

Missile Defense Program Update For The 6TH Annual Missile Defense Conference



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31 MAR 08

**Lt Gen Trey Obering, USAF
Director
Missile Defense Agency**



Strategic Overview

- **Fielded an initial capability to defend the U.S. and our allies against ballistic missile attacks which we will expand to meet warfighter needs and future uncertainties**
- **Building a layered, integrated system of land, sea, and space based elements using an innovative acquisition approach employing “knowledge points”**
- **Successfully tested the system in operationally realistic conditions which we will make even more challenging as we mature**
- **Working with more than 18 nations worldwide and are on track to reach agreements with the Polish and Czech governments for European sites**
- **Managing the prudent investment in missile defense in a very cost-effective way with the bipartisan support of Congress**

Missile Defense Is Now A Proven, Flexible Capability For The Nation



Real World Event

Satellite Intercept – 20 FEB 08

- **Objective**

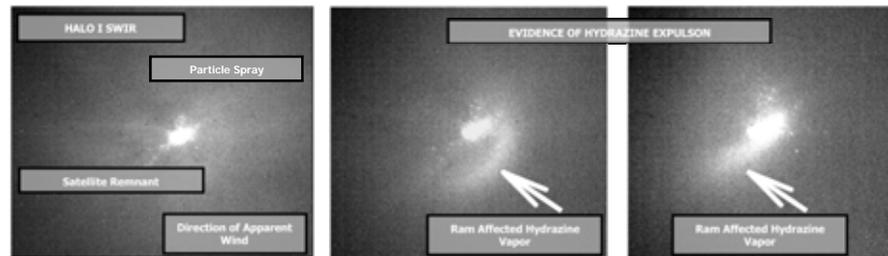
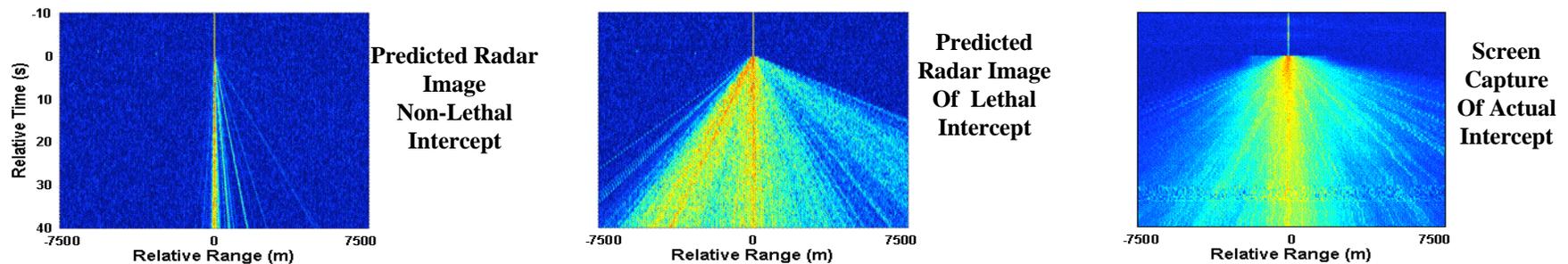
- Protect against potential loss of life due to uncontrolled reentry of ~ 5,400 lb (2,450 kg) satellite
- Destroy ~ 1,000 lbs (450 kg) hydrazine fuel tank

- **Preparation**

- 3 Standard Missiles-3 (SM-3), radars and system software extensively modified to enable intercept

- **Engagement**

- 1 SM-3 launched by USS Lake Erie northwest of Hawaii
- Successful intercept occurred ~153 miles (250 km) above the earth verified by 3 different phenomenologies



- **Post Intercept**

- Analysis (as of 25 FEB 08) shows vast majority of intercept debris has already burned up upon reentering the Earth's atmosphere, or will do so shortly – there have been no reports of debris landing on earth
- The 3 Aegis ships have already been reconfigured to support BMD mission



Today's Reality

North Korea Conducts Successful Nuclear Test

DPRK Announcement
October 9, 2006

North Korea Would Sell Nukes To Terrorists: Report Reveals 2005 Statement

Washington Times
February 5, 2008

N. Korea Test-Fires Long-Range Missile

The Washington Post
July 5, 2006

Iran Expanding Its Atom Program, UN Agency Reports

International Herald Tribune
August 30, 2007

Iran Reports 7th Shipment of Russian Nuclear Fuel

Voice of America News
January 26, 2008

Iran Lauds Development of Solid Fuel Missile

Arms Control Today
January / February 2008



Tomorrow's Possibilities

**Iran Successfully Test New
Ballistic Missile: All Europe Now
In Range**

NATO Leaders Alarmed

**The Wall Street Journal
September 5, 2009**

**North Korea detonates nuclear –
tipped ICBM**

**The Washington Post
June 20, 2009**

**Al-Qaeda Controls Nukes!
Tactical Missiles Missing!**

**Demands U.S. withdrawal from Middle East or
“Face Wrath of Allah”**

**Washington Times
March 25, 2009**

**Iran Announces Successful
Space Launch**

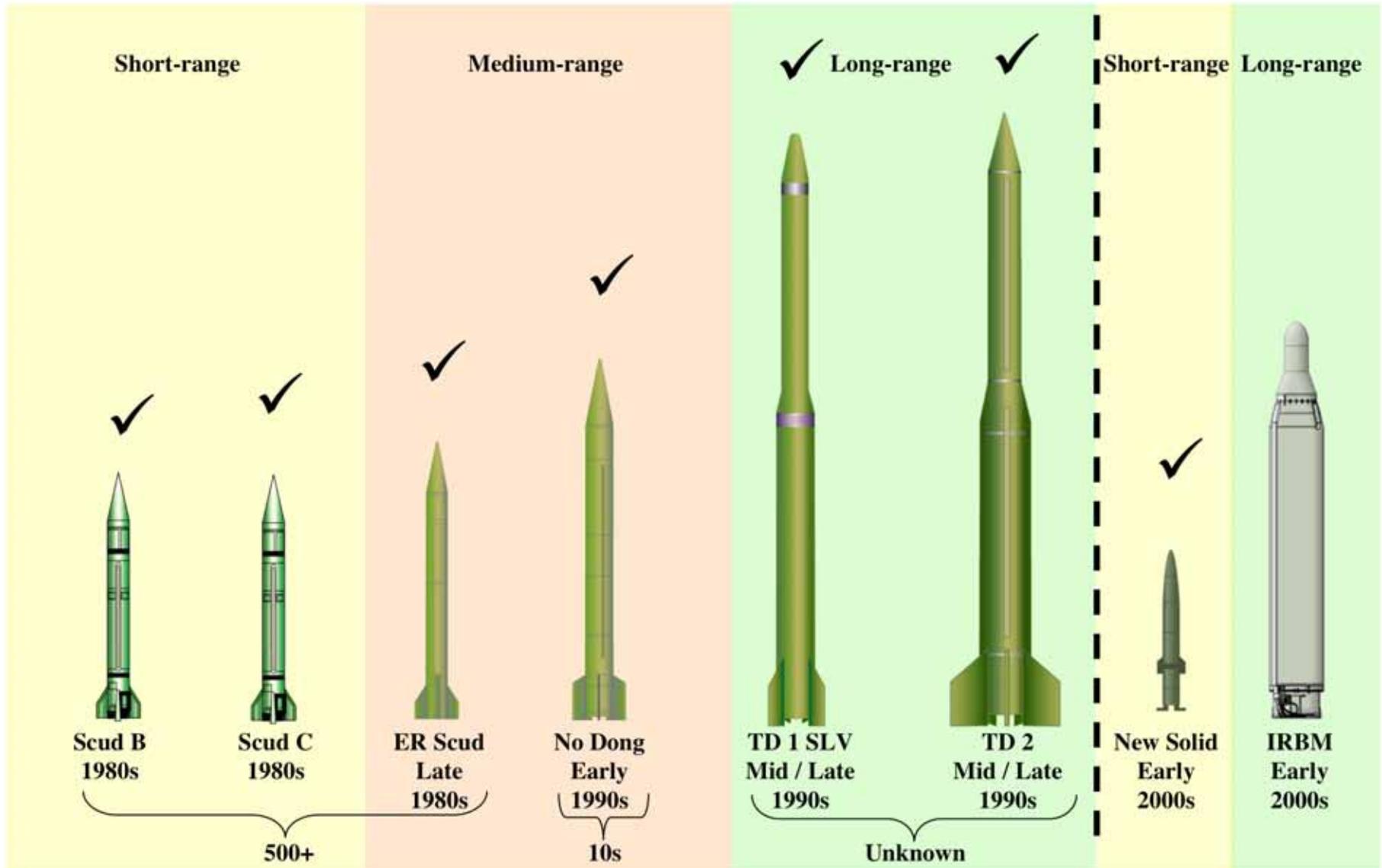
U.S. Worried Over ICBM Implications

**The New York Times
November 8, 2009**



North Korean Ballistic Missiles

✓ *Flown*

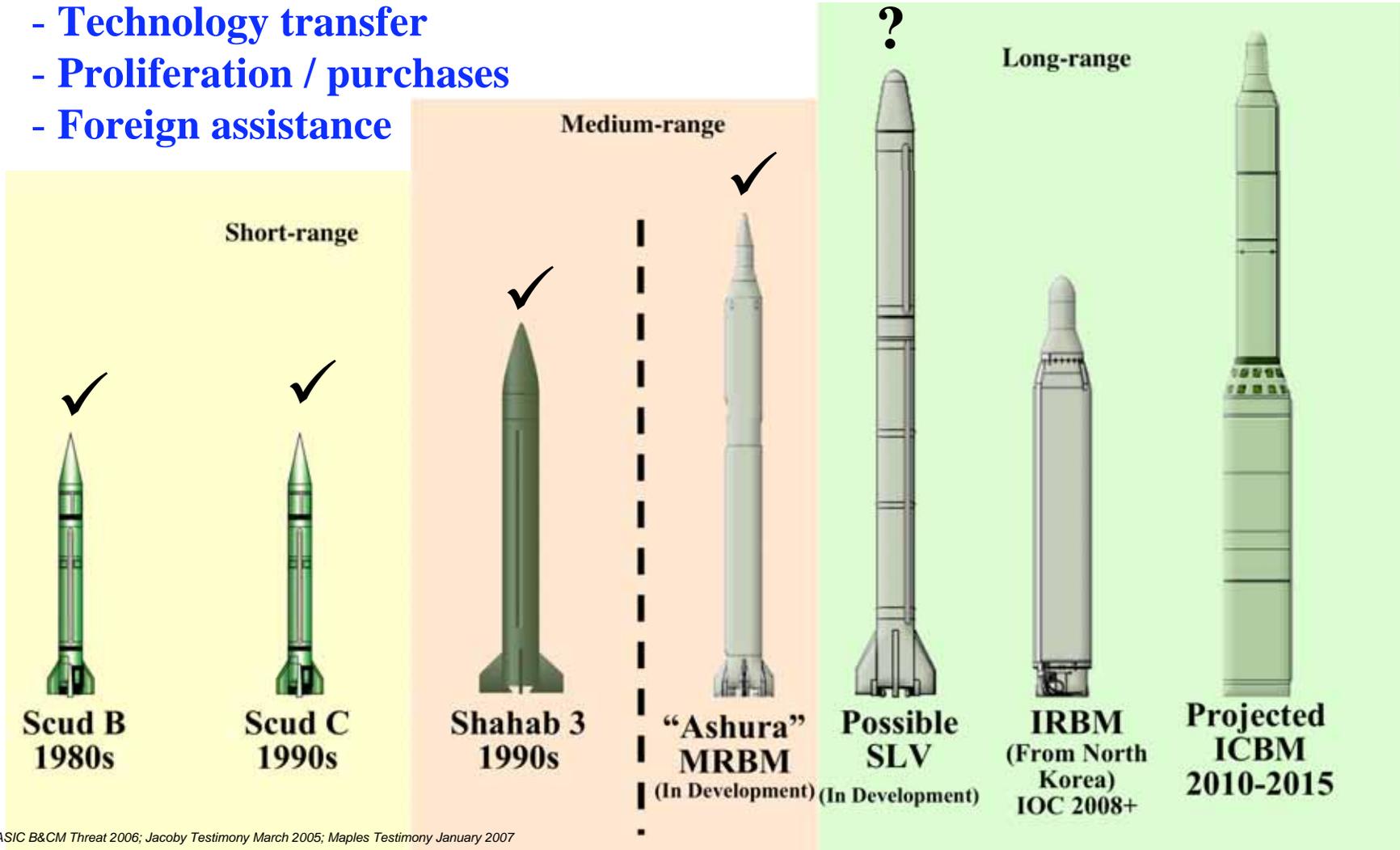




Iranian Ballistic Missiles

✓ *Flown*

- Iranian missile capability likely to accelerate due to
 - Technology transfer
 - Proliferation / purchases
 - Foreign assistance



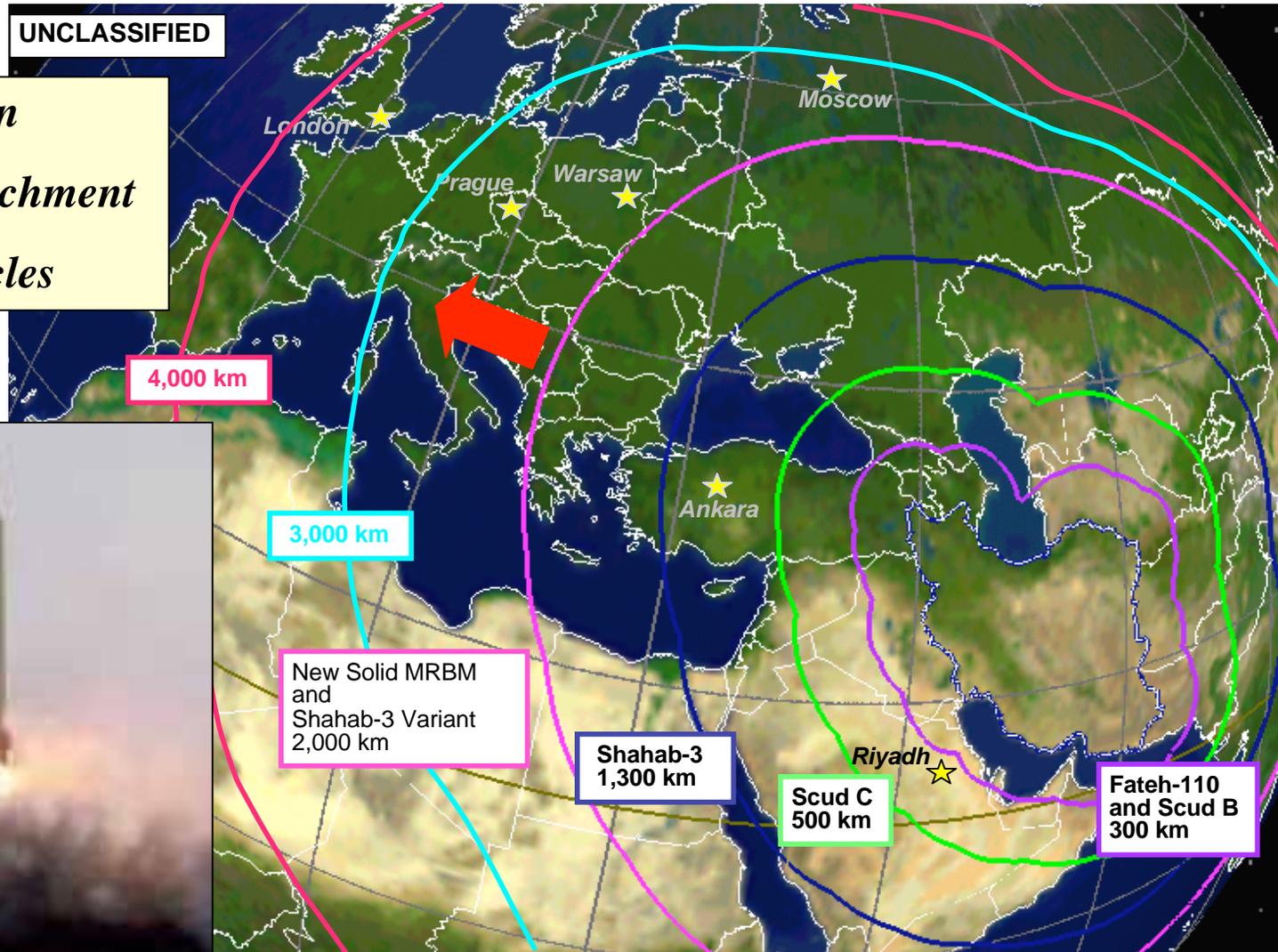
Sources: NASIC B&CM Threat 2006; Jacoby Testimony March 2005; Maples Testimony January 2007



Iranian Ballistic Missile Threat

UNCLASSIFIED

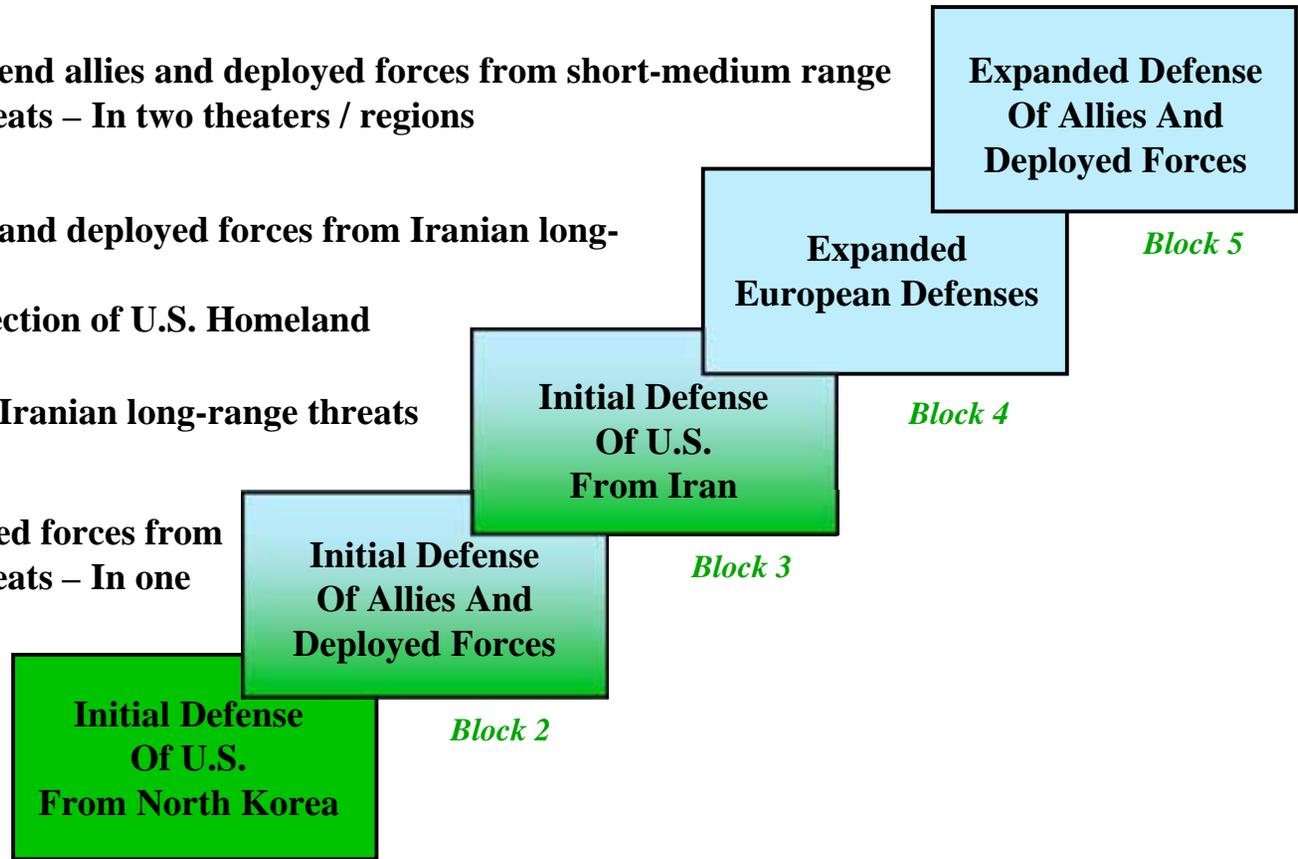
- *Weaponization*
- *Uranium enrichment*
- *Delivery vehicles*





Capability-Based Block Structure

- Defend allies and deployed forces from short-medium range threats – In two theaters / regions
- Defend allies and deployed forces from Iranian long-range threats
- Expand protection of U.S. Homeland
- Defend U.S. from Iranian long-range threats
- Defend allies and deployed forces from short-medium range threats – In one theater / region
- Defense of U.S. from North Korean long-range threats



 Indicates Percent Complete

Delivering Ballistic Missile Defense Capabilities By Block



Integrated Ballistic Missile Defense System

Sensors



Defense Support Program



Space Tracking and Surveillance System



Sea-Based Radars



Forward-Based Radar With Adjunct Sensor



Midcourse X-Band Radar



Early Warning Radar



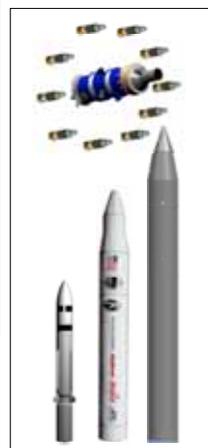
Airborne Laser



Kinetic Energy Booster



Aegis Ballistic Missile Defense / Standard Missile-3



Multiple Kill Vehicle



Ground-Based Midcourse Defense



Terminal High Altitude Area Defense



Sea-Based Terminal



Patriot Advanced Capability-3

Command, Control, Battle Management & Communications



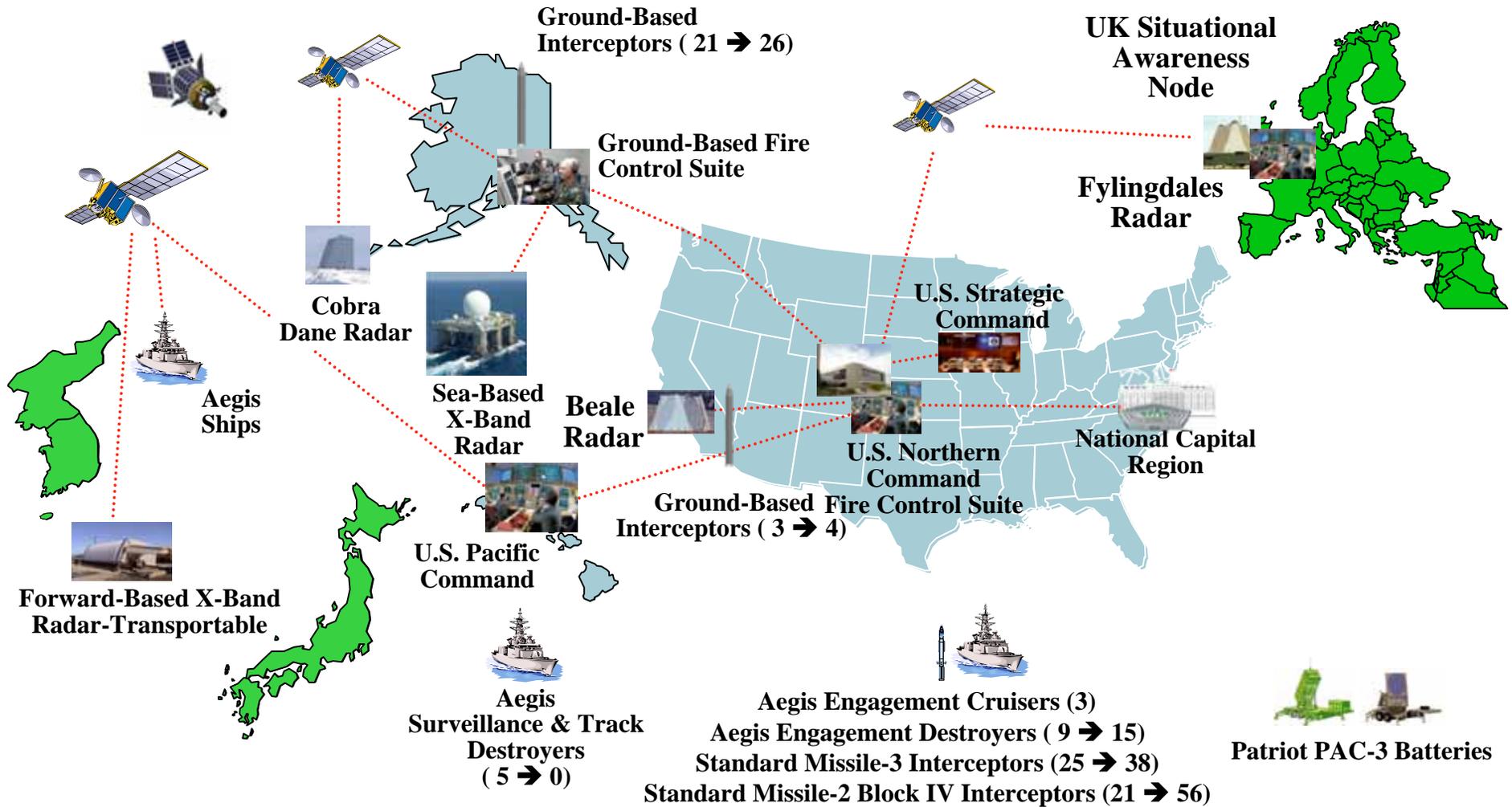
NMCC USSTRATCOM USNORTHCOM USPACOM USEUCOM USCENTCOM

Designated Lead Service:

Army	Navy	Air Force	TBD
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System Configuration March 2008 → Dec 2008



None Of This BMD Capability Existed In June 2004



Flight Tests

34 Of 42 Terminal And Midcourse Hit-To-Kill Intercepts In The Atmosphere And Space Since 2001

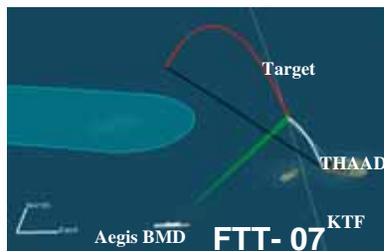
MDA Achieved 26 Test Successes In Last 27 Flight Tests Since September 2005

Hit-To-Kill Since 2001

Since September 2005

**Note: Patriot PAC-3
(12 of 15)**

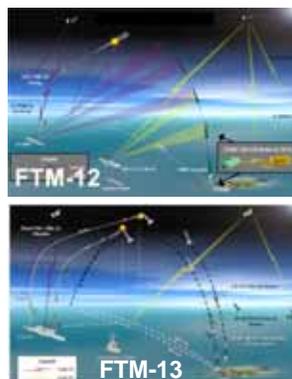
**Terminal High Altitude Area Defense
(4 of 4)**



**July 12, 2006
January 26, 2007
April 5, 2007
October 27, 2007**

VM313

**Aegis Ballistic Missile Defense
(12 of 14)**



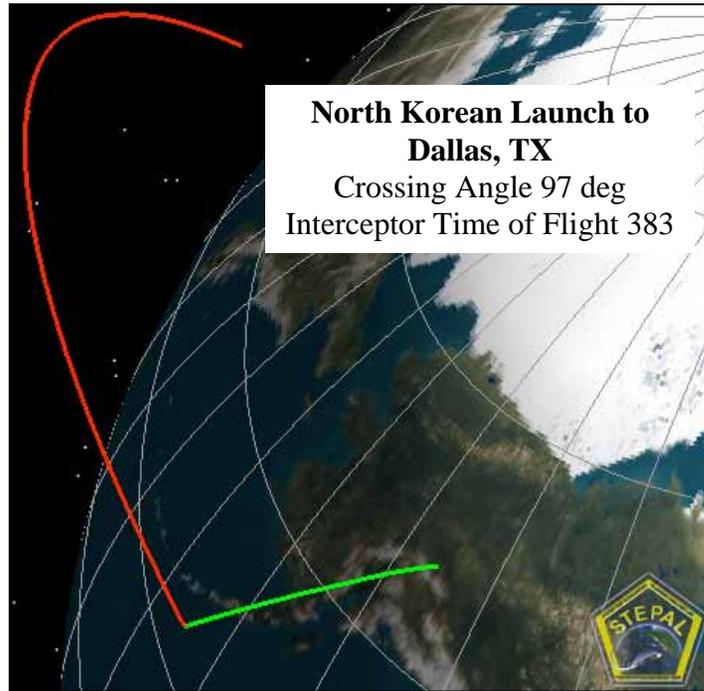
**November 11, 2005
December 7, 2006
June 22, 2006
April 26, 2007
June 22, 2007
August 31, 2007
November 6, 2007
December 17, 2007**

VM-339C

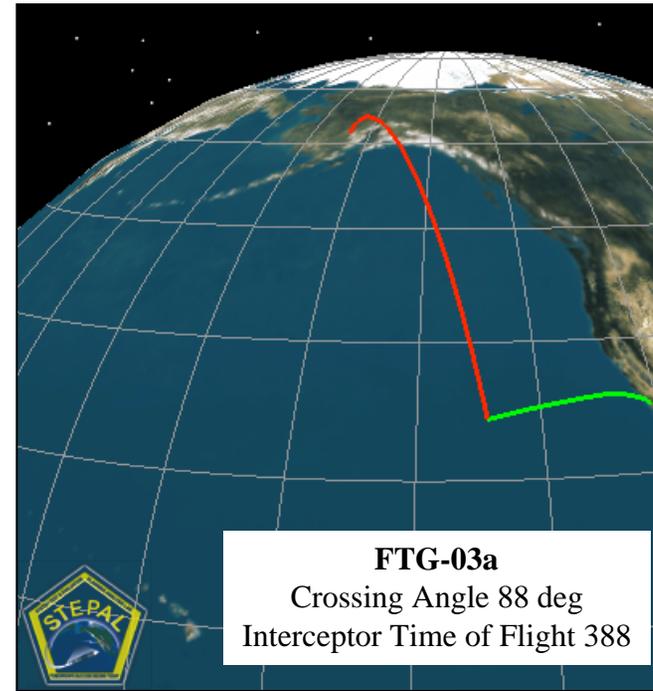
VM-355



Long-Range Flight Tests



**Ground-based Midcourse Defense
(6 of 9)**

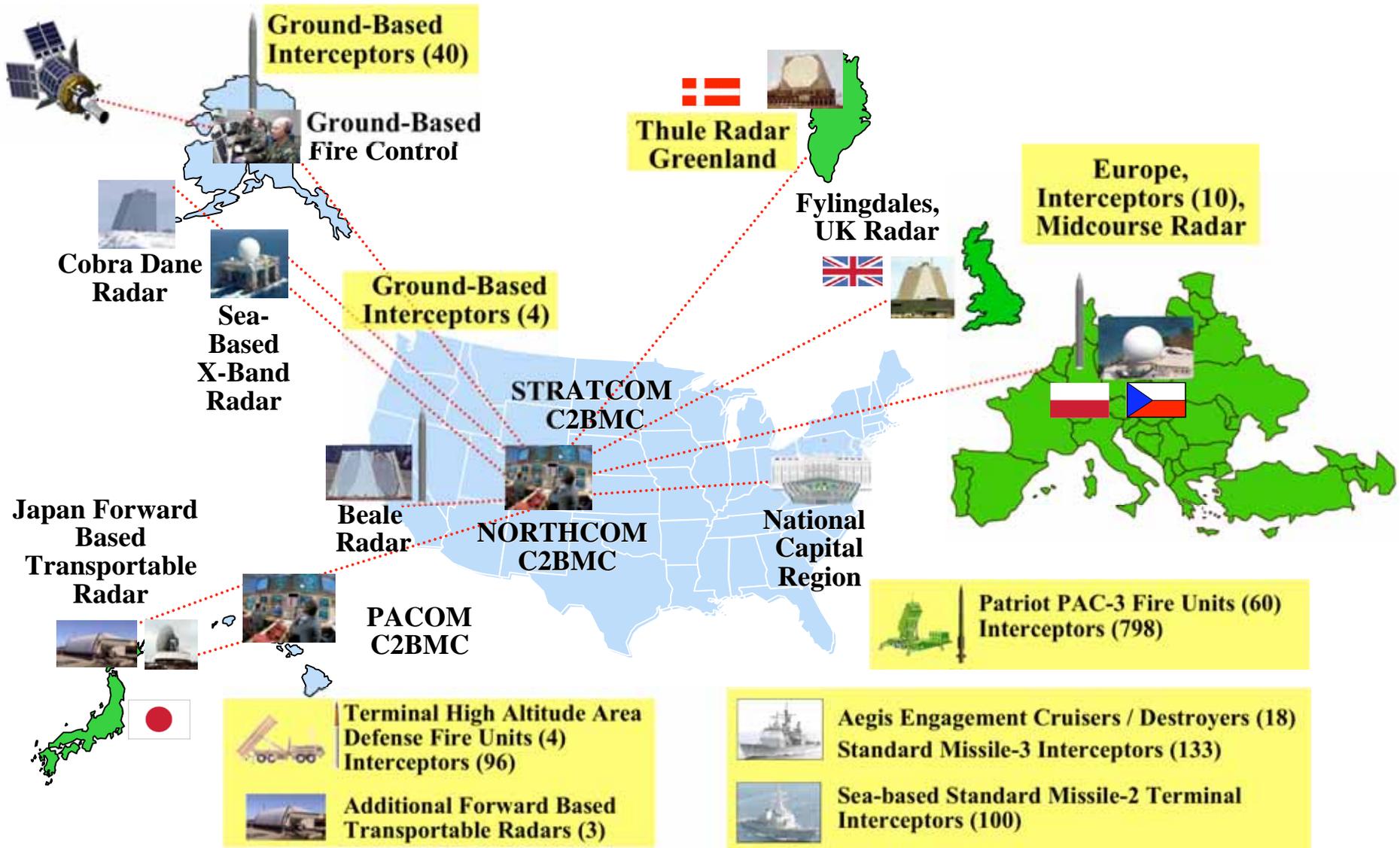


- **Operational infrastructure**
- **Threat-representative target**
- **Operational fire control software**
- **Operational radars**
- **Operational crews**

- ✓ **September 1, 2006**
- ✓ **September 28, 2007 Russian officials observed this test from Washington, DC**

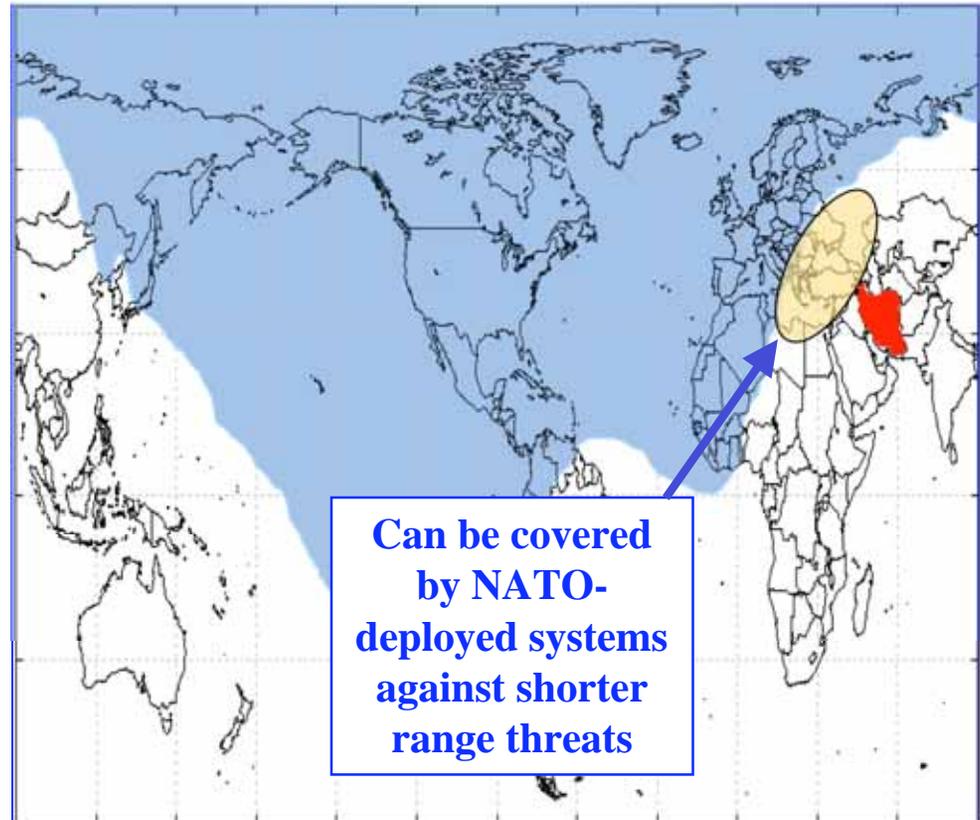


System Configuration – 2013





Capability Provided Versus Iranian Intermediate- To Long-Range Ballistic Missiles



BMD System with /
Interceptor Field (Poland) +
Midcourse Radar (Czech
Republic) + Forward Based
Radar (TBD)



European Site Initiative

Proposed Long-Range Missile Defense Elements In Europe



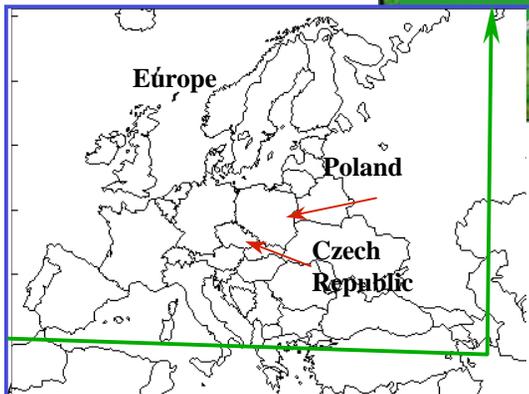
(2012)

Construction Start 3QFY09
 Integration Start 4QFY11
 Operational Capability 3QFY12



(2011-2013)

Construction Start 3QFY09
 Integration Start 2QFY12
 Operational Capability 3QFY12
 (FCD 2QFY13)



Why Poland and Czech Republic

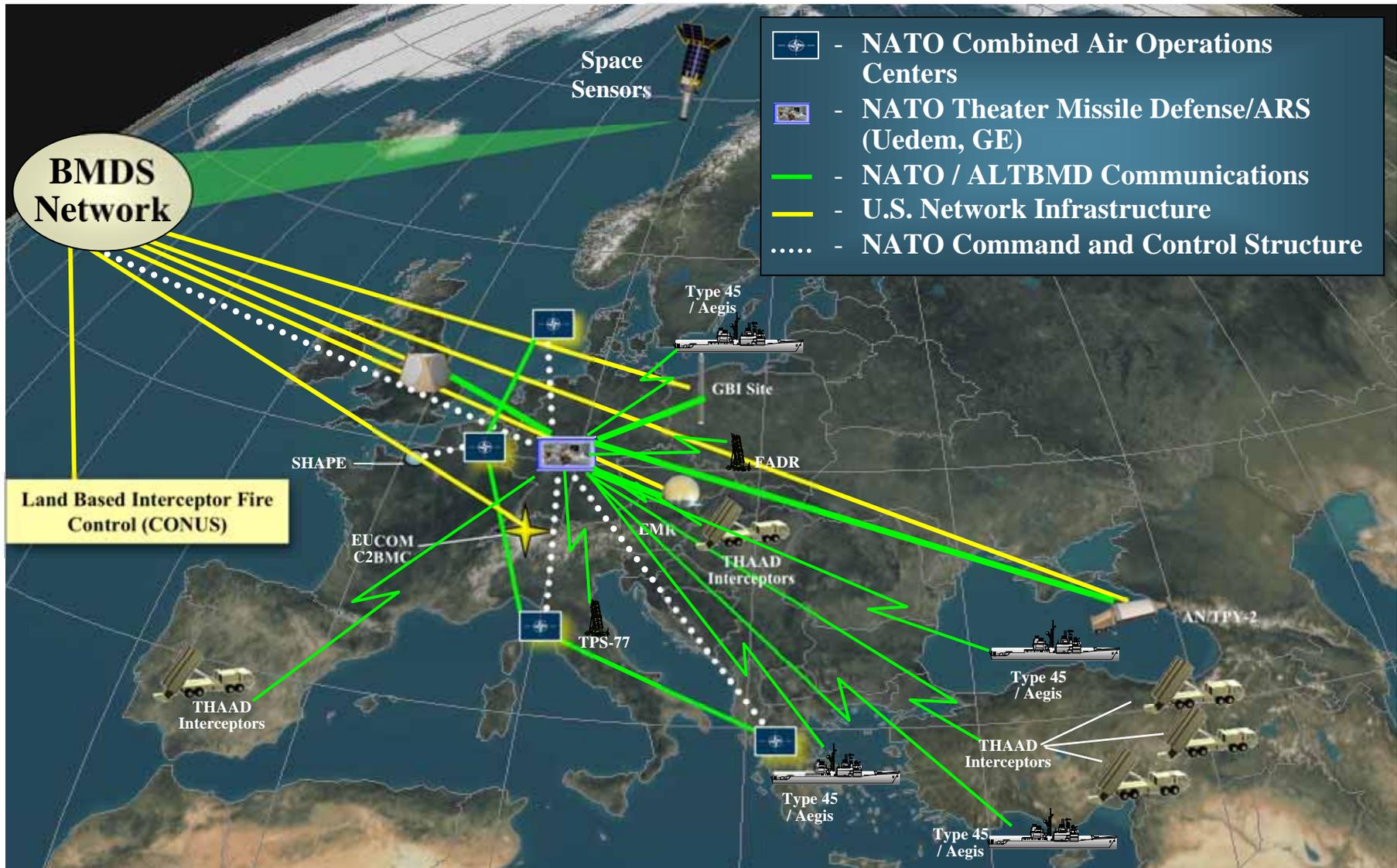
- Azimuthal range
- Range from Iran



(TBD)



U.S. And NATO Possible Command And Control Architecture





Available Components For Missile Defense Regional Architecture

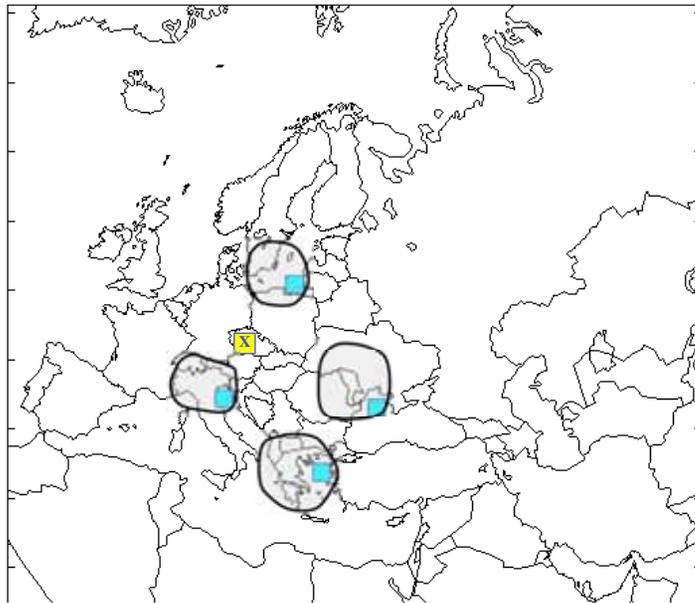
	U.S.	NATO / ALTBMD
Command & Control	<ul style="list-style-type: none"> • Command, Control, Battle Management and Communications (C2BMC) 	<ul style="list-style-type: none"> • Air Command and Control System (ACCS) 
Sensors	<ul style="list-style-type: none"> • European Midcourse Radar (EMR) • Forward Based Radar • Aegis SPY Radar • Terminal High Altitude Area Defense (THAAD) radar • PATRIOT radar 	<ul style="list-style-type: none"> • Type 45 Destroyer  • Air Defense Command Frigate (Early Warning)  • Tactical Transportable Radar System (TPS77)  • Forward Air Defense Radar/Deployable Air Defense Radar (FADR/DADR) 
Long-Range Interceptors	<ul style="list-style-type: none"> • Ground Based Interceptor (2-Stage) 	
Short to Medium Range Interceptors	<ul style="list-style-type: none"> • Aegis Standard Missile Family • Terminal High Altitude Area Defense (THAAD) • PATRIOT 	<ul style="list-style-type: none"> • PATRIOT  • MEADS  • Principal Anti Air Missile System (PAAMS)   • SAMP-T  



Notional European Midcourse Radar Contribution

– Aegis Ship Weapon System –

Aegis Ship Weapon System Without European Midcourse Radar



Aegis Ship Weapon System With European Midcourse Radar



Adversary

- Iranian intermediate range missile under conditions challenging to defend

Architecture

- Aegis in the Black Sea, Aegean Sea, Adriatic Sea, Gulf of Gdansk
- European Midcourse Radar at Czech Republic

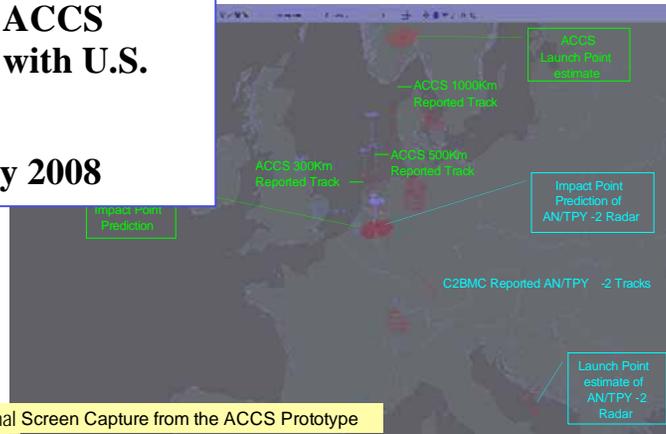
Defended Area Increases 140% / Ship (560% Total) Against Iranian Intermediate Range Missile When Using European Midcourse Radar For Launch On Remote



Notional Shared Situational Awareness Demonstration Scenario And Screen Captures

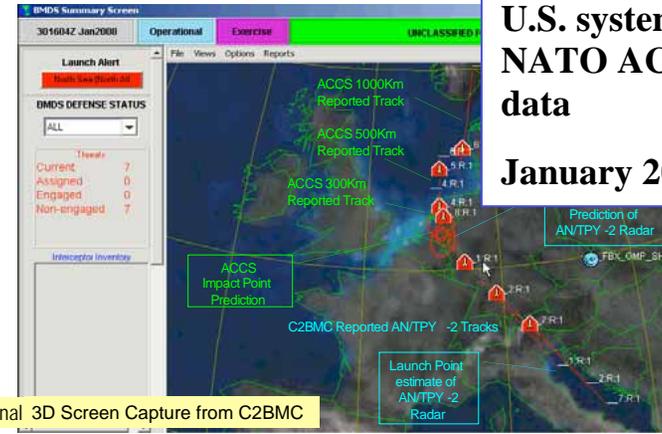
NATO ACCS system with U.S. data

January 2008

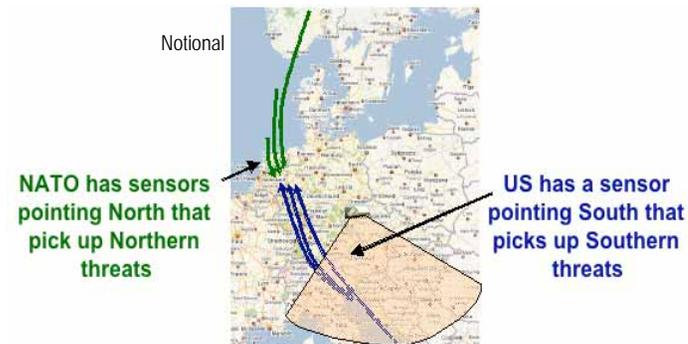


U.S. system with NATO ACCS data

January 2008



- **Demonstrated sharing of precise participant location; estimated launch and impact point; target tracks**
- **Lessons learned: great amount of data commonality, accuracy and timeliness**
- **Advanced demonstration planned for June 2008 with simultaneous transmission**



- **Demonstration scenario for risk reduction exercise for Joint Project Optic Windmill X (September 2008)**



International Activity Highlights

Framework Partners



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



UK: Fylingdales UEUR, lethality studies system-level analyses, advanced technology programs, target development



Australia: Potential Over-The-Horizon radar and track fusion cooperation projects; potential role for AUS destroyers; sensor cooperation activities



Denmark: Upgrade Thule Early Warning Radar



Italy: MEADS partner

Continuing Activity



Israel: Arrow Deployed, Arrow System Improvement Program; development of short-range BMD



Germany: MEADS partner, laser cross-link technology



Netherlands: PAC-3, Maritime Cooperation



NATO: Working with Active Layered Theater BMD office to integrate NATO and U.S. systems; assessing European site initiative

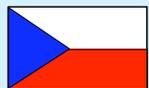
New Relations / Emphasis



Spain: U.S. -Spain Missile Defense Technical Group established



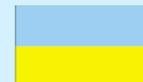
Poland: Missile Defense Consultations and Workshops; expressed interest in hosting missile site



Czech Republic: Missile Defense Consultations; expressed interest in hosting midcourse radar



United Arab Emirates: Expressed interest in missile defense



Ukraine: Concluded one missile defense project; beginning another. RDT&E agreement being negotiated



India: Missile Defense Discussions and ongoing



Russia: Theater Missile Defense Exercise Program; technical experts discussion on-going



France: Desire BMD cooperation; discussions in progress



Republic of Korea: Expressed interest in missile defense



Development Program

Boost Phase Kill

Airborne Laser



- Over 70 successful laser firings
- Atmospheric compensation and tracking test against target, July, August 2007
- Lethal shutdown 2009

Near-Field Infrared Experiment (NFIRE)



- Successful launch April 2007
- Boost phase data partially successfully collected, August 2007 – next test, Summer 2008

Kinetic Energy Interceptor



- Completed 2 1st stage static firings (FY07)
- Conduct 2 2nd stage static firings (FY08)
- Booster flight test in 2009
- Partial full-scale flight test in FY11

Mobile Midcourse

SM-3 Block IIA 21" Interceptor



- Agreement with Japan signed, June 2006
- First flight 2014
- Operational avail 2015

Endoatmospheric Navy

Sea-Based Terminal



- Near-term capability (100 upgraded SM-2 Block 4 interceptors available now)
- Far-term weapon system requirements work begins in 2008

Knowledge Points Drive Development Progress



MDA's Strategy For Countering Complex Threats

Advanced Radar Sensors



Sea-Based X-band Radar

- Deployed in the Pacific Ocean (mobile)

Forward-based X-band Radar (AN/TPY-2)

- Deployed to Japan (transportable)

Improve object tracking and discrimination

Technologies

- Advanced Processors
- Scaleable panels
- Algorithms for clutter mitigation

Advanced Infrared



Space Tracking and Surveillance System

- Launch 2 demonstration satellites in 2008
- First launch of operational satellite 2016-2018

Improve object tracking and discrimination

Technologies

- Single and multi-color focal plane arrays
- Cryocoolers
- Algorithms for clutter mitigation

Volume Kill



Multiple Kill Vehicle

- Land- and sea-based volume kill capability
- Flight test in 2015
- Initial capability in 2017

Destroy multiple threat objects and decoys

Technologies

- Structures
- Propellants
- Advanced processors
- Advanced communications
- Divert Attitude Control System

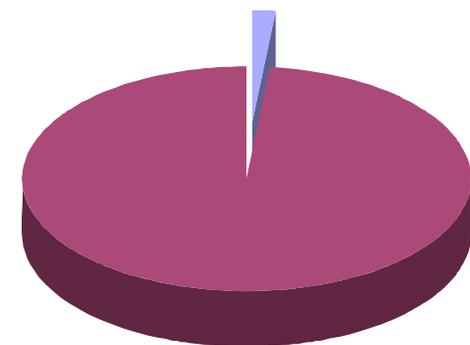


MDA PB09 Budget Overview

- **PB09 continues to field the same capabilities programmed in PB08**
 - **Delivery of some capabilities delayed as necessary to address both Congressional marks and program adjustments**
- **Overall budgetary flexibility is limited by fielding and sustainment commitments and increasing test program complexity**
 - **Fielding and sustainment is \$2.5B in FY09 and \$3.1B in FY10**
 - **Test and test related activities account for \approx \$2.0B a year**
- **Focus is on near-term development and fielding**
(\$7.0B of \$9.3B in FY09 or 75%)
- **Responds to identified warfighter requirements and to the Department of Defense Transformation Priorities**

**Total FY09
DoD Budget – \$515.4B**

MDA, \$9.3B, 1.8%



■ Total MDA Budget
■ DoD Budget



Issues

- **Costs of Missile Defense**
- **Adequacy and frequency of testing**
- **Near-term emphasis vs future capabilities**
- **Missile Defense Agency “normalization”**



Advantages Of Missile Defense

- **Can be a major arms control tool that could devalue missiles thereby reducing their proliferation**
- **Bolster deterrence by increasing the effectiveness of offensive forces**
- **Influence nations not to develop their own nuclear weapons**
- **Provide U.S. and NATO leaders options in addition to preemption or retaliation**
- **Can stabilize events in a crisis and could buy time for a potential diplomatic resolution**
- **Augment offensive capabilities available for the protection of population centers and critical assets in event of hostilities**



Notional 3:00 AM Phone Call in 2015

“Mr/Madame President, this is the National Military Command Center.”

“We have detected the launches of two ballistic missiles out of Iran with projected impact in New York in less than 25 minutes.”

“Iranian President says he did not order this, it was done by a small radical group which explains our very limited indications and warning.”

“Iranian strategic and regional missile forces have now been ordered to full alert in anticipation of U.S. retaliation.”

“We have notified state and local authorities and are notifying allied governments.”

“Mr/Madame President, what are your instructions?”



What Are Your Instructions?

- ***Without* a Ballistic Missile Defense System:**
 - “Commander STRATCOM initiate offensive response operations plans and go to full alert”
 - “Commander NORTHCOM with FEMA implement consequence management plans—pray for us all.”
- ***With* a Ballistic Missile Defense System:**
 - “Release authority granted for missile intercepts”
 - “Convene National Security Council to discuss next steps”

**The Decisions We Make Today Will Determine Our
Options and Security in The Future**

