

Missile Defense Program Update



20 MAR 06

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



Ballistic Missile Defense Policy And Mission

Policy

“... The United States plans to **begin deployment** of a set of missile defense capabilities **in 2004**. These capabilities will serve as a **starting point** for fielding improved and expanded missile defense capabilities later.”

“ ... **Missile defense cooperation** will be a feature of U.S. relations **with close, long-standing allies**, and an important means to build new relationships with new friends like Russia.”



White House Fact Sheet

National Policy on Ballistic Missile Defense, 20 MAY 03

Mission

- **Develop an integrated layered Ballistic Missile Defense System**
 - **To defend the United States, its deployed forces, allies and friends**
 - **From ballistic missiles of all ranges**
 - **Capable of engaging them in all phases of flight**



Why Did We Deploy When We Did?

- **4 of 5 successful intercepts in tests of the Ground-based Midcourse Defense System 1999-2002 proved technology**
- **Successful flight tests of the boosters' operational configuration in 2003**
- **Successful completion of integration and checkout tests of the radars, command, control and communications system**
- **Completion of a comprehensive, independent safety review**



Today's Reality

Iran Tests Solid Fuel Motor for Missile

By ALI AKBAR

The Associated Press

Jun 1, 2005

Iran, Defiant, Insists It Plans To Restart Nuclear Program

The New York Times
Jan 10, 2006

NK's Taepodong Missiles Could Be Operational By 2015: LaPorte

Korea Times

March 11, 2005

Iran says it increased range, accuracy of its Shihab-3 missile

The Associated Press

August 9, 2005

N. Korea Develops Longer-Range Scud Missile With Up to 1,000-km Range

Kyodo World Service

February 15, 2005

N. Korean Nuclear Advance Is Cited

Washington Post

April 29, 2005



Why Invest In Ballistic Missiles And Weapons Of Mass Destruction?

- **Overcome a significant U.S. conventional weapon advantage**
 - Such weapons offer a cost-effective way to offset U.S. military power and level the battlefield
 - The 1991 and 2003 Gulf Wars showed that countries will use ballistic missiles against our forces
- **Enhance capabilities to deter, blackmail or coerce the United States and its allies and friends**
 - Threaten our foreign policy objectives by holding cities and high-value assets hostage
 - Deny access or coerce a withdrawal of U.S. and friendly forces engaged in a regional conflict
- **Acquire new tools of terrorism**
 - Would take terrorism into a new, more frightening dimension

**WMD Are the Great Strategic Equalizer,
And the Ballistic Missile Is the Weapon of Choice**



Tomorrow's Possibilities



Russia Admits Tactical Nuclear Missiles Are Missing
Associated Press
February 15, 2009



Non-Traditional Acquisition

- **MDA has adopted a Capability-based Acquisition Strategy**
 - Requirements are based on evolving threat uncertainty, not precise predictions
 - Incorporates an interactive, collaborative approach
 - Focus is on fielding early capability with military utility
- **Spiral development calls for continuous upgrades**
 - Short timeframes do not lock on a final grand design
 - Periodic continuation reviews with flexible contracts reduce incentives for unrealistic expectations
- **Knowledge points allow decisions on whether or how program development advances**
 - Critical risks demonstrated early



Critics of the Missile Defense Program

- **There is not enough oversight of MDA**
- **The testing is not realistic – you are cheating**
- **The cost of missile defense is not worth it**
- **This will lead to an arms race in the world**
- **Experts say the challenge is too great – it will never work**



The “Experts”

“There is no field where so much inventive seed has been sown with so little return as in the attempts of man to fly successfully through the air.”

Rear Admiral George Melville

Chief Engineer in the U.S. Navy, 1901



The atomic bomb was “the biggest fool thing we have ever done. The bomb will never go off, and I speak as an expert in explosives.”

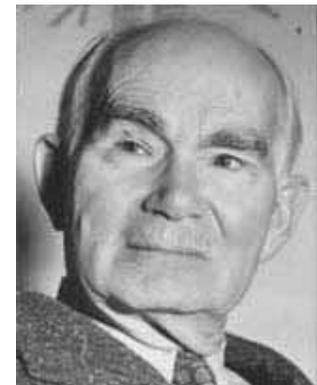
Admiral of the Fleet, William Daniel Leahy

One of President Truman’s most senior military advisors, 1945

“[Man will never reach the moon] regardless of all future scientific advances.”

Dr. Lee DeForest

Inventor of the electron tube, 1957





The “Experts”



“The concept of missile defense is quite seductive. (But) it’s destabilizing, it’s incredibly expensive, and it doesn’t work.”

Philip Coyle

Senior Advisor to the President of the Center for Defense Information, 23 FEB 06

“The national missile defense interceptor cannot tell the difference between warheads and the simplest of balloon decoys. This means that the national missile defense system can simply not work.”

Theodore Postol

MIT Professor of Science, Technology and National Security Policy





Integrated Ballistic Missile Defense System

Sensors



Space Tracking And Surveillance System



Sea-Based Radars



Forward-Based Radar



Early Warning Radar



Defense Support Program

Boost Defense Segment

Midcourse Defense Segment

Terminal Defense Segment



Kinetic Energy Interceptor



Airborne Laser



Aegis Ballistic Missile Defense



Ground-Based Midcourse Defense



Multiple Kill Vehicles



Patriot Advanced Capability-3



Terminal High Altitude Area Defense

Command, Control, Battle Management & Communications



USSTRATCOM

USPACOM

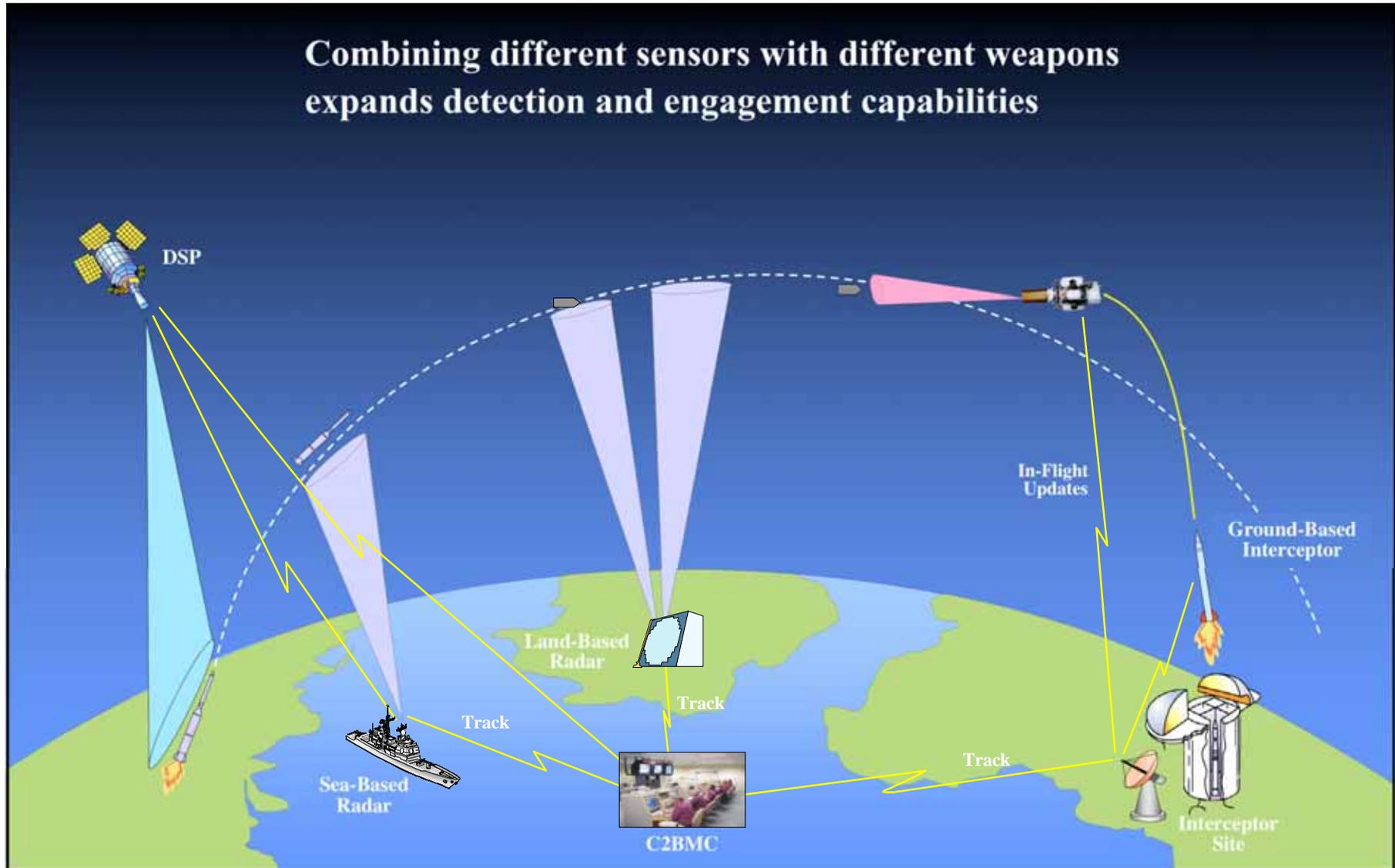
USNORTHCOM

NMCC



An Integrated Approach To Ballistic Missile Defense

Combining different sensors with different weapons expands detection and engagement capabilities



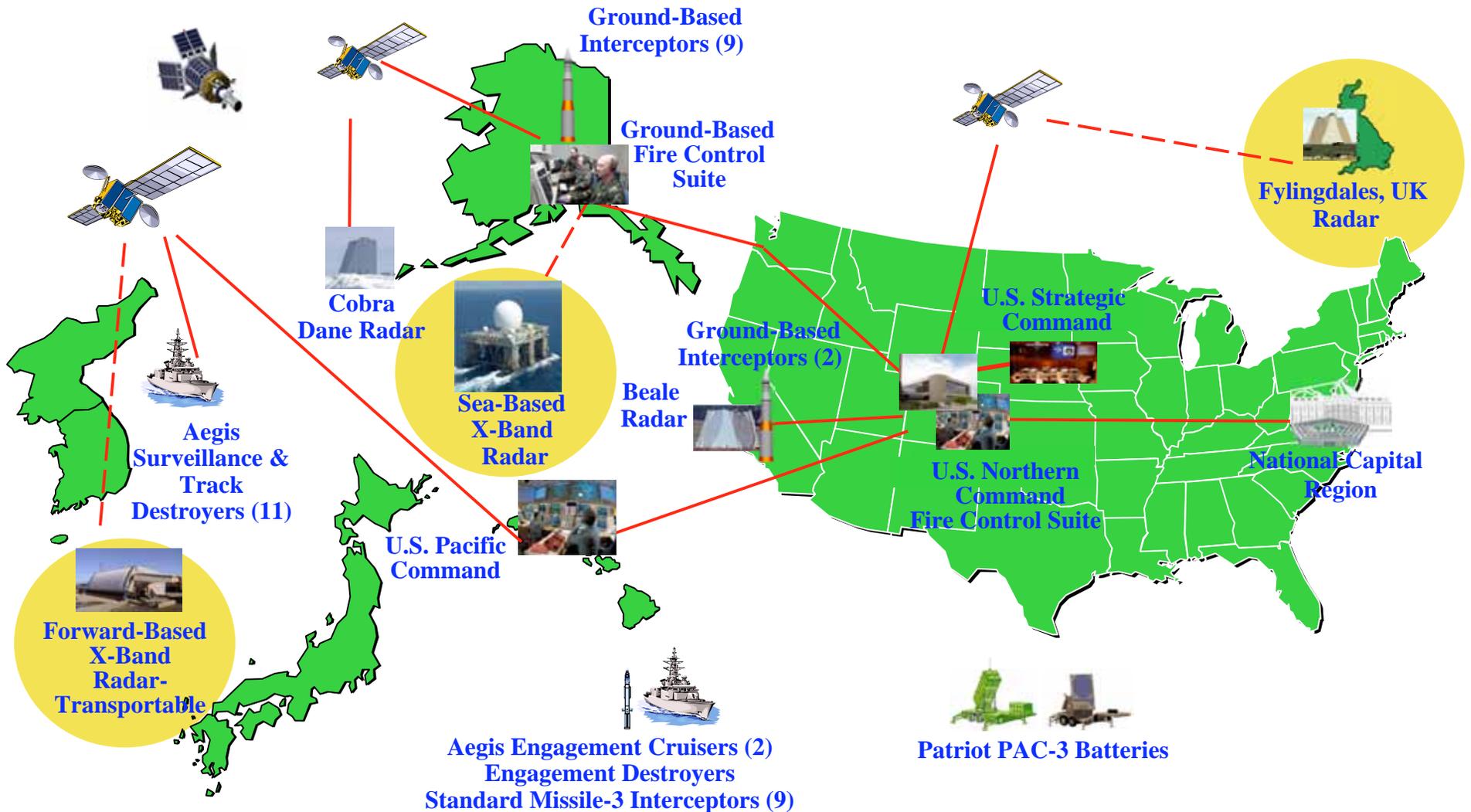


Missile Defense Program Strategy

- **Field an initial increment of missile defense capability**
 - **Initial protection of entire U.S. from North Korea, partial protection of the U.S. from Middle East threat**
 - **Protection of deployed forces, allies and friends with terminal defenses**
- **Field next increment (2006-2007) of missile defense capability**
 - **Complete protection of U.S. from Middle East**
 - **Expand coverage to allies and friends**
 - **Increase countermeasure resistance, and increase capability against shorter-range threats**
- **Follow on increments begin to increase robustness of interceptor inventory and sensors**
 - **Addresses unconventional attacks**



Current System Configuration Block 2006





Ft. Greely, Alaska





Vandenberg Air Force Base





Aegis BMD



Long-Range Surveillance & Track



Engagement

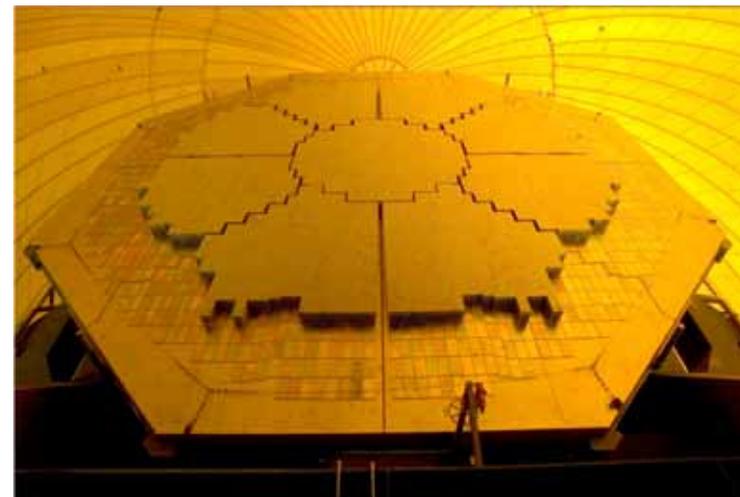


Sea-Based X-Band Radar (SBX)



SBX Under Way

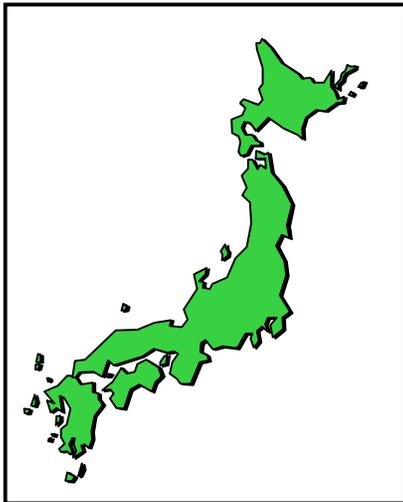
SBX In Pearl Harbor



SBX Interior



Forward Based X-Band Radar— Transportable (FBX-T)





Ballistic Missile Defense System

December 2006





Test Accomplishments

- **Long-Range Engagement**
 - **Successful Ground-Based Interceptor and kill vehicle performance test – December 2005**
 - **Successful demonstration of Cobra Dane (September 2005) and Beale (February 2006) radars – intercept solution generated and processed by fire control system**
 - **Acquired and tracked ICBMs with Forward-Based X-Band Radar**
 - **Achieved Sea-Based X-Band Radar high-power radiation – now in Hawaii enroute to Alaska**
- **Medium- and Short-Range Engagement**
 - **Successful Aegis intercept test – November 2005**
 - **Successful Terminal High Altitude Area Defense flight test – November 2005**
 - **Airborne Laser achieved successful full duration lase at operational power level – December 2005**
 - **Successful Japanese Standard Missile-3 nosecone proof-of-principal flight – March 2006**



FTM 04-1





LRALT

26 SEP 05





THAAD Interceptor

22 NOV 05





THAAD

22 NOV 05

UNCLASSIFIED

Sea Lite Beam Director Data
MIT Lincoln Lab, Raytheon, SVAD
THAAD FTT-01
Nov 22, 2005
MWIR-A AuASAM Telescope
3.3-5.0 micron
7.7 x 9.9 mrad FOV

UNCLASSIFIED

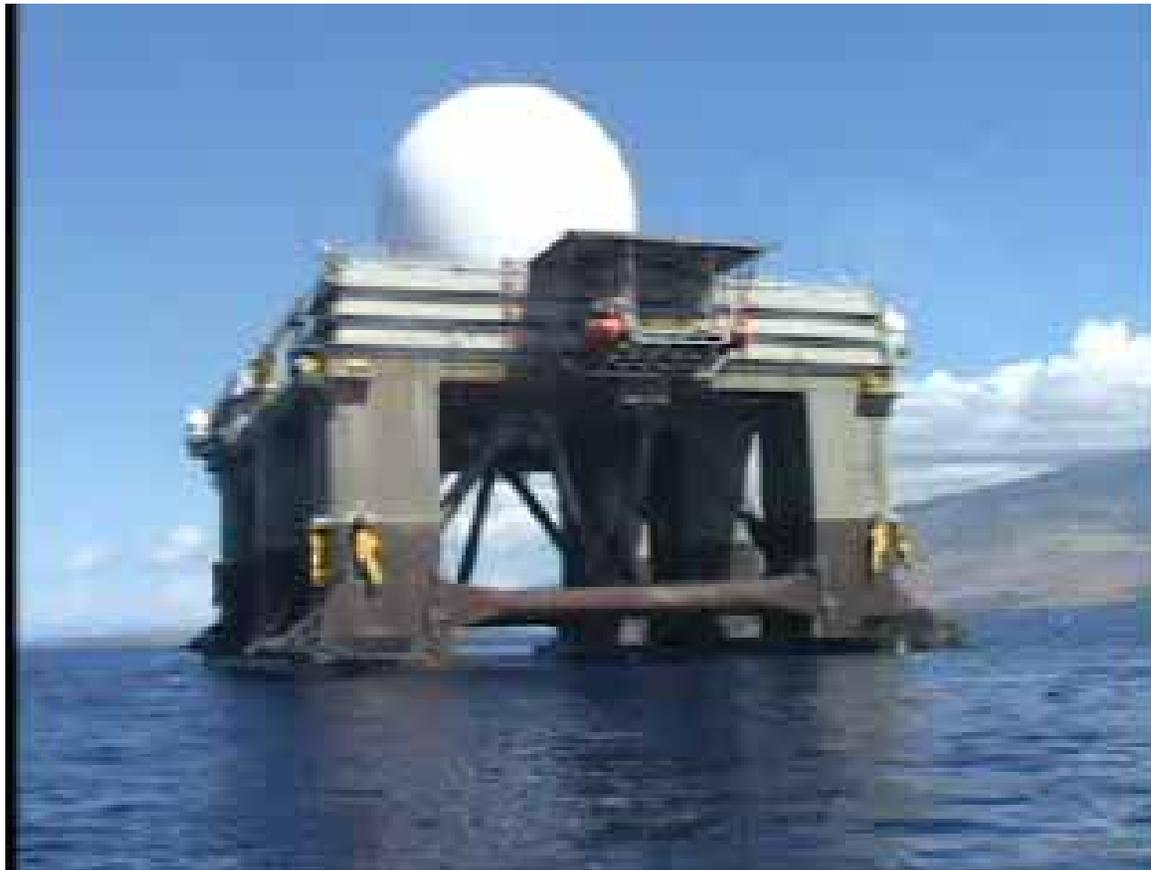


Ground-Based Midcourse Defense 13 DEC 05

**Ground-based Midcourse Defense
Flight Test - 1**



Sea-Based X-Band Radar





Planned Flight Testing In 2006

- **Ground-based midcourse defense (long-range)**
 - ✓ **Demonstrate operationally configured radar (Beale)**
 - **Demonstrate interceptor and verify kill vehicle functions – June/July**
 - **Conduct intercept test – September / October**
 - **Conduct intercept test – November / December**
- **Sea-based midcourse defense (short- to medium-range)**
 - ✓ **Japanese interceptor nosecone proof-of-principle flight (non-intercept)**
 - **Conduct intercept test against separating warhead – June**
 - **Conduct intercept of a low exoatmospheric ballistic missile – November**
- **Ground-based terminal defense (Short- to medium- range)**
 - **Demonstrate Terminal High Altitude Area Defense interceptor – Mar-May**
 - **Two intercept tests against unitary (April-June) and separating targets (June-August)**
 - **Demonstrate low-altitude flight of interceptor – September-November**



Emerging Block 2006 Capabilities

- **Defense against intercontinental ballistic missiles from North Korea**
 - Up to 22 Ground-Based Interceptors in Alaska and California
 - Initial radar discrimination software for complex threats
- **Defense against emerging threats**
 - Second forward-based radar March 2007, ready for forward-based functions December
 - Space-Based Infrared System (Highly Elliptical Orbit) integration December 2007
 - Space Tracking and Surveillance System demonstration satellites December 2007
 - Total of 3 cruisers / 7 destroyers with 26 Standard Missile-3 interceptors
 - Improved battle management and initial global integrated fire control





Uncertainties And Challenges

- **Rogue Nations: Keep ahead of long-range threat inventories while significantly increasing capability against shorter- threats**
 - **Threat Maturation: Keep pace with increasing threat complexity**
 - **Unconventional Ballistic Missile Attacks: Negate attempts to circumvent the Ballistic Missile Defense System**
 - **Emerging Threats: Maintain development program foundation to address capabilities**
-
- **With last year's \$5 billion reduction, we developed a program strategy to balance these risks**
 - **This year's cuts of an additional \$1.8 billion and fact-of-life changes caused further program adjustments for 2007 budget**



Approach To FY 2007 President's Budget

- **Maintain fielding and sustainment commitments**
 - **Continue focus on mission assurance and quality**
 - **Balance development to address current and future challenges**
-
- **Fact of life changes have driven cost growth**
 - **Exoatmospheric Kill Vehicle producibility challenges**
 - **Extended qualification testing for Terminal High Altitude Area Defense**
 - **Sea-based interceptor deployment stretched to accept technical upgrades**
 - **Program adjustments: Development**
 - **Defer second Airborne Laser aircraft two years**
 - **Delay fielding of Kinetic Energy Interceptor until after 2008 flight test**
 - **Accommodate low risk technology and 2-color seeker in Multiple Kill Vehicle**
 - **Program adjustments: Fielding**
 - **Focus on forward-deploying precision tracking and discrimination sensors**
 - **Increase funding to achieve 24/7 operations and support**
 - **4 additional Ground-Based Interceptors thru Infrastructure Reduction**



President's Budget FY07

TY \$'s in Millions

President's Budget 2007	FY06	FY07	FY08	FY09	FY10	FY11	Total FY06-11
Development	6,256	6,867	6,785	7,084	7,452	8,228	42,672
Fielding	939	1,743	2,062	2,093	1,880	1,015	9,732
Sustainment	500	708	688	779	789	630	4,094
Total BMDS	7,695	9,318	9,536	9,956	10,121	9,873	56,498



Emerging Block 2008 Capabilities

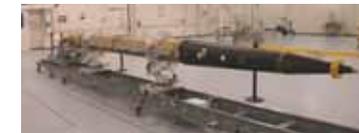
- **Increased capability against North Korea and Iran**
 - Up to 38 Ground-Based Interceptors
 - Thule radar (Greenland) available
- **Initial defense against asymmetric and improved capability against regional threats**
 - 3 Aegis cruisers and 15 Aegis destroyers with 57 Standard Missile-3 interceptors
 - 24 Terminal High Altitude Area Defense interceptors
- **Greater mobility to address surprise threats**
 - Up to 3 forward-based radars
 - Surveillance and tracking satellites (2)





Block 2010 Capabilities

- **Increased capability against North Korea and Iran**
 - Up to 50 Ground-Based Interceptors (Includes 10 in Europe)
 - Thule radar (Greenland) fully integrated
- **Improved defense against asymmetric and improved capability against regional threats**
 - 3 Aegis cruisers and 15 Aegis destroyers with 81 Standard Missile-3 interceptors
 - 48 Terminal High Altitude Area Defense interceptors
- **Greater mobility to address surprise threats**
 - Up to 4 forward-based radars available





International Activity Highlights

Framework Partners



Japan: FBX-T Siting, 21" Missile Technology, Information Sharing



UK: Fylingdales UEWR, CM & Lethality Technology, Target Development, Third Site Candidate



Australia: OTH Radar, M&S Partner, Future Joint Analysis



Denmark: Thule UEWR



Italy: FW MOU In Final Stages, MEADS Partner, Architecture Analysis Study

Continuing Activity



Israel: AWS Deployed, ASIP Program



Germany: MEADS Partner, Laser Cross-Link Technology



Netherlands: PAC-3, Trilateral Frigate Program With Aegis



Turkey: Bilateral Sensor Architecture Study, Possible FBX-T 2 Siting

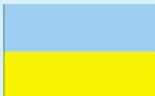


Spain: U.S.-Spain MD Working Group Established, Aegis LRS&T

New Relations / Emphasis



NATO: ALTBMD Program Office, Feasibility Study, Interoperability



Ukraine: CM And Target Cooperation, MD Workshops Held June And October 2005



Russia: TMDEX Program



France: Exploring Interest



Poland: Interim MOA Under Discussion, Third Site Candidate



Czech Republic: Third Site Candidate



India: PLANX In January 2006, SIMEX 2007



Taiwan: Workshops; Analysis



Results Of Mission Readiness Task Force

- **Implemented findings into test program**
 - **Identified mission director for test events to provide end-to-end continuity**
 - **Defined and executed common sequence of test reviews / panels across all BMDS test activities**
 - **Created TE Director for Test Assurance under RTO**
 - **Stood up Test Configuration Control Board (TCCB) promoting total system perspective**
 - **Integrated MDA Safety, Quality, and Mission Assurance in test task forces**
 - **Strengthened Mission Assurance and Systems Engineering processes across the program**



Issues For Industry

- **We will place special emphasis through audits, award fee plans and program reviews on:**
 - **Mission Assurance**
 - **Systems Engineering**
 - **Test Readiness Certification**
 - **Supply Chain Management**
- **Integration challenges the way we have done business**
 - **Data sharing, proprietary technologies and procedures**
 - **We will adjust our acquisition strategies to better facilitate integration of BMDS**
- **Capability-based acquisition challenges the traditional relationship between government and industry**
 - **Government doesn't have all the answers**
 - **International cooperation introduces new variables**
- **Implementing a knowledge-based funding approach which will match our spiral strategy**
 - **Contracts must be adaptive, flexible, and not necessarily long-term**



A World With Missile Defense

- **Evolving the Ballistic Missile Defense system over the next decade**
 - **More mobility**
 - **More layers**
 - **More redundancy**
 - **More inventory**
 - **Participation of more allies and friends**
- **How will this impact our world?**
- **How will U.S. defense goals (dissuade, assure, deter, defend), the Global War on Terrorism, and U.S. foreign policy be affected?**



Persistent Surveillance



- **Global command, control, battle management, communications**
- **More sea-based and land-based sensors**
- **Surveillance and track satellites**
- **Next-generation space-based infrared satellites**



- *Improved response times worldwide*
- *Expanded areas of engagement*
- *Better information on missile events*
- *Worldwide integration*

The United States Can Better Defend Its Interests and More Readily Meet Its Defense Commitments to Allies and Friends.



More Mobile Assets



- **18 sea-based engagement ships**
- **Transportable land-based engagement capabilities (THAAD, MEADS)**
- **Transportable and mobile radars**
- **Introduction of boost phase defenses**



- *Flexibility to address emerging threats*
- *Improved crisis response*
- *More agile battle field operations*
- *New defense layers against all missile ranges*

**Quick Reaction Times Improve Confidence of Leaders –
“Shows of Force” to Deter Adversaries Possible**



Building Defense Robustness



- **50 Ground-Based Interceptors at multiple sites**
- **Multiple Kill Vehicles/ counter-countermeasures**
- **Additional CONUS radars**
- **ICBM-capable sea-based interceptors**
- **Redundant sensor coverage**



- *Bolstered interceptor inventories*
- *Growing confidence in missile defense system*
- *Terminal long-range defenses supplement midcourse and boost defenses*
- *Improved homeland defense*

Greater Freedom of Action to Prosecute the Global War On Terror, and Improved Defense of U.S. Populations From Off-shore Launches



The Future Ballistic Missile Defense System

- **How much defense is enough?**
 - **Our air, naval, and ground forces continue to evolve to meet national security requirements**
 - **Will the ballistic missile threat ever be stable enough so that we can stop growing or changing the system?**
- **Do we need to go to space with interceptors?**
 - **A space layer will significantly enhance system performance and responsiveness – at what point do we explore this hypothesis?**
 - **Will terrestrial-based BMD assets be sufficient to deal with increasingly sophisticated and shifting threats?**



Take Aways

- **The missile threat is real and proliferating**
- **Major progress towards meeting Presidential direction**
- **Capabilities are in the warfighters' arsenal while concurrently supporting further development efforts**
 - **Adding persistence improves awareness**
 - **Adding mobility increases options**
 - **Adding inventory enhances robustness**
 - **Enhancing C2BMC extends the battlespace**
- **Carefully balancing program priorities to accommodate fiscal controls, but fielding plans and development programs are being affected**
- **International partners play an increasingly important role in missile defense fielding and development activities**





Ballistic Missile Defense System Limited Defensive Operations (March 2006)





Agenda

- **Perspective**
- **BMDS Update**
- **MRTF Results**
- **Expectations for Industry**
- **Future of BMDS**



Mission and Direction

- **Develop an integrated layered Ballistic Missile Defense System**
 - **To defend the United States, its deployed forces, friends, and allies**
 - **From ballistic missiles of all ranges**
 - **Capable of engaging them in all phases of flight**

- **Presidential Security Policy Directive 23 (May 2001)**
 - **Begin initial fielding in 2004...continue to improve over time**
 - **No final fixed architecture...evolve as needed**
 - **International cooperation a key element**

- **National Missile Defense Act of 1999**
 - **Deploy capabilities when “technologically possible”**