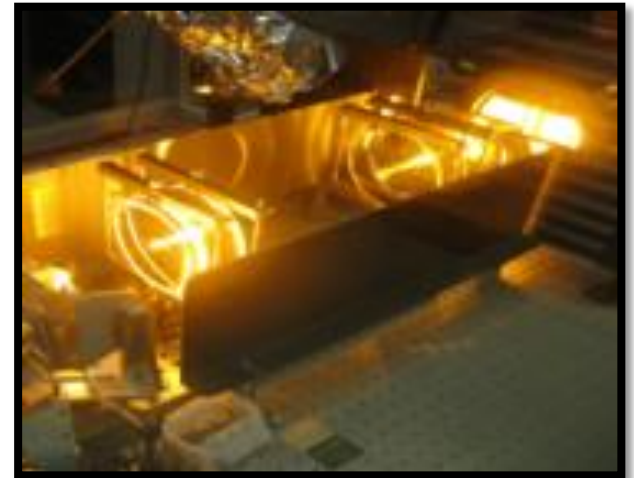
**Reaper and
Multispectral Targeting System**



**Command, Control Battle
Management and Communications**



**Missile Defense Integration
and Operations Center**



Laser Experiments

INTERNATIONAL COOPERATION



Nato



United Kingdom



Poland



Romania



Spain



Netherlands



Denmark



Turkey



Australia



Japan



South Korea



Israel



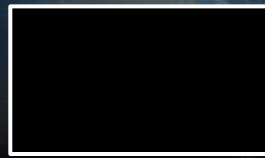
United Arab Emirates



Qatar



Saudi Arabia





Summary

- **Balance of capabilities, requirements, and risks to deter aggression, project power, and protect U.S. and allied interests**
- **Deployment of capabilities ongoing to respond to warfighter requirements**
- **Developing, building and using a global C2 and sensor network**
- **Operationally realistic, integrated testing**
- **Continued cooperation with allies and partners for interoperable missile defense**

Missile Defense Capability – Globally Deployed

