Ballistic Missile Defense Program Update

MAY 2008

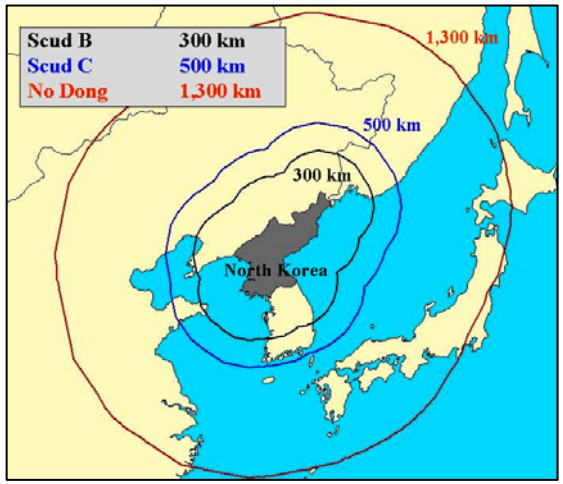
A New Security Environment…Not The Cold War

- Rogue states view ballistic missiles as a means for gaining or maintaining their own freedom of action
  - North Korea uses missiles for coercion, intimidation and deterrence
  - Iran views ballistic missiles as element of asymmetric strategy against U.S. and allies
  - Proliferation is occurring to both states and non-state actors
- Emerging Threats
  - Now more than 20 countries have a ballistic missile capability
  - Future threats difficult to predict but likely to arise – both technical and political surprises
  - As access increases, control becomes more of a problem

North Korean Ballistic Missile Threat

- 500 Scuds (300-500 km)

- No Dong (1,300 km)
  - Reaches Japan and all South Korea
  - Scaled-up Scud technology
  - Flight-tested in May 1993 and July 2006



- Taepo Dong-1 Space Launch Vehicle
  - Flight tested 1998
  - Third stage failed, but first two stages demonstrated several key technologies required for an ICBM, including stage separation

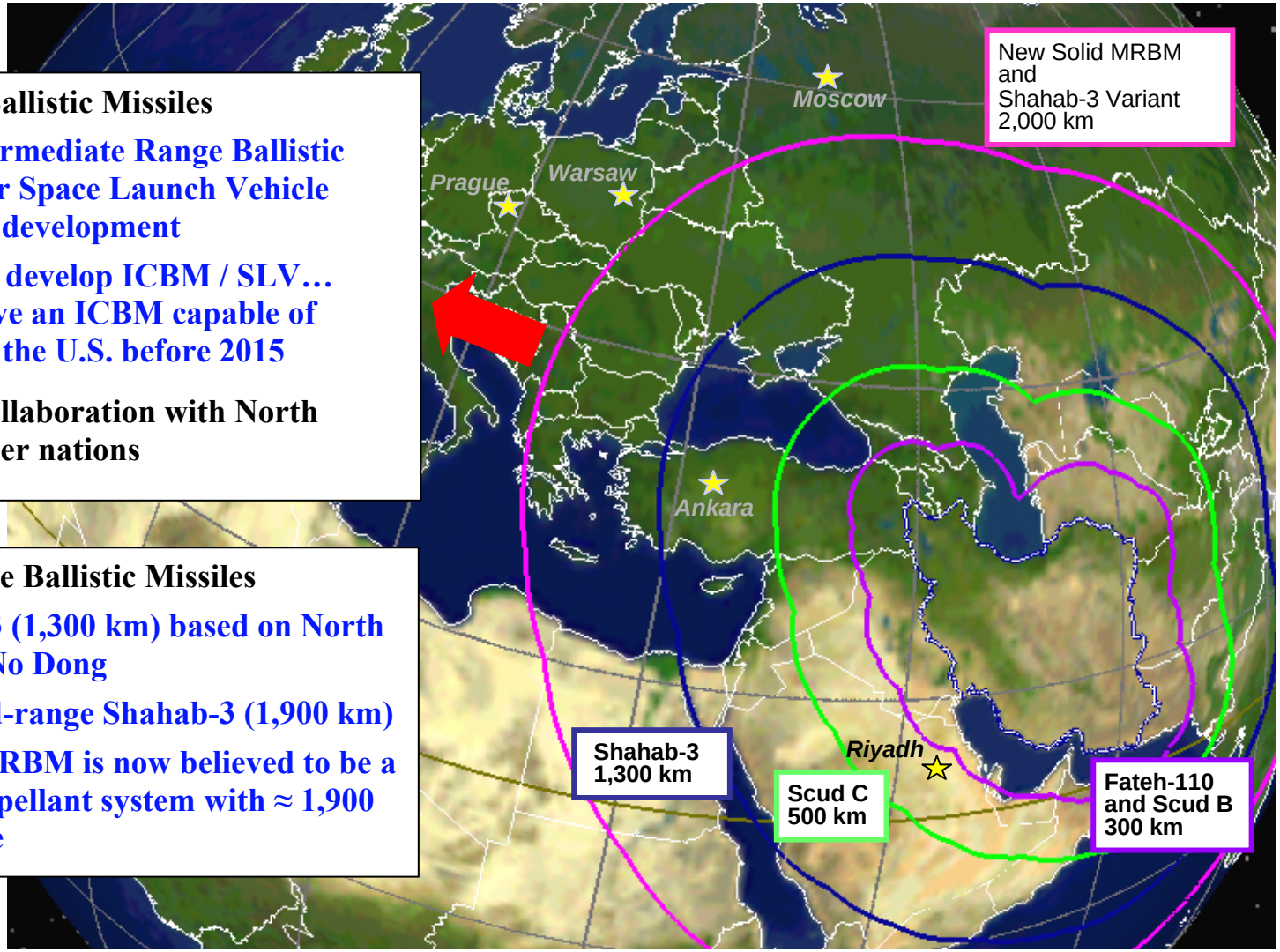
- Taepo Dong-2 SLV/ICBM
  - 2-stage: 10,000 km
  - 3-stage: 15,000 km
  - 4 JUL 06 test failed shortly after launch

- Believed to be developing IRBM (3,200+ km range)
  - A qualitative improvement in performance

Iranian Ballistic Missile Threat

- **Long-Range Ballistic Missiles**
  - **New Intermediate Range Ballistic Missile or Space Launch Vehicle (SLV) in development**
  - **Likely to develop ICBM / SLV… could have an ICBM capable of reaching the U.S. before 2015**
- **Evidence of collaboration with North Korea and other nations**

- **Medium-Range Ballistic Missiles**
  - **Shahab-3 (1,300 km) based on North Korean No Dong**
  - **Extended-range Shahab-3 (1,900 km)**
  - **A new MRBM is now believed to be a solid-propellant system with ≈ 1,900 km range**



Source: NASIC, B&CM Threat 2006, Jacoby Testimony March 2005

Integrated Ballistic Missile Defense System

Sensors

Defense Support Program

Space Tracking and Surveillance System

Sea-Based Radars

Forward-Based Radar With Adjunct Sensor

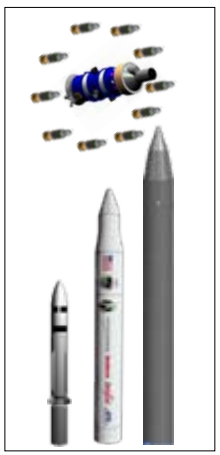
Midcourse X-Band Radar

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

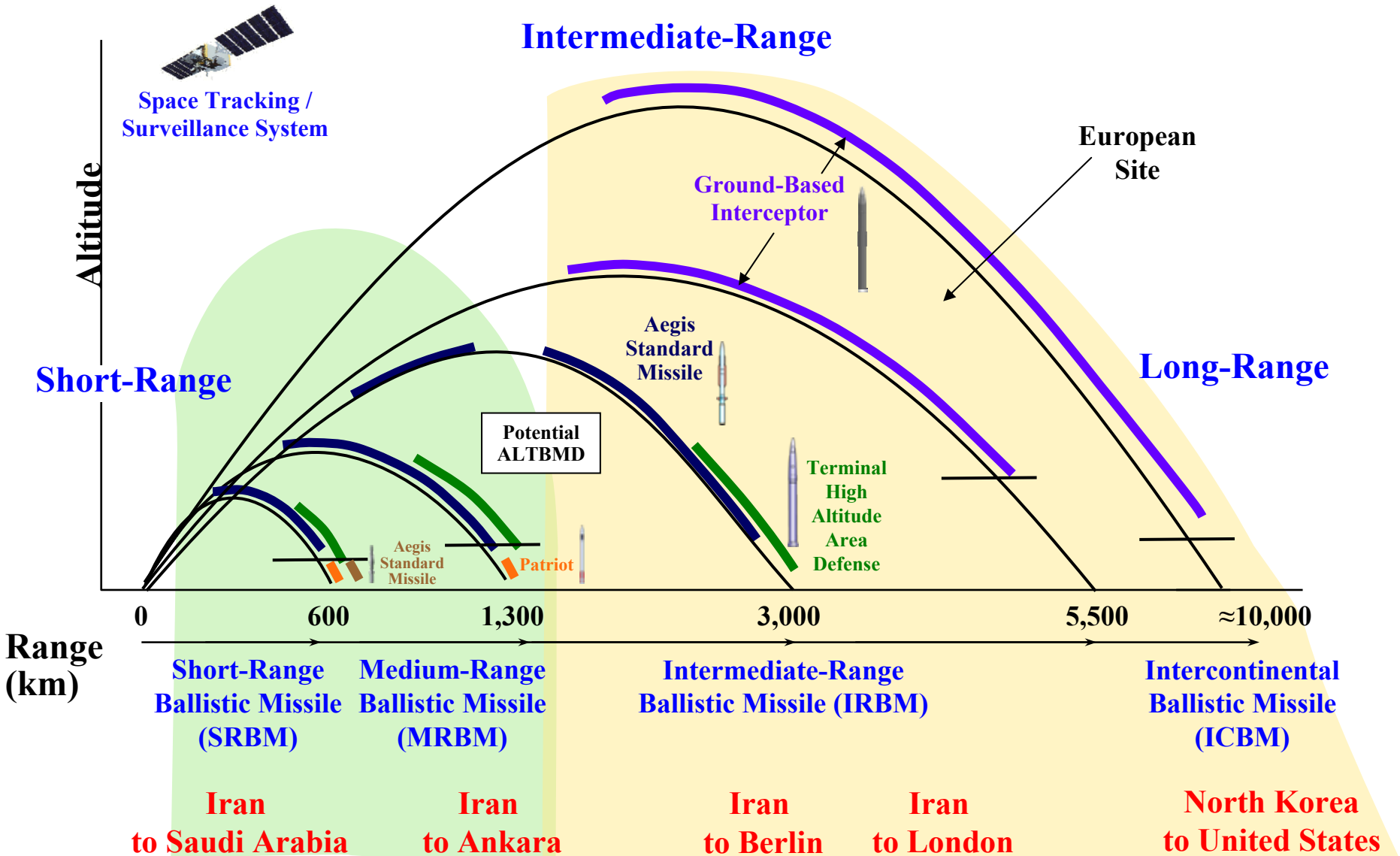
Patriot Advanced Capability-3

Command, Control, Battle Management & Communications

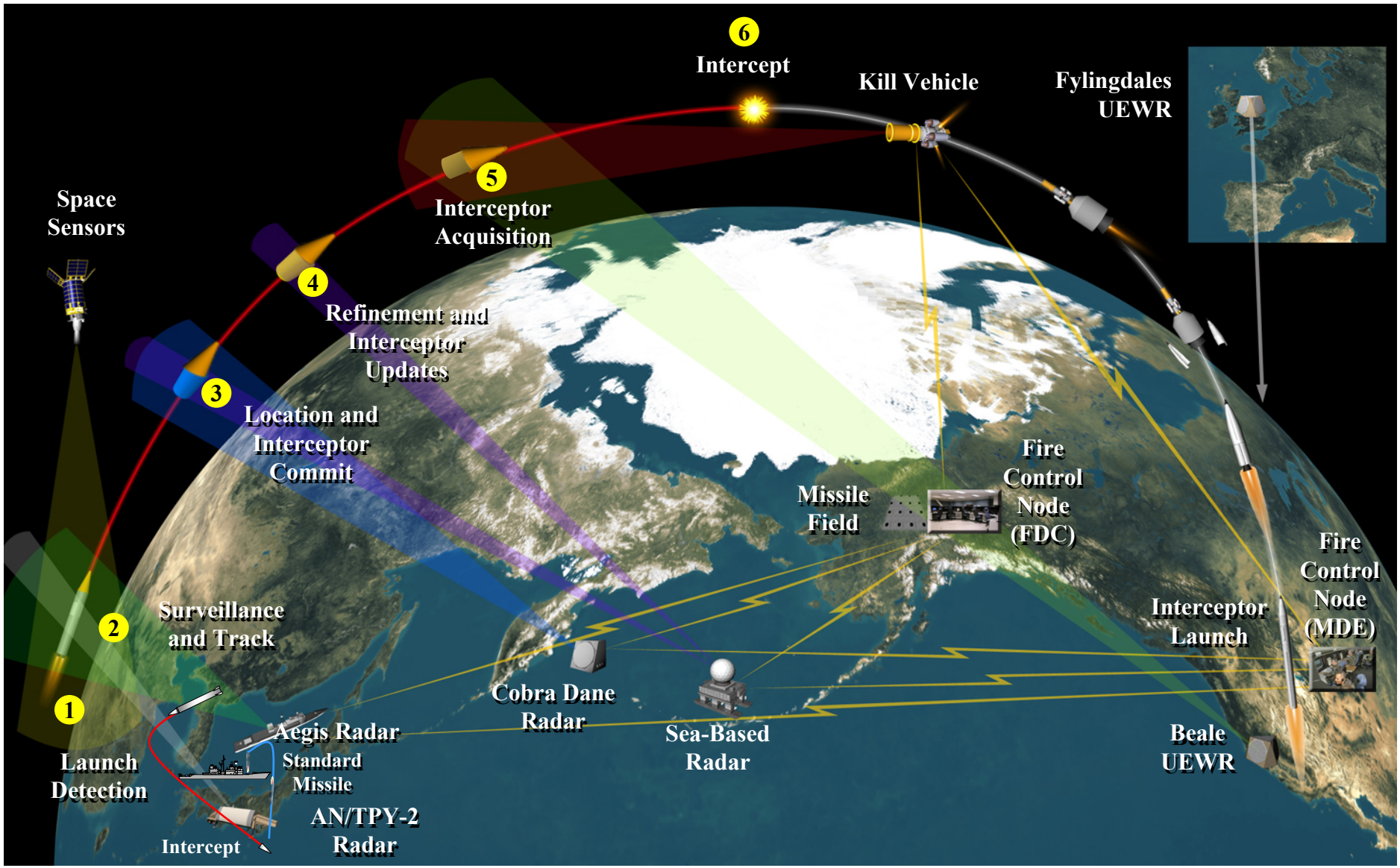
NMCC USSTRATCOM USNORTHCOM USPACOM USEUCOM USCENTCOM

Designated Lead Service: Army | Navy | Air Force | TBD

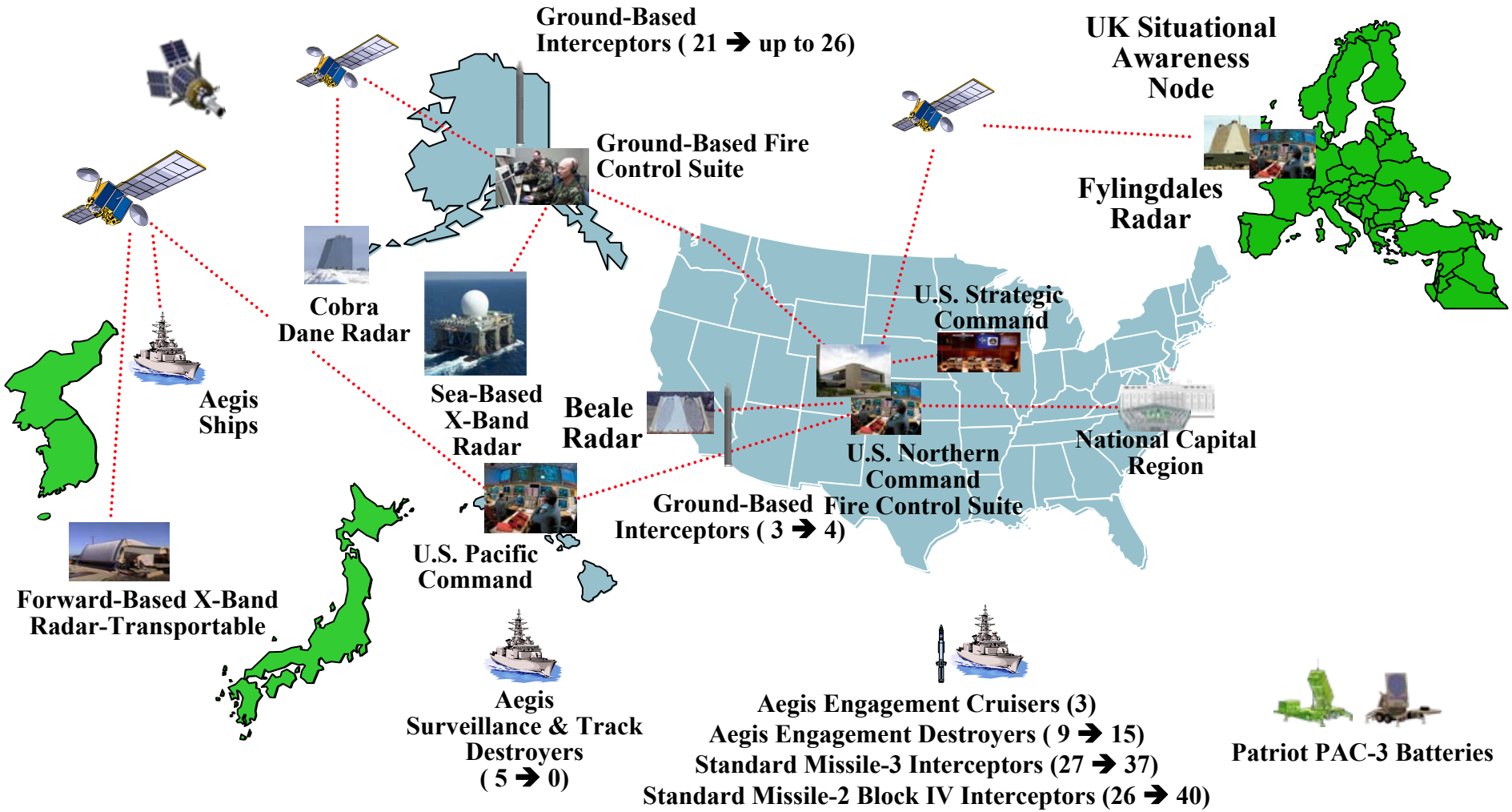
Layered BMD


Intermediate-Range
Space Tracking / Surveillance System
Altitude
European Site
Ground-Based Interceptor
Aegis Standard Missile
Short-Range
Long-Range
Potential ALTBMD
Terminal High Altitude Area Defense
Aegis Standard Missile
Patriot
0
600
1,300
3,000
5,500
≈10,000
Range (km)
Short-Range Ballistic Missile (SRBM)
Medium-Range Ballistic Missile (MRBM)
Intermediate-Range Ballistic Missile (IRBM)
Intercontinental Ballistic Missile (ICBM)
Iran to Saudi Arabia
Iran to Ankara
Iran to Berlin
Iran to London
North Korea to United States

An Integrated Approach To Ballistic Missile Defense



System Configuration
May 2008 ➔ Dec 2008



None Of This BMD Capability Existed In June 2004

Missile Defense 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 (not including two no-tests), since September 2005 (includes 14 of 15 successful intercepts)
  - Since April 2007
    - Successful long-range ground-based intercept (September)
    - Aegis Standard Missile-3 intercepts of separating and unitary targets (April, June, August, November, December)
    - Successful Terminal High Altitude Area Defense (THAAD) intercepts of unitary targets (April, October) and successful controlled test flight (June)
- Upcoming tests through end of 2008
  - One Aegis Standard Missile-2, Block IV intercept test (Sea-based Terminal); one Aegis Standard Missile-3 intercept test (Japan)
  - Two Terminal High Altitude Area Defense intercepts against separating targets
  - Intercept test of long-range ground-based interceptor

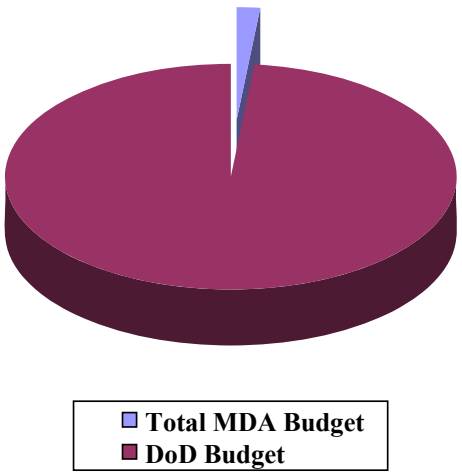
MDA PB09 Budget Overview

- 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 ≈ $2.0B a year
- Focus is on near-term development and fielding

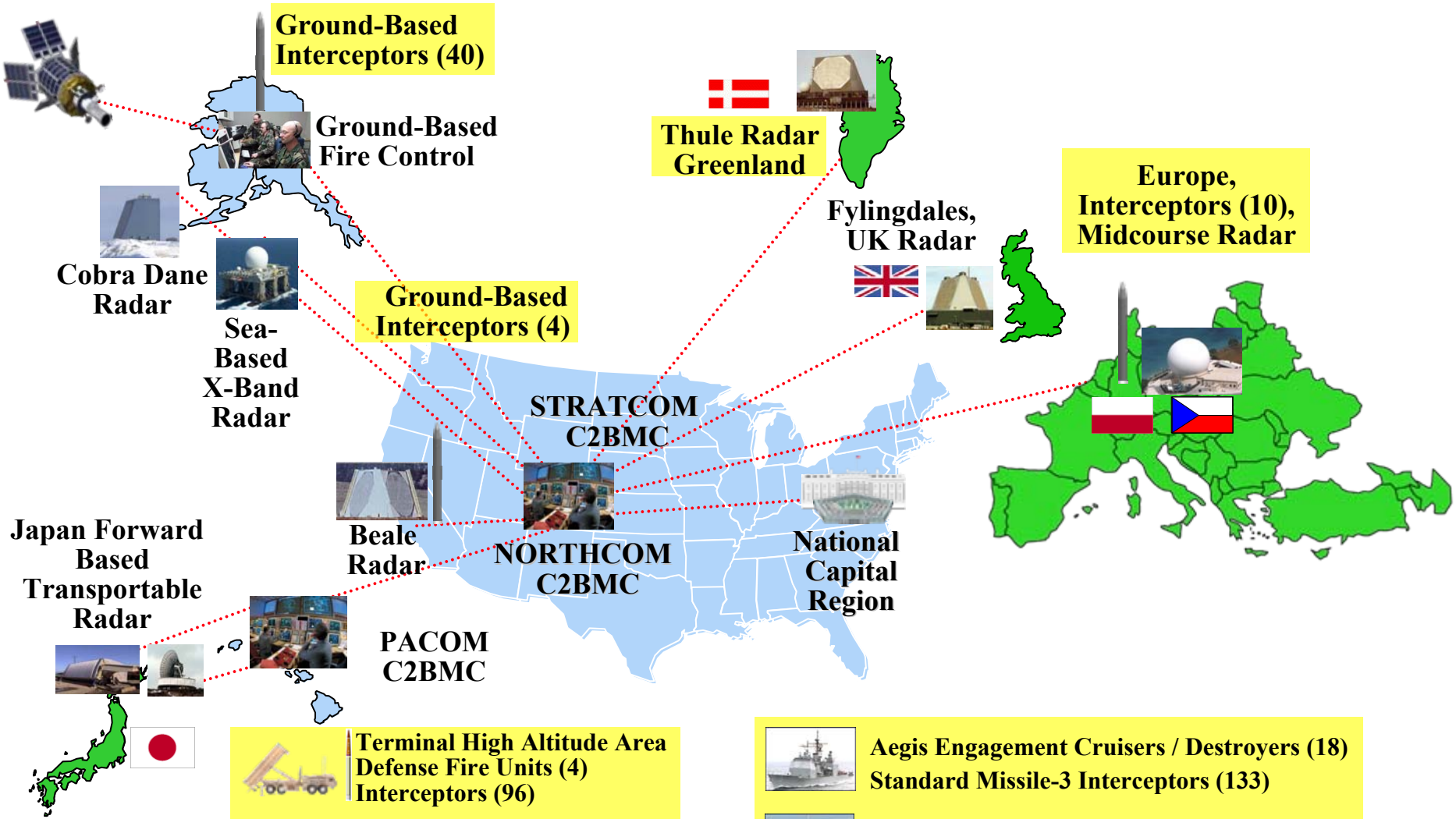
  ($7.0B of $9.3B in FY09 or 75%)
- Responds to identified warfighter requirements and to the Department of Defense Transformation Priorities

Total FY09
DoD Budget – $515.4B

MDA, $9.3B, 1.8%

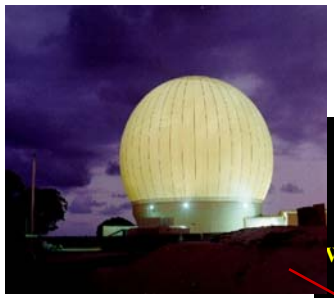


PB09 BMDS Fielding – 2013



European Site Initiative

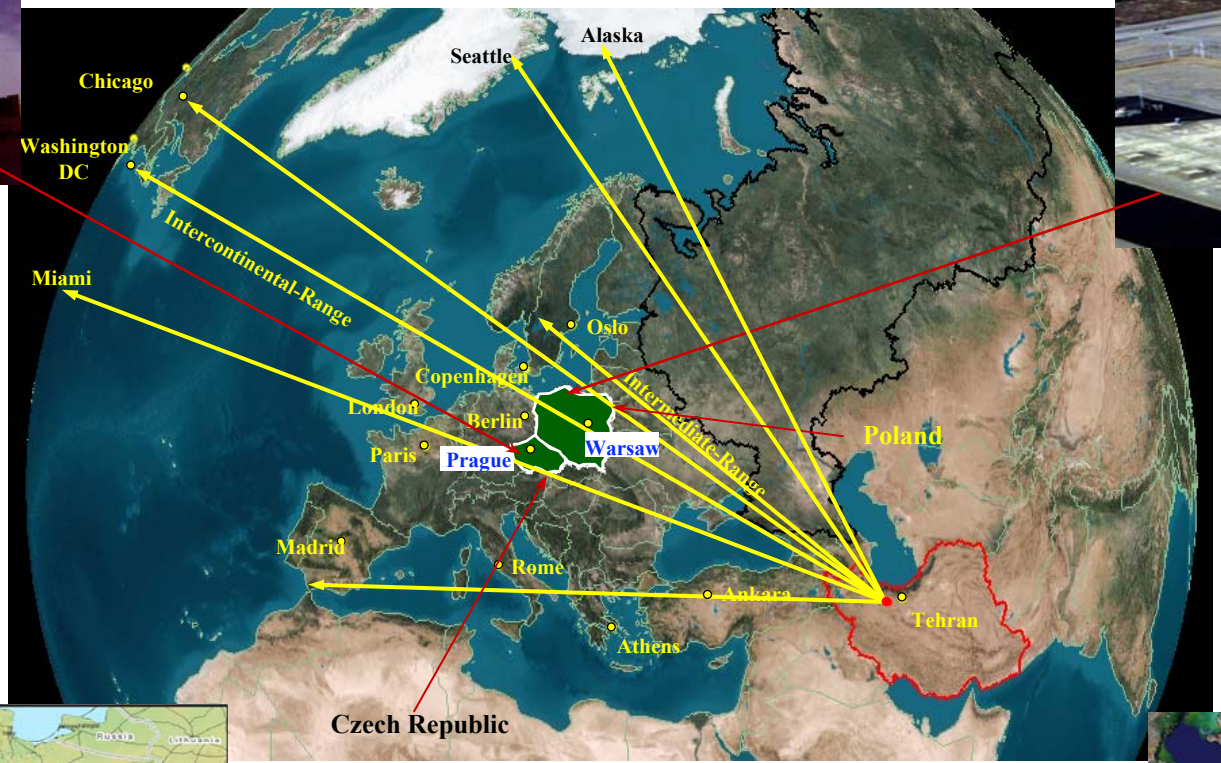
Proposed Long-Range Missile Defense Elements In Europe



(2012)

Schedule

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



(2013)

Schedule

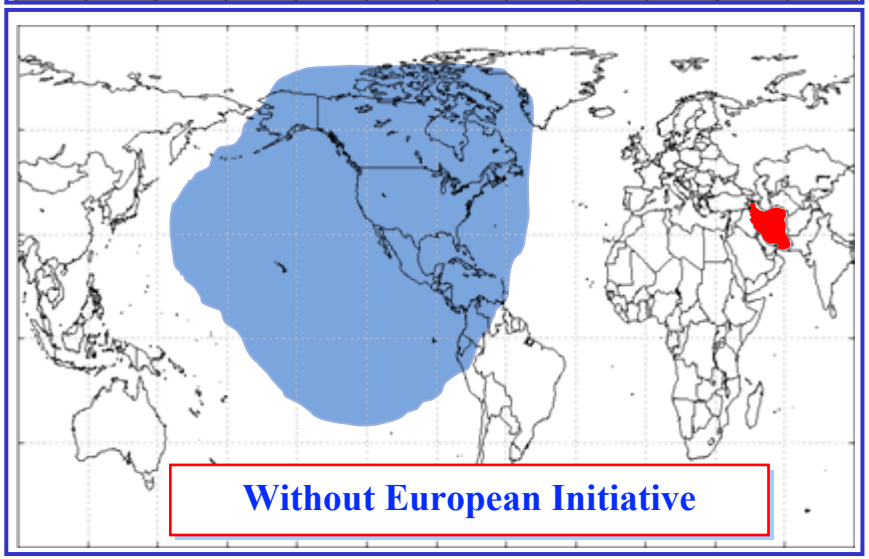
- Construction Start 3QFY09
- Integration Start 2QFY12
- Operational Capability 3QFY12 (FCD 2QFY13)

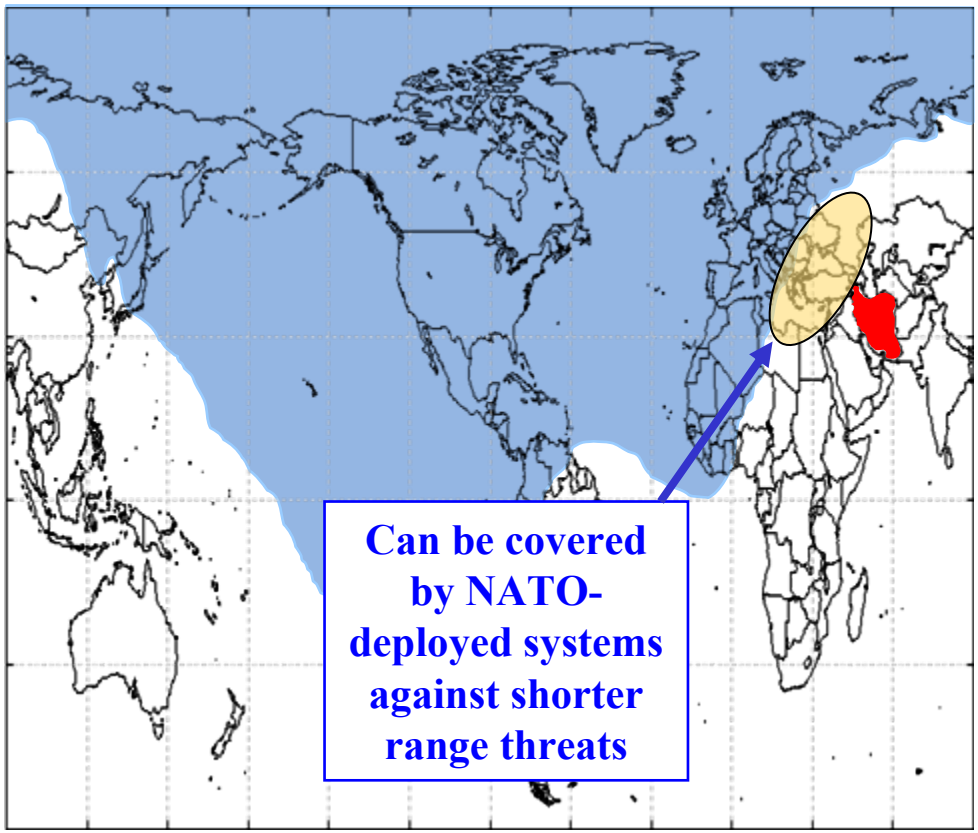
Why Poland and Czech Republic

- Azimuthal range
- Range from Iran

(TBD)

Capability Provided Versus Iranian Intermediate- To Long-Range Ballistic Missiles – 2013





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

Development Program

Boost Phase Kill

Airborne Laser

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

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

Counter-countermeasure

Multiple Kill Vehicle

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

Mobile Midcourse

SM-3 Block IIA 21" Interceptor

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

Enhanced Fire Control

Space Tracking and Surveillance System

- Launch 2 demonstration satellites in 2008
- Operational constellation concept being refined

Endoatmospheric Navy

Sea-Based Terminal

- Far-term program definition in work

Knowledge Points Drive Development Progress

MDA's PB09 President's Budget

TY $ in Millions

	FY08	FY09	FY10	FY11	FY12	FY13	Total FY08-13
Development	6,634	6,872	6,315	7,021	7,669	8,280	42,791
Fielding	1,285	1,749	2,405	1,613	1,077	542	8,672
Sustainment	736	715	727	824	877	956	4,835
Total PB09 Submit	8,655	9,336	9,447	9,459	9,623	9,778	56,298

International Activity Highlights

Framework Partners

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

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

Australia: Missile defense activities on hold pending new administration policy position

Denmark: Upgrade Thule Early Warning Radar

Italy: MEADS partner

Continuing Activity

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

Germany: MEADS partner, laser cross-link technology

Netherlands: PAC-3, Maritime BMD Cooperation

NATO: New tasking to explore architectures to supplement European Site. Working with ALTBMD to integrate NATO and U.S. systems

New Relations / Emphasis

Czech Republic: Agreement reached to host European Mid-course Radar pending parliamentary ratification

Poland: In negotiations to host European Interceptor Site

France: European test bed discussions, cooperative technology potential

United Arab Emirates: Expressed interest in missile defense

Ukraine: Conducting two industry to industry studies; RDT&E agreement being staffed

India: Missile defense discussions ongoing

Russia: Strategic cooperation /transparency dialogue, Theater Missile Defense Exercise Program on hold by Russians

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

Republic of Korea: Expressed interest in missile defense

Summary

- Major progress towards meeting Presidential Direction
- Capabilities are in the Warfighters' arsenal while concurrently supporting further development efforts
- Follow-on Blocks and development programs are addressing future challenges and uncertainties
- European missile defense deployments will help enhance defensive capabilities against the growing threat from Iran
- International partners play an increasingly important role in missile defense fielding and development activities

MISSILE DEFENSE AGENCY

DEPARTMENT OF DEFENSE