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United States Government Accountability Office
Washington, DC 20548

December 21, 2010

The Honorable James R. Langevin
Chairman
The Honorable Michael R. Turner
Ranking Member
Subcommittee on Strategic Forces
Committee on Armed Services
House of Representatives

Subject: *Missile Defense: European Phased Adaptive Approach Acquisitions Face Synchronization, Transparency, and Accountability Challenges*

This report formally transmits our briefing on acquisition management for the European Phased Adaptive Approach (EPAA) (see enc. I). This is one of two products we are issuing in response to your October 13, 2009 request that we evaluate the Department of Defense's (DOD) plans for implementing EPAA. We provided your staff a draft copy of this briefing in a meeting with them on September 22, 2010. We do not make any recommendations in the briefing. We will issue a final report on broader issues of European missile defense that will include the material in the briefing. That final product will have recommendations, as appropriate.

Objectives, Scope and Methodology

For the briefing we sought to answer two questions: (1) What key acquisition planning and management practices are in place for EPAA? (2) Are there near-term development risks for EPAA?

To answer the first question on acquisition management practices, we synthesized management and oversight criteria from the Office of Management and Budget, DOD, the Missile Defense Agency (MDA), and GAO best acquisition practices for large acquisition to determine key management principles. We then compared EPAA acquisition efforts to these principles. To determine the status of DOD's efforts, we reviewed DOD and MDA documentation related to EPAA, including the Ballistic Missile Defense Review Report and MDA's Ballistic Missile Defense System (BMDS) Accountability Report. We met with MDA and Office of the Secretary of Defense officials. We also visited U.S. European Command and U.S. Strategic Command to understand their needs.

To answer the second question on near-term development risks, we reviewed MDA's BMDS acquisition documentation, including the integrated master test plan and budget documents. We met with officials from MDA directorates and element program offices as well as the Office of the Under Secretary of Defense for Policy and the Under Secretary of Defense for Acquisition, Technology and Logistics, and visited contractor facilities. We also used prior GAO work regarding best acquisition practices to assess those risks.

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We conducted this performance audit from March 2010 to November 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Summary of Results

In response to changing threats in the region and new opportunities created by advances in missile defense technology, in September 2009 the President announced a new policy for missile defense of Europe, called the European Phased Adaptive Approach, or EPAA.DOD has emphasized the benefits of a policy of regional phased adaptive approaches, stating that it does not require a globally integrated missile defense architecture and that it relies on proven solutions. According to DOD, because EPAA is a policy, not a separate missile defense acquisition program, DOD intends to use the department's existing processes for managing missile defense acquisitions and the existing BMDS element-based acquisition approach for missile defense system elements---not one specific to EPAA—to approve system acquisitions.

However, we found that DOD has not fully implemented a management process that synchronizes EPAA acquisition activities and ensures transparency and accountability. DOD has made progress in acquisition planning for technology development and systems engineering and testing and partial progress in defining requirements and identifying stakeholders but has not yet developed an EPAA acquisition decision schedule or an overall EPAA investment cost. The limited visibility into the costs and schedule for EPAA and the lack of some key acquisition management processes we found reflect the oversight challenges with the acquisition of missile defense capabilities that we have previously reported. The consequences of these issues have included:

- limited means of independently assessing progress and a limited basis for oversight and
- going into production before fully demonstrating system performance, leading to rework, cost increases, delays, and uncertainties about delivered capabilities.

The flexibility desired by DOD is not incompatible with appropriate visibility into key aspects of acquisition management. As DOD proceeds with the EPAA acquisition activities, it is important for Congress and the President to have assurance that the EPAA policy is working as intended and that acquisition activities are cost-effective.

Agency Comments and Our Evaluation

DOD provided us written comments on a draft of this briefing. These comments are reprinted in enclosure II.

In its comments, the department stated that it disagreed with GAO's approach to assess EPAA as what it termed a "near-distinct" element of the Ballistic Missile Defense System, rather than DOD's decision to employ the department's existing processes. As we have consistently reported, the department's existing processes for developing and acquiring missile defense have transparency and accountability issues that limit oversight and preclude assessing overall progress as well as limiting opportunities for constructive action to put programs in a better position to succeed. The six key principles we used in our review to assess the department's planning and management of acquisition processes for EPAA are

embedded in the department's acquisition guidance as well as the Office of Management and Budget's guidance for capital programming across federal agencies, particularly as it relates to bringing together and synchronizing multiple development efforts. Although we understand that EPAA is a policy approach, not an acquisition program, it nonetheless represents an arrangement of significant investments, it requires a high degree of coordination and technical integration, and the progress implementing EPAA continues to be of congressional interest. Thus, we continue to believe these acquisition management principles serve as a useful, appropriate and beneficial standard by which to assess the department's approach to managing EPAA acquisitions.

The department also stated that GAO inaccurately portrayed DOD's acquisition plans as inadequate to making capability available to the warfighter should requests for deployment come from combatant commanders. The acquisition issues with individual systems reported in the briefing are risks, not certainties. As we have stated in the briefing and throughout our body of work on acquisition of missile defense capabilities, the department does not take a knowledge-based approach toward missile defense development—which involves developing firm requirements, ensuring a resource requirements match, and starting with mature technologies, among other steps. We have found that attaining high levels of knowledge at key junctures in development is an attribute of successful acquisitions. Instead, the highly concurrent development, production and deployment effort DOD is undertaking in the the BMDS increases risks that the capability eventually provided will not meet the warfighter's needs, with significant potential cost and schedule growth consequences.

We also received technical comments from DOD, which have been addressed in the briefing, as appropriate. Our quality standards require that we solicit technical comments on draft products to ensure the accuracy of our findings. DOD and MDA submitted two sets of technical comments for our review. We were only able to make relatively small adjustments to the briefing because the department was unable to substantiate most of the comments with sufficient documentation.

The changes we did make to the briefing include additional context on EPAA as well as additions that reflect the oversight and management processes in place to guide decisions on EPAA. We also made minor text changes at various locations throughout the briefing. Our conclusions, however, remain the same.

We are sending copies of this report to the appropriate congressional committees; the Secretary of Defense; the Under Secretaries of Defense for Policy and for Acquisition, Technology and Logistics; and the Director of the Missile Defense Agency. The report also is available at no charge on the GAO Web site at http://www.gao.gov.

Should you or your staff have any questions concerning this report, please contact me at (202) 512-4841 or chaplainc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to

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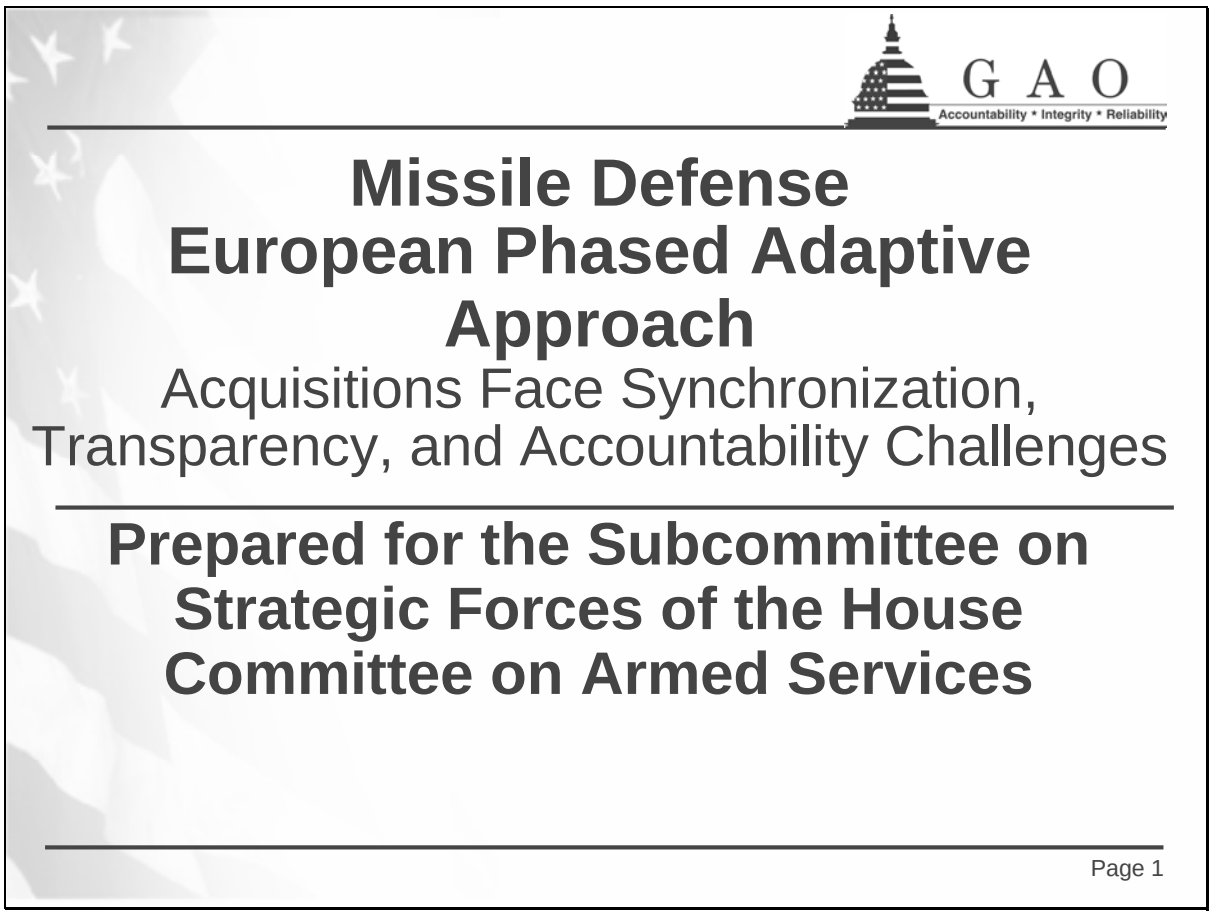
Acquisition and Sourcing Management

Enclosures - 2

Enclosure I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Missile Defense
European Phased Adaptive Approach
Acquisitions Face Synchronization, Transparency, and Accountability Challenges
Prepared for the Subcommittee on Strategic Forces of the House Committee on Armed Services
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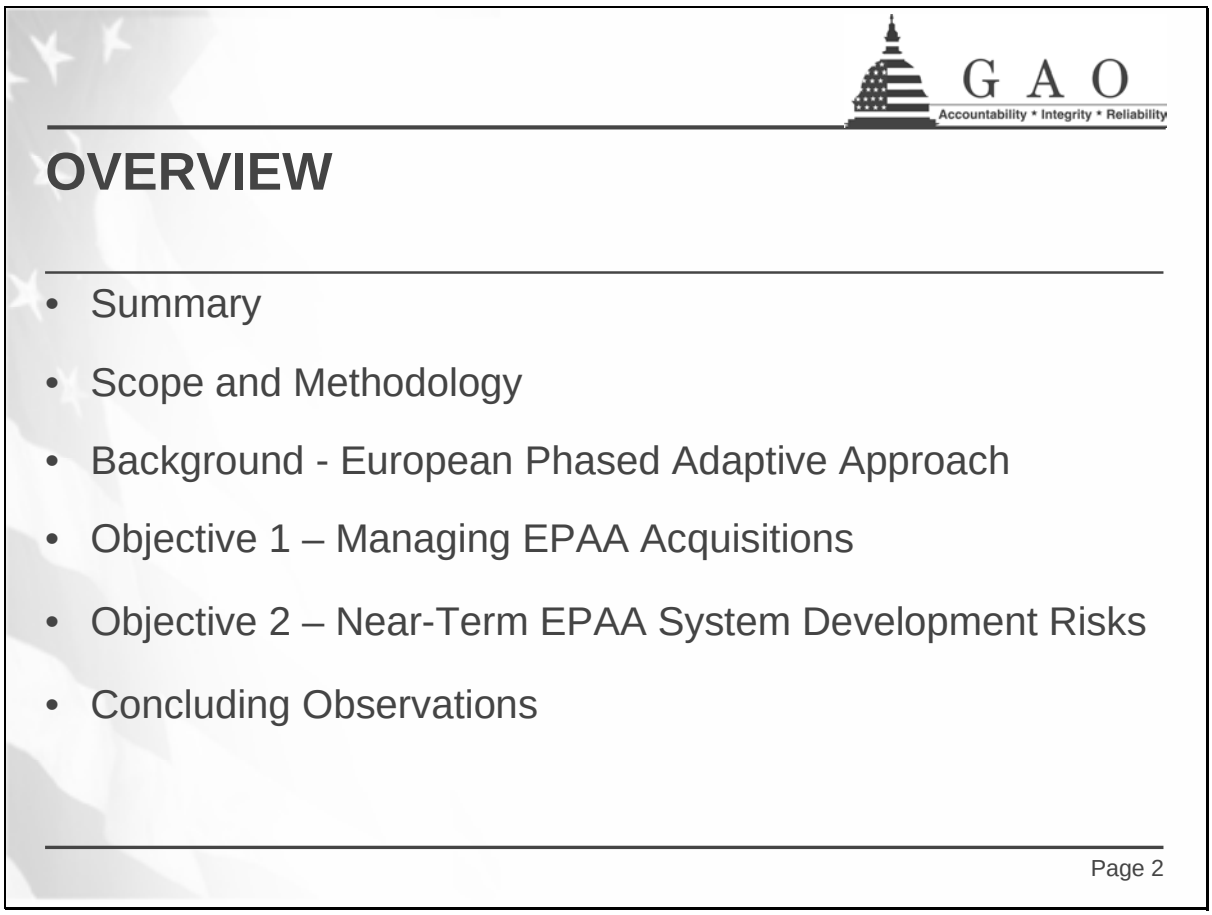
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• Summary
• Scope and Methodology
• Background - European Phased Adaptive Approach
• Objective 1 – Managing EPAA Acquisitions
• Objective 2 – Near-Term EPAA System Development Risks
• Concluding Observations
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Introduction

- Meeting the presidential direction to develop and field missile defenses in Europe in four phases will require addressing significant acquisition management and system development challenges.
  - Acquisition management challenges are inherent to the European Phased Adaptive Approach (EPAA) because acquisition activities of the of Ballistic Missile Defense System (BMDS) elements comprising EPAA must be synchronized to deliver the capabilities desired.
  - System development challenges are inherent to EPAA because the EPAA policy commits to delivering capabilities on a schedule that requires concurrency among technology, design, testing, and other development activities; this concurrency introduces risk of increased costs, schedule delay, or performance shortfalls, which must be addressed.

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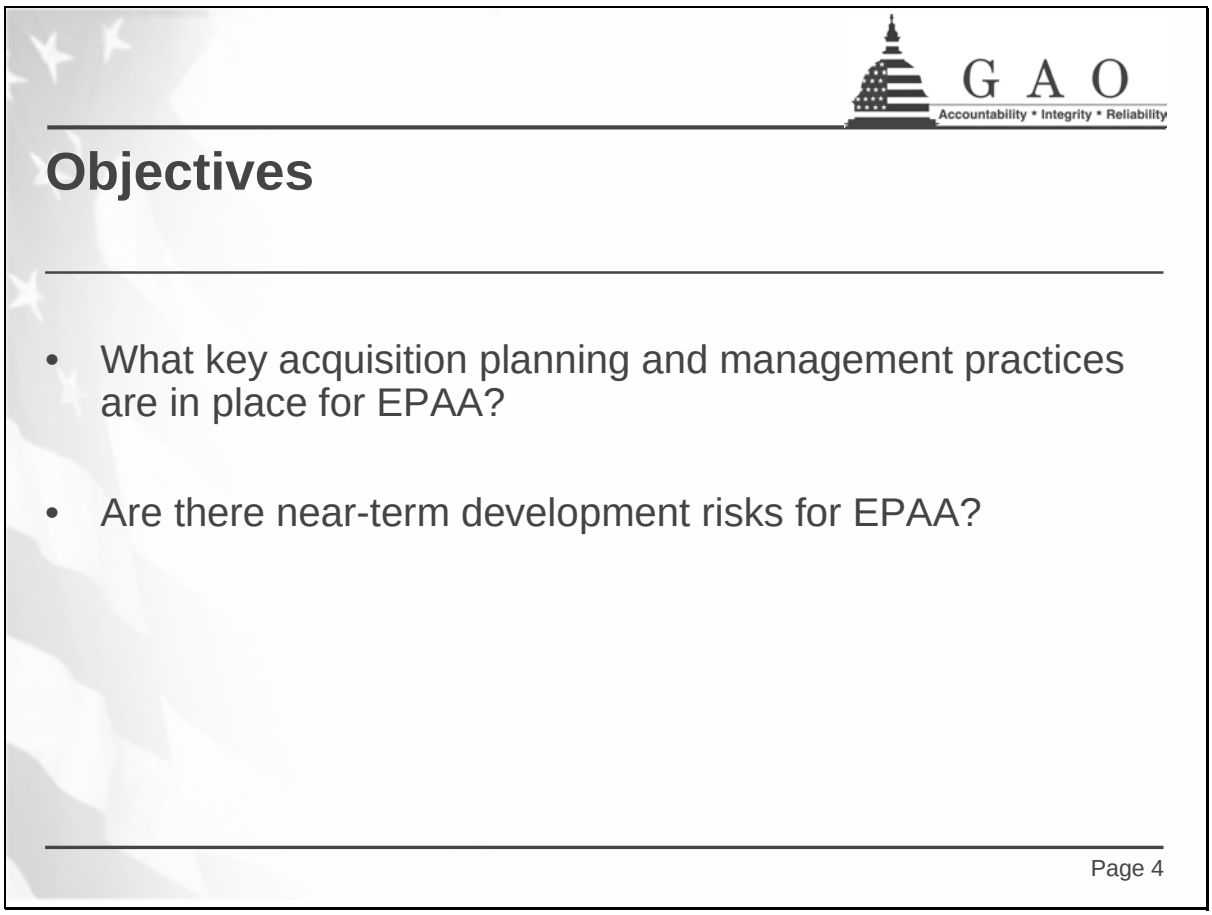
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Objectives
• What key acquisition planning and management practices are in place for EPAA?
• Are there near-term development risks for EPAA?
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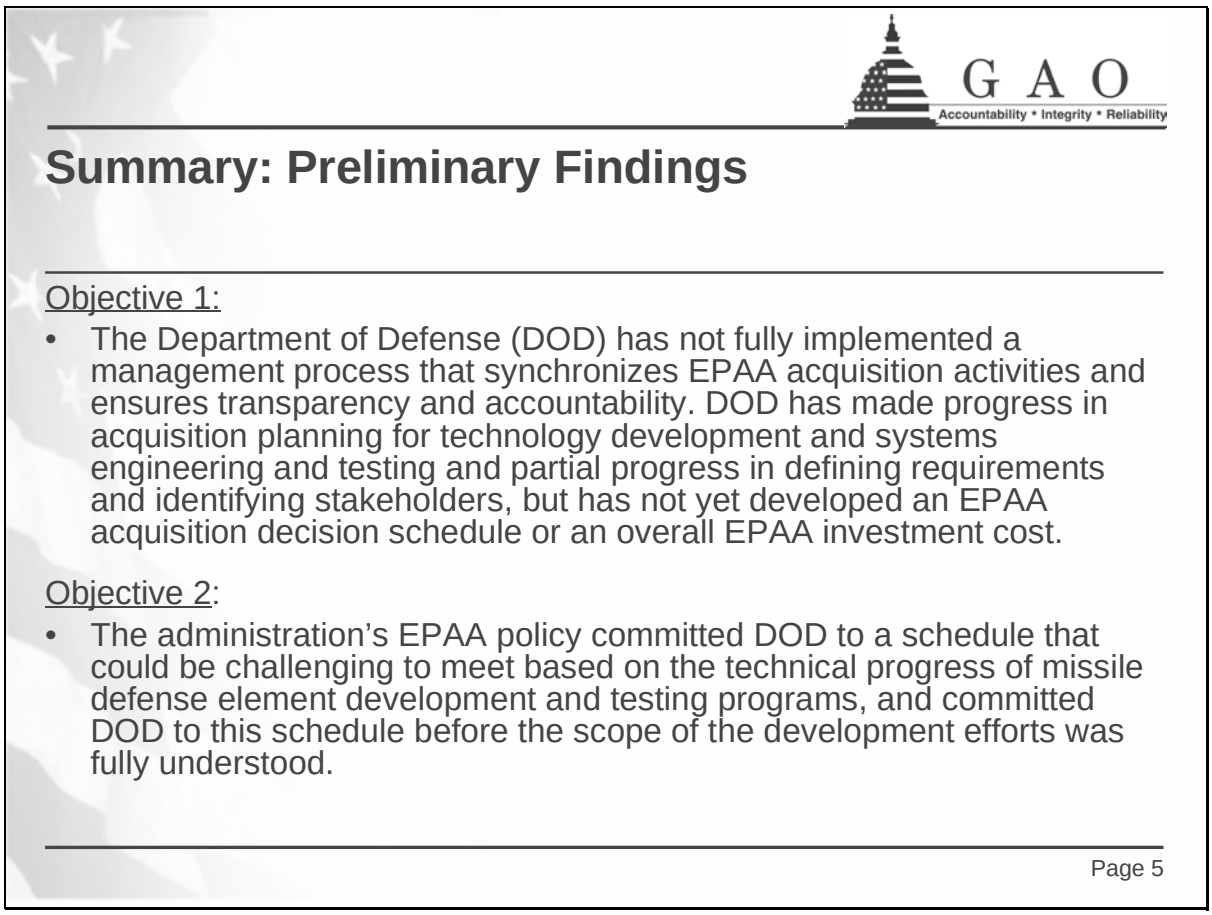
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Summary: Preliminary Findings
Objective 1:
• The Department of Defense (DOD) has not fully implemented a management process that synchronizes EPAA acquisition activities and ensures transparency and accountability. DOD has made progress in acquisition planning for technology development and systems engineering and testing and partial progress in defining requirements and identifying stakeholders, but has not yet developed an EPAA acquisition decision schedule or an overall EPAA investment cost.
Objective 2:
• The administration's EPAA policy committed DOD to a schedule that could be challenging to meet based on the technical progress of missile defense element development and testing programs, and committed DOD to this schedule before the scope of the development efforts was fully understood.
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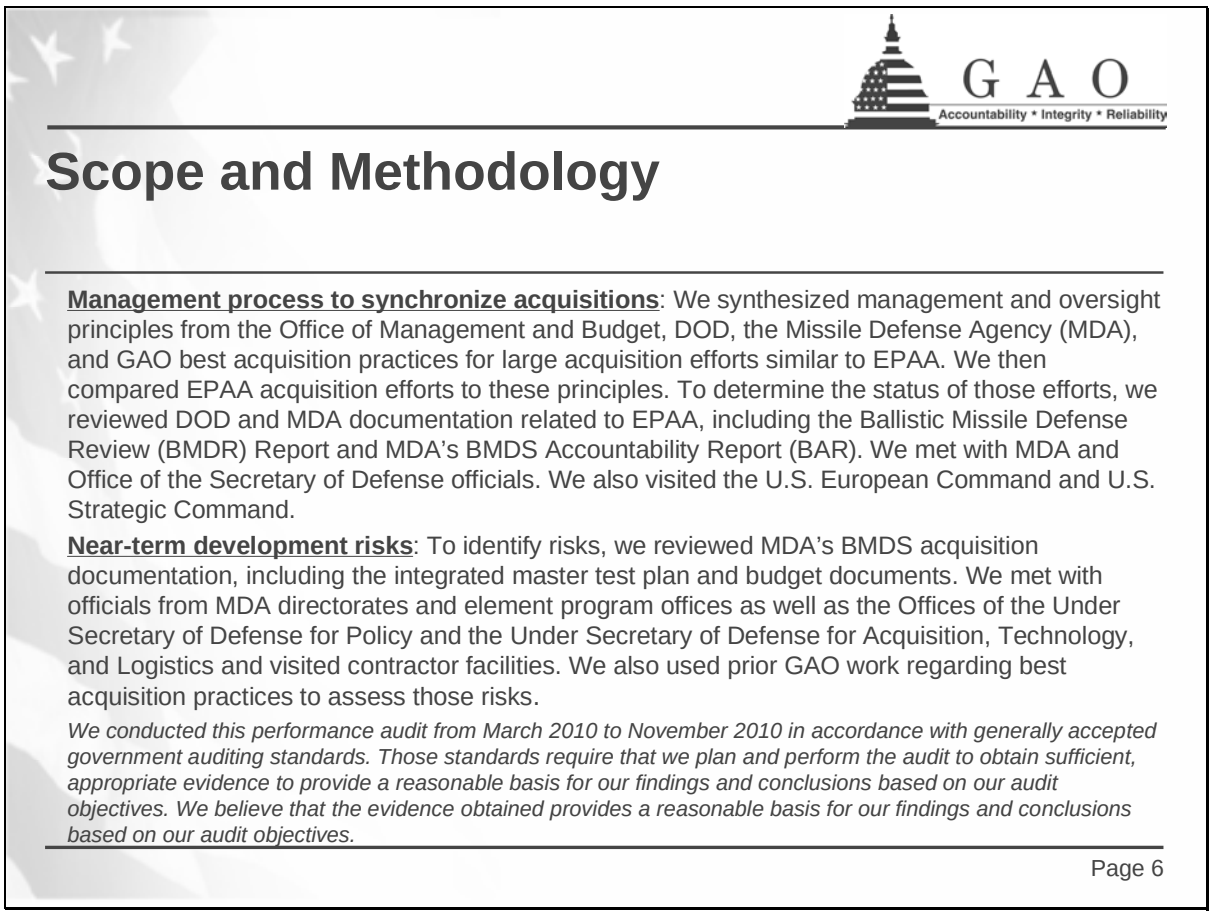
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Scope and Methodology
Management process to synchronize acquisitions: We synthesized management and oversight principles from the Office of Management and Budget, DOD, the Missile Defense Agency (MDA), and GAO best acquisition practices for large acquisition efforts similar to EPAA. We then compared EPAA acquisition efforts to these principles. To determine the status of those efforts, we reviewed DOD and MDA documentation related to EPAA, including the Ballistic Missile Defense Review (BMDR) Report and MDA's BMDS Accountability Report (BAR). We met with MDA and Office of the Secretary of Defense officials. We also visited the U.S. European Command and U.S. Strategic Command.
Near-term development risks: To identify risks, we reviewed MDA's BMDS acquisition documentation, including the integrated master test plan and budget documents. We met with officials from MDA directorates and element program offices as well as the Offices of the Under Secretary of Defense for Policy and the Under Secretary of Defense for Acquisition, Technology, and Logistics and visited contractor facilities. We also used prior GAO work regarding best acquisition practices to assess those risks.
We conducted this performance audit from March 2010 to November 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.
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Background

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The President's EPAA Policy

- In response to changing threats in the region and new opportunities created by advances in missile defense technology, in September 2009 the President announced a new policy for missile defense of Europe, called the European Phased Adaptive Approach, or EPAA.
- According to DOD, the EPAA policy was based primarily around an Aegis Standard Missile 3-based architecture in Europe and the need for a flexible defense against an uncertain threat.
- DOD describes the new approach as more cost effective because the SM-3 is less expensive than the ground-based interceptor that would be used under the prior approach to the defense of Europe. In addition, DOD believes the new approach is more resilient to changes in raid size than the previous plan, which would only have had 10 interceptors in Europe.
- DOD states that EPAA's use of distributed, mobile, and relocatable systems increases the system's survivability by making the assets more difficult for an adversary to target.

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Background

BMDR Report: New Phased Adaptive Approaches at Core of Defending against Regional Threats

- EPAA represents the first example of DOD's plan to adopt a new regionally based approach to delivering missile defense capability; as outlined in its first BMDR report published February 2010.
- DOD has emphasized the benefits of a policy of regional phased adaptive approaches (PAA), stating that it does not require a globally integrated missile defense architecture and that it relies on proven solutions.
- According to DOD, the regionally based policy approach reflects the commitment to significantly accelerate the acquisition and deployment of mature systems and that the benefits of improving capabilities are best ensured by tailoring regional deterrence and defense architectures to the unique requirements of each region.

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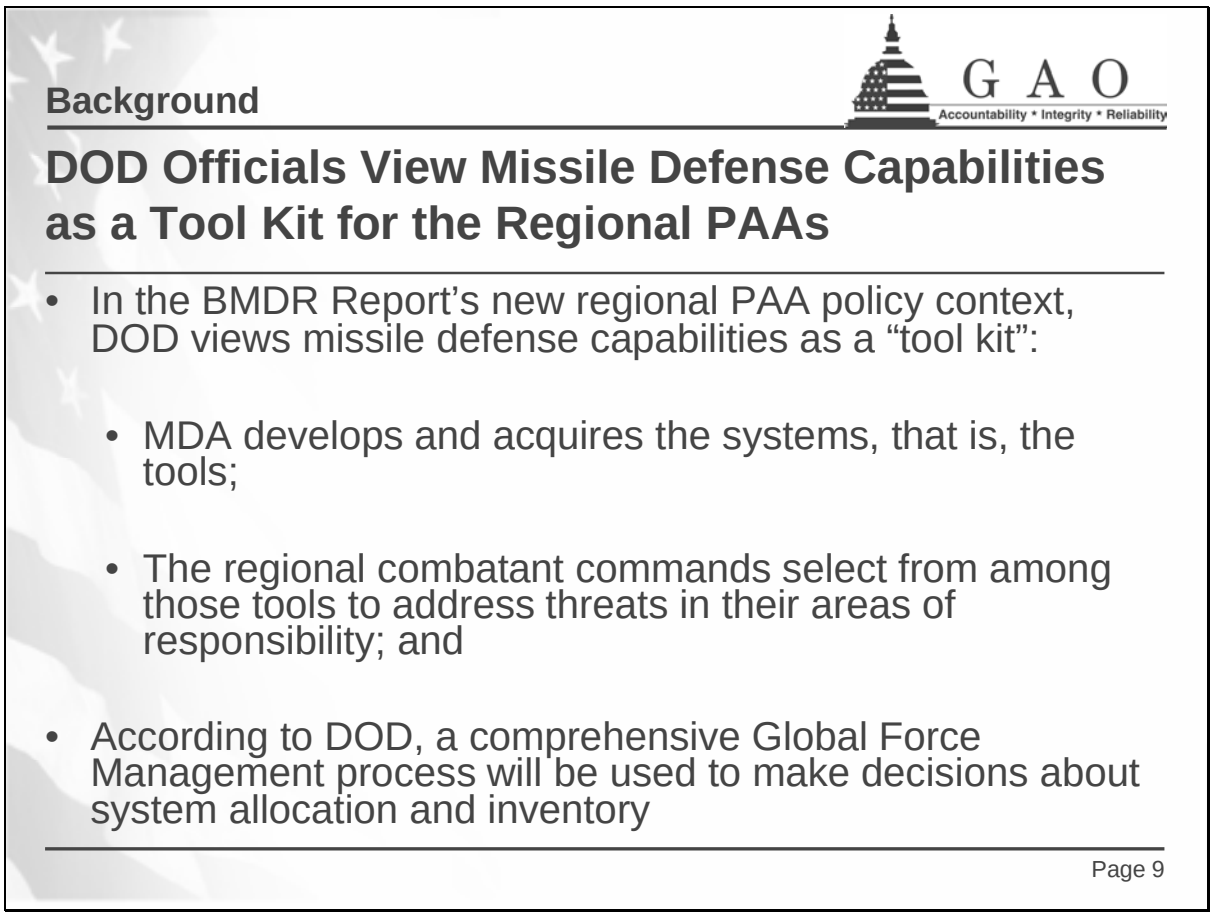
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DOD Officials View Missile Defense Capabilities as a Tool Kit for the Regional PAAs
• In the BMDR Report's new regional PAA policy context, DOD views missile defense capabilities as a "tool kit":
• MDA develops and acquires the systems, that is, the tools;
• The regional combatant commands select from among those tools to address threats in their areas of responsibility; and
• According to DOD, a comprehensive Global Force Management process will be used to make decisions about system allocation and inventory
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Background
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DOD Plans to Use Existing Missile Defense Acquisition Management and Oversight Processes for EPAA
• According to DOD, because EPAA is a policy, not a separate missile defense acquisition program, DOD intends to use the department's existing processes for managing missile defense acquisitions and the existing BMDS element-based acquisition approach for missile defense system elements—not one specific to EPAA—to approve system acquisitions.
• Among the department's existing missile defense acquisition management roles, responsibilities and processes are the following:
Linking Acquisition to Policy
• The Under Secretary of Defense for Policy is responsible to ensure consistency between missile defense policy and development and acquisition plans and approaches
Warfighter Desired Capabilities
• The Chairman of the Joint Chiefs of Staff provides advice on desired BMDS capabilities and characteristics
• The Commander, U.S. Strategic Command, through the Chairman of the Joint Chiefs of Staff coordinates development of the BMDS operational architecture and advocates for combatant command-desired missile defense characteristics and capabilities
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DOD Plans to Use Existing Missile Defense Acquisition Management and Oversight Processes for EPAA (cont'd)

Missile Defense Acquisition Oversight

- The Under Secretary of Defense for Acquisition, Technology and Logistics
  - is responsible for overall management oversight of MDA
  - provides acquisition policy direction and program guidance and makes production decisions,
  - periodically determines the applicability of the department's traditional acquisition process to MDA acquisition management,[1] and
  - chairs the Missile Defense Executive Board
- The Missile Defense Executive Board (MDEB)
  - recommends and oversees implementation of strategic policies and plans, program priorities, and investment options,
  - makes recommendations regarding the MDA comprehensive acquisition strategy; and
  - oversees the annual preparation of the BMDS portfolio, including required capabilities and a program plan to meet those requirements

[1]Pursuant to 2002 direction from the Secretary of Defense, BMDS elements do not follow DOD's traditional acquisition processes until they enter production and are transferred to the services.

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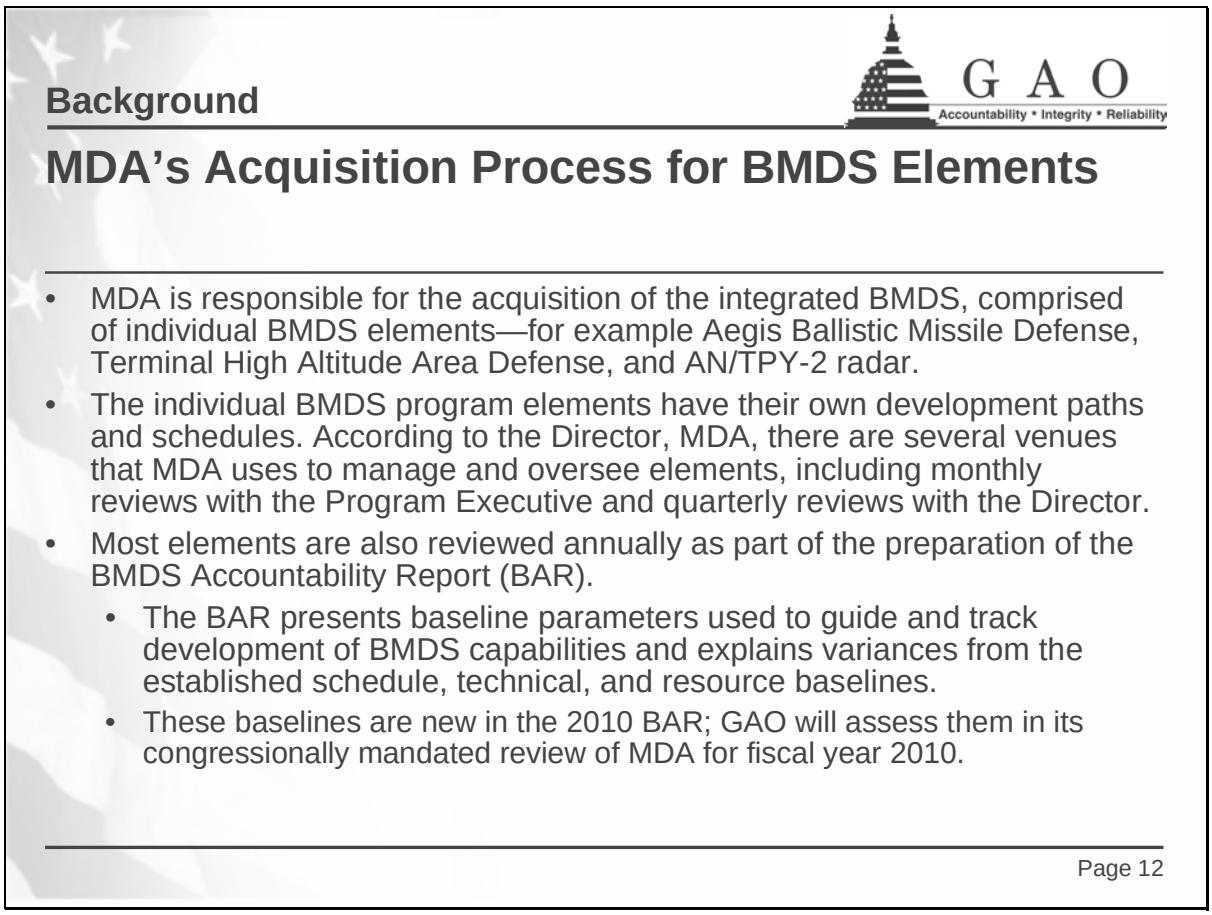
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MDA's Acquisition Process for BMDS Elements
• MDA is responsible for the acquisition of the integrated BMDS, comprised of individual BMDS elements—for example Aegis Ballistic Missile Defense, Terminal High Altitude Area Defense, and AN/TPY-2 radar.
• The individual BMDS program elements have their own development paths and schedules. According to the Director, MDA, there are several venues that MDA uses to manage and oversee elements, including monthly reviews with the Program Executive and quarterly reviews with the Director.
• Most elements are also reviewed annually as part of the preparation of the BMDS Accountability Report (BAR).
• The BAR presents baseline parameters used to guide and track development of BMDS capabilities and explains variances from the established schedule, technical, and resource baselines.
• These baselines are new in the 2010 BAR; GAO will assess them in its congressionally mandated review of MDA for fiscal year 2010.
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Background

Acquisition Activities to Implement EPAA

- The EPAA policy articulates a schedule for delivering four phases of capability to defend Europe and augment current protection of the U.S. homeland; Phase 1 in 2011, Phase 2 in 2015, Phase 3 in 2018, and Phase 4 in the 2020 time frames respectively.
- The policy is structured around increasingly capable variants of the Standard Missile 3 interceptor, together with sensors, command and control, and other capabilities.
- It is envisioned that each successive phase will deliver additional capability with respect to both threat missile range and raid size.
- DOD has not yet determined the full set of BMDS system elements that will participate in EPAA or which of the four phases they will be part of (see table on the following slide).

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Background

Ballistic Missile Defense System Elements That May Comprise EPAA

Element	Capability description
Command and Control, Battle Management, and Communications (C2BMC)	Integrating element provides deliberate planning, situational awareness, sensor management, communications, and battle management for the integrated BMDS.
Sensors (AN/TPY-2, ABIR, PTSS)	The Army Navy/Transportable Radar Surveillance (AN/TPY-2) is an X-band, high resolution radar that can detect missiles early in flight, provide precise tracking information to the BMDS. Other sensors for EPAA may include the Airborne Infrared (ABIR) and/or Precision Tracking Space System (PTSS) which would provide persistent classification and global tracking capability.
Aegis Ballistic Missile Defense (Aegis BMD)	Midcourse engagement capability with Standard Missile 3 to defeat short-, medium- and some intermediate-range ballistic missiles. Has long range surveillance and track capability which detects and tracks in early ascent phase, providing forward based BMDS surveillance. Includes the sea and land-based variant (known as Aegis Ashore).
Terminal High Altitude Area Defense (THAAD)	Ground-based system designed to destroy short- and medium-range ballistic missiles during the late-midcourse and terminal phases of flight. A THAAD battery consists of the THAAD interceptor system and the AN/TPY-2 radar.

Source: GAO summary of MDA data.

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Objective 1: Managing EPAA Acquisitions

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Key Principles for Synchronizing EPAA Acquisitions and Ensuring Transparency and Accountability

- Given the range of assets involved (system variety and quantity), the scale of the presidential policy commitment, and potential costs, a management process that synchronizes EPAA acquisition activities and provides enhanced transparency and accountability is important to delivering the promised capability on time and cost effectively.
- The following tables outline key acquisition principles that help ensure synchronization, transparency and accountability and provide an assessment of DOD's EPAA acquisition activities.
- These principles are derived from prior GAO assessments of DOD systems acquisition, as well as DOD and governmentwide acquisition guidance, such as Office of Management and Budget Circular A-11's Capital Program Guidance.
- Key principles are as follows:
  1. Defining the capability desired
  2. Identifying stakeholders and roles
  3. Developing integrated schedules and decision reviews
  4. Developing integrated plans for technology development and systems engineering
  5. Establishing integrated test plans
  6. Estimating the total integrated investment

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Objective 1: Managing EPAA Acquisitions

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Defined Requirements

Key principle	Assessment of EPAA acquisition efforts
Well-defined requirements	**Ongoing**
- Warfighter needs are the basis of the decision for developing and producing a capability and for deciding the optimal type and quantity of systems. - A system's business case, as called for by best acquisition practices, should provide demonstrated evidence that needs are real and necessary and can best be met by the chosen concept.	- EPAA was generated by presidential direction versus the process for warfighter involvement as laid out in MDA policies and directives for missile defense acquisition. - EPAA effectively started the acquisition process for European capabilities; more detailed determination of desired capabilities is in progress. - Although DOD has begun to plan and implement EPAA, it has not yet established architectures with systems and quantities for the phases.

Source: GAO analysis of DOD data.

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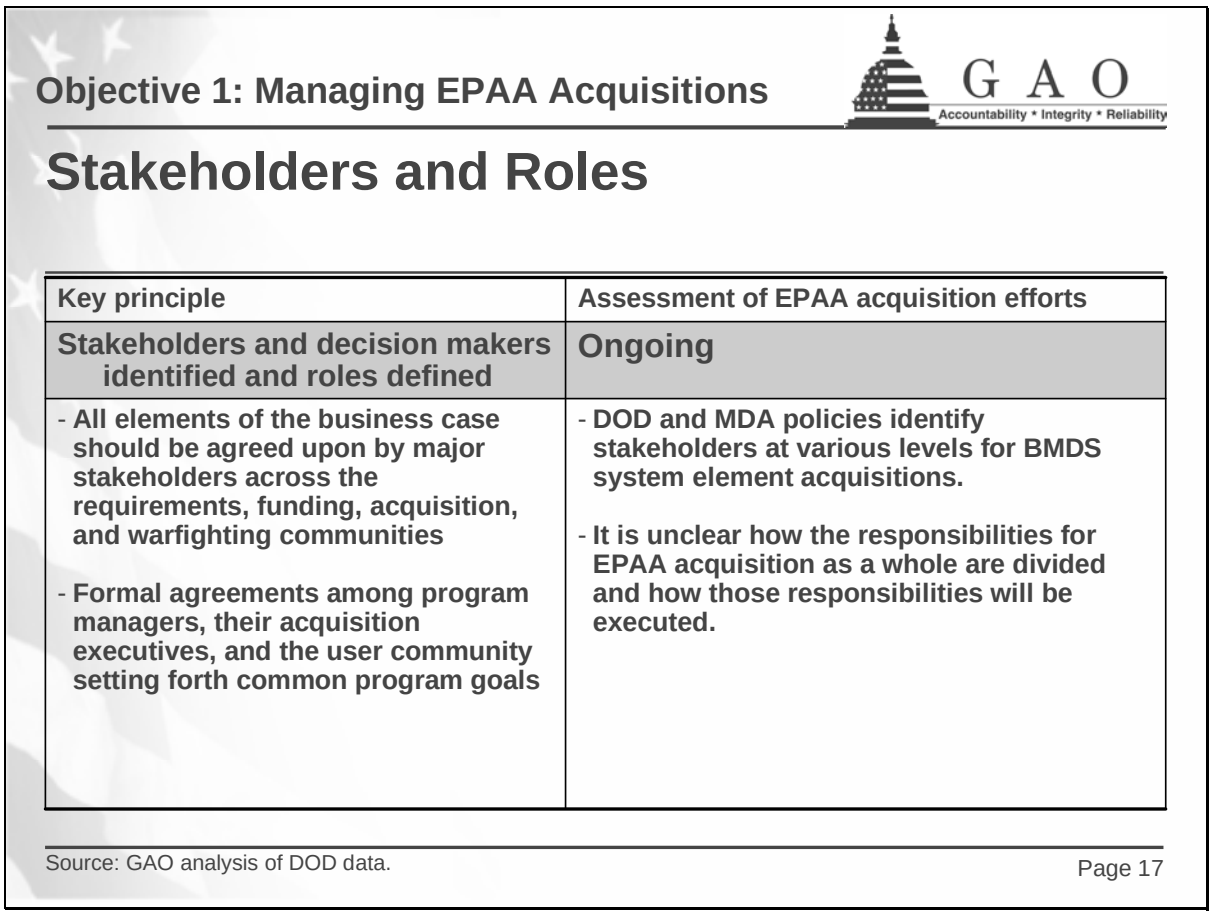
Objective 1: Managing EPAA Acquisitions
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Stakeholders and Roles
Key principle
Assessment of EPAA acquisition efforts
Stakeholders and decision makers identified and roles defined
Ongoing
- All elements of the business case should be agreed upon by major stakeholders across the requirements, funding, acquisition, and warfighting communities
- Formal agreements among program managers, their acquisition executives, and the user community setting forth common program goals
- DOD and MDA policies identify stakeholders at various levels for BMDS system element acquisitions.
- It is unclear how the responsibilities for EPAA acquisition as a whole are divided and how those responsibilities will be executed.
Source: GAO analysis of DOD data.
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Objective 1: Managing EPAA Acquisitions

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Integrated Schedule

Key principle	Assessment of EPAA acquisition efforts
Integrated schedule and decision reviews	**Not present**
- Reviews of demonstrated progress and follow-on plans at defined major decision points. - Exit and entry criteria to show components ready to move from one phase to next and component baseline is integrated within itself and with the greater (BMDS) baseline	- The MDEB, responsible for overseeing missile defense portfolio capability developments, has focused its attention solely at the element, not EPAA, level. DOD has not formally or fully aligned acquisition programming to support EPAA or set acquisition decision points for each phase. - Decisions about production of systems do not appear to be fully linked to the phases. - EPAA policy defines the year a phase may deliver capability, but MDA/DOD acquisition managers, stakeholders and Congress currently lack an integrated EPAA-level view. According to DOD an integrated schedule is being developed.

Source: GAO analysis of DOD data.

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Objective 1: Managing EPAA Acquisitions

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Integrated Technology Development and System Engineering

Key principle	Assessment of EPAA acquisition efforts
Integrated planning for technology development and systems engineering	**Present**
- Systems engineering activities—requirements analysis, design, and testing—are needed to ensure that a weapon system program's requirements are achievable and designable given available resources, such as technologies - Systems engineering is to provide for integrating technical processes and define and balance performance, cost, schedule, and risk within a family of systems or system of systems	- In March 2010, MDA system engineering activities explicitly incorporated EPAA as a "system" and included it in existing engineering integration activities within the BMDS. - MDA Systems Engineering has established a Master Integration Plan that addresses EPAA and is coordinated with integrated testing.[a] [a]We assessed this plan only for its alignment with EPAA, not for any other purpose.

Source: GAO analysis of DOD data.

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Objective 1: Managing EPAA Acquisitions

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Integrated Testing

Key principle	Assessment of EPAA acquisition efforts
Integrated planning for testing	**Present**
- Test and Evaluation Master Plan should contain integrated master schedule. - Major defense acquisition programs subject to interoperability evaluations throughout life cycle to ensure validity to support mission accomplishment.	- We reported in February 2010 that MDA revised its testing approach to better align tests with modeling and simulation needs. - MDA's Integrated Master Test Plan has been updated to explicitly align with DOD's new PAA and MDA is preparing an Integrated Master Assessment Plan that is expected to further articulate testing and assessment efforts.[a] [a]We assessed this plan only for its alignment with EPAA, not for any other purpose.

Source: GAO analysis of DOD data.

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Objective 1: Managing EPAA Acquisitions

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Integrated View of Financial Commitment

Key principle	Assessment of EPAA acquisition efforts
Integrated investment view (costs)	**Not present**
- Baseline for total cost is a fundamental marker used to measure progress, identify cost growth, and ensure that full resource commitment is understood - The BMDR commits to develop and field capability that is "fiscally sustainable over long-term"	- There is currently no basis for an accurate acquisition cost estimate because DOD has not determined which BMDS elements will comprise EPAA or their quantities, and the scope of technology development for new and existing systems remains unclear. - According to DOD, it is difficult to determine an accurate long-term acquisition cost estimate because the EPAA describes a flexible versus rigid architecture.

Source: GAO analysis of DOD data.

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Objective 1: Managing EPAA Acquisitions

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Previously Reported Transparency and Accountability Issues May Continue with EPAA

- DOD emphasizes that EPAA is a policy, not a separate acquisition program, and that the department's existing processes for managing missile defense acquisition are sufficient for EPAA.
- The acquisition activity required to meet the President's direction poses complex synchronization, transparency, and accountability challenges for the existing BMDS system element acquisition process.
- These challenges are of particular concern in light of our past findings regarding that process. Since our first report in 2004, following the establishment of MDA, we have consistently found that
    - DOD has not taken a knowledge-based approach to missile defense acquisition
    - DOD has used an approach for building cost, schedule, and performance goals that yielded limited transparency and accountability; and
    - DOD's decisions to manufacture, produce, and field missile defense systems are outpacing testing, modeling, and validation, resulting in decisions being made with limited understanding of system effectiveness
- While DOD has worked to address some of our concerns, in February 2010 we reported that DOD continues to face challenges regarding transparency and accountability, and that DOD is still proceeding with production and fielding of BMDS despite developmental problems and test delays.

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Objective 2: System Development Risks
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Near-Term EPAA Development Risks
• Compressed schedule for all assets
• Interoperability for all assets
• System-specific risks
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Objective 2: System Development Risks

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EPAA Policy Compresses Development Schedule

- A sound/executable acquisition has firm requirements, mature technologies, and a strategy that provides sufficient time and money for design activities before making the decision to start system development and demonstration or to transition to production.
- The administration's EPAA policy committed DOD to a schedule before the scope of system development effort was fully understood.
- DOD is working to develop plans for implementation within the constraints of policy time frames; however, system schedules are highly optimistic in technology development, testing, production, and integration, leaving little room for potential delays.
- As efforts to meet near-term commitments unfold, the schedule for delivering capabilities may be difficult to achieve and resources needed may grow.

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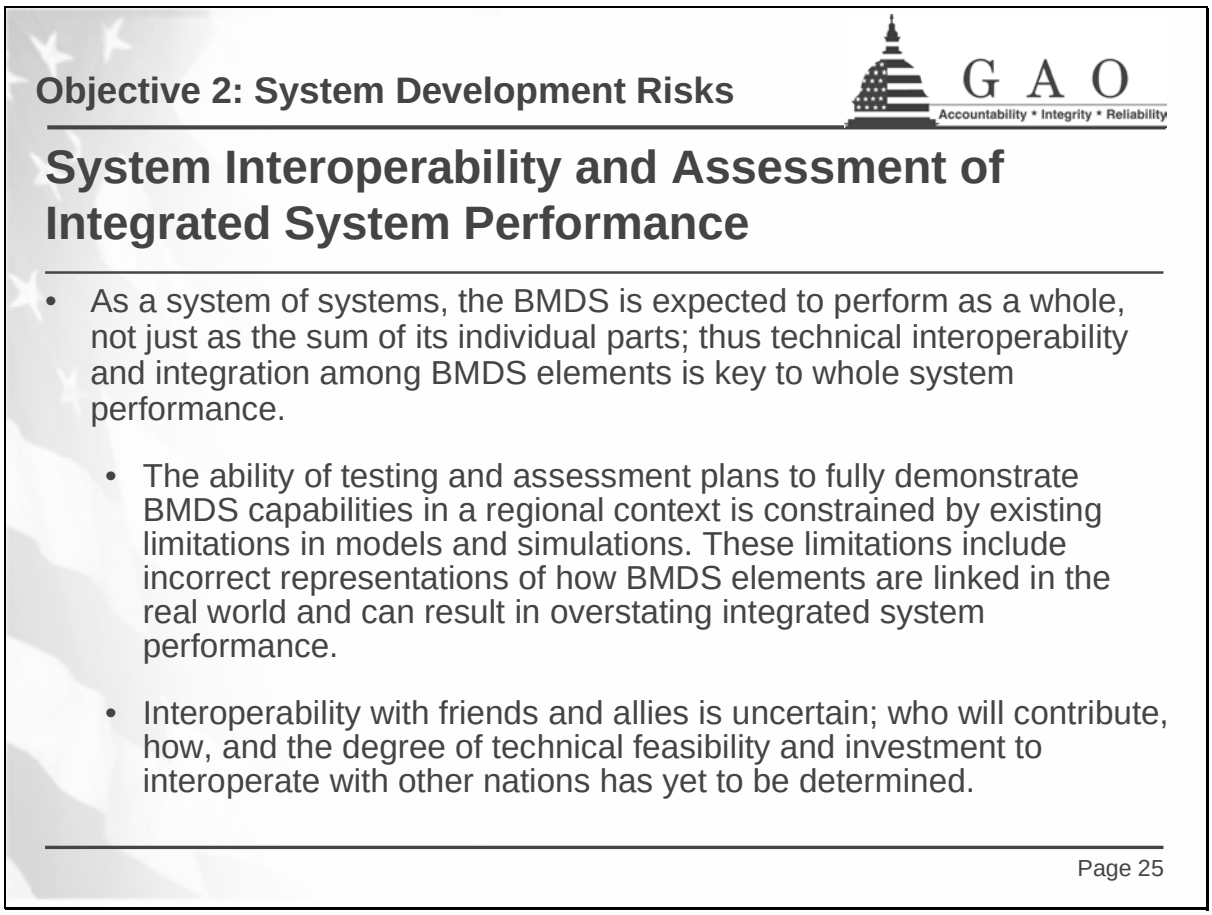
Objective 2: System Development Risks
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System Interoperability and Assessment of Integrated System Performance
• As a system of systems, the BMDS is expected to perform as a whole, not just as the sum of its individual parts; thus technical interoperability and integration among BMDS elements is key to whole system performance.
• The ability of testing and assessment plans to fully demonstrate BMDS capabilities in a regional context is constrained by existing limitations in models and simulations. These limitations include incorrect representations of how BMDS elements are linked in the real world and can result in overstating integrated system performance.
• Interoperability with friends and allies is uncertain; who will contribute, how, and the degree of technical feasibility and investment to interoperate with other nations has yet to be determined.
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Objective 2: System Development Risks

C2BMC Development

- As the BMDS integrating element, C2BMC is expected to provide planning, situational awareness, sensor management, and battle management. Integration is a key feature–and because of C2BMC's role—also a risk.

- The system may not accurately group threat missile tracks to reduce multiple cues from sensors about the tracks, and may present an incorrect picture of the battlespace to BMDS "shooters." Data fusion issues may delay the multiradar capability of the next version of the system, while degrading sensor tasking, track forwarding, and situational awareness. Execution of the current ground test campaign is expected to provide additional data with which to assess these risks.

Objective 2: System Development Risks

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Aegis Ashore: Development Uncertainties

- According to the Director, MDA, Aegis Ashore development is not a high risk because it is based on the existing Aegis BMD system. Aegis BMD version 3.6.1 is currently in service on BMD-capable cruisers and destroyers.
- However, a significant degree of uncertainty remains:
  - While Aegis BMD has demonstrated performance at sea, a series of changes are required to modify it for use on land with Aegis Ashore.
  - Changes to existing Aegis BMD technologies that will be reused for Aegis Ashore may reduce their maturity in the context of the new Aegis Ashore program, and new features will require testing and assessment to demonstrate their performance. MDA plans both ground and flight tests prior to deployment.
  - In addition, there are dependencies on next-generation versions of Aegis systems that are still in development.

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Objective 2: System Development Risks

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Aegis Ashore: Development Uncertainties (cont'd)

Modification and development planned for Aegis Ashore includes:

- *Deckhouse:* Reconfiguration of design, integration, and fabrication of new enclosures.
- *Operating system configurations:*
  - Integrated Aegis Combat System architecture includes 32 sensors, communications, weapons, and countermeasures. Only 11 of these will be reused for Aegis Ashore; the remaining 21 will need to be suppressed or otherwise disabled.
  - Upgraded new Multi-Mission Signal Processor and BMD 5.0 software. Suppress certain features for use with Aegis Ashore, such as the software that accounts for a ship's pitch and yaw.
- *Radar:* It is currently unclear whether the SPY-1 radar's spectrum supportability in its intended environment is fully understood or accounted for.
- *Vertical launching system*: Modifications planned for environmental control as well as safety and survivability
- *Standard Missile 3 block IB*: Interceptor's design may need changes to meet location requirements of Aegis Ashore.

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Objective 2: System Development Risks

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Aegis Ashore: Design Stability

- According to program officials, detail design for Aegis Ashore has not yet begun.
- The contract for Aegis Ashore deckhouse fabrication is scheduled for award prior to preliminary or critical design reviews for the whole Aegis Ashore system.
- We have previously reported that starting fabrication prior to achieving design stability can lead to costly modifications later in the process.

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Objective 2: System Development Risks

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Aegis Ashore: BMDS Integration and Testing

- Integration: The Aegis Ashore capability depends on successful integration within the BMDS via its C2BMC command and control node. It is C2BMC that links Aegis Ashore to its cueing forward sensors, and as such, demonstrating quality of service and connectivity of Aegis Ashore with C2BMC is a vital piece of integration if Aegis Ashore is to provide the type of coverage envisioned for its operation in Europe.
- Testing: The scope of testing planned for Aegis Ashore has reduced since the program began and may not be timed to provide needed knowledge prior to production.
  - Some knowledge points for Aegis Ashore remain undefined.
  - While Aegis Ashore was previously scheduled to participate in four Aegis Ashore specific flight test intercepts, it is now scheduled to participate in only two, though MDA believes this will not affect testing objectives.
  - We have previously reported that repetition of intercept related objectives is important to build confidence in intercept capability.
  - The first intercept flight test with a target is scheduled for the second half of fiscal year 2014, at which point contracts for component production and construction will be well under way.

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Objective 2: System Development Risks

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Standard Missile 3 Block IB Interceptor: Development

- Technology development of the throttleable divert attitude control system is following a high-risk path.
- According to the Director, MDA the first intercept flight test was just moved into the third quarter 2011 to allow time to complete all qualification tests before the flight test.

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Objective 2: System Development Risks

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Standard Missile 3 Block IB Interceptor: Testing and Production

- The test schedule is not synchronized with planned production and financial commitments. Investments are planned prior to demonstrating system performance.
  - Two flight tests needed to demonstrate interceptor knowledge points are scheduled after the manufacturing readiness review and contract awards for 38 missiles (plus four “pathfinders”).
  - In all, 104 of 320 interceptors–estimated at a cost of $1.2 billion to $1.6 billion–are expected to be under contract before all major knowledge points have been demonstrated.
- While MDA characterized the first 30 interceptors as being test rounds, half remain unassigned to a specific test. Of those assigned to a test, some interceptors may be produced earlier than necessary since they deliver 1 to 2 years prior to the scheduled test.
- Existing issues with subcontractor manufacturing performance for missile components introduce risk that the transition to manufacturing IB missiles may not go as smoothly as planned.

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Objective 2: System Development Risks

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THAAD Production

- Some production risks identified for THAAD batteries including incomplete system and some component qualification, potential design changes, and demonstrated production rates for interceptor components not supporting production needs have caused more than a 6-month delay in production. The program has now addressed most of these risks and has mitigation plans in place for those remaining.
  - An Army safety review board identified the requirement to install an optical block for the initiation system in 2003, but MDA did not modify the development contract to include this requirement until 2006. In addition MDA awarded a production contract in December 2006 although a design was not yet selected.
  - To date, 7 years after the optical block requirement was identified, program officials told us that full recurring costs have not been determined and the requirement has not been defined on the production contract. This late requirement has since delayed interceptor production and, subsequently, Battery 1 and 2 full deliveries more than 6 months. The program recently completed efforts to redesign and requalify the optical block component.
  - The program also has yet to demonstrate necessary production rates for a component of the interceptor (the flight sequencing assembly); according to the program office there is a mitigation strategy in place that may successfully address this issue.
  - Contract award for Battery 3 (with an option for Battery 4) interceptor production was delayed from second to fourth quarter fiscal year 2010. However, most THAAD subcontractors have already identified gaps in production—some of more than a year—which may require the contractor to recertify and requalify production processes.

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Concluding Observations

- According to DOD, one of the benefits of DOD's new concept for regional phased adaptive approaches is that it provides DOD with flexibility and will be more cost effective.
- We did not review the viability of the new regional policy; rather we focused on its acquisition executability. Thus our conclusions are not about what is the right policy, but about the right way to execute its acquisitions
- Limited visibility into costs and schedule for EPAA and the lack of some key acquisition management processes reflect oversight challenges we have previously reported with the acquisition of missile defense capabilities.
- Consequences have included the following:
  - Limited means of independently assessing progress and limited basis for oversight.
  - Going into production before fully demonstrating system performance has led to rework, cost increases, delays and uncertainties about delivered capabilities.
- The flexibility desired by DOD is not incompatible with appropriate visibility into key aspects of acquisition management. As DOD proceeds with the EPAA acquisition activities, it is important for Congress and the President to have assurance that the EPAA policy is working as intended and that acquisition activities are cost-effective.
- We plan to issue a broader report on European missile defense issues. That final product will have recommendations, as appropriate.

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Enclosure II

OFFICE OF THE UNDER SECRETARY OF DEFENSE
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ACQUISITION,
TECHNOLOGY
AND LOGISTICS

DEC 15 2010

Ms. Christina T. Chaplain
Director, Acquisition and Sourcing Management
U. S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Chaplain:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-11-179R, "DEFENSE ACQUISITIONS: European Phased Adaptive Approach (EPAA) Acquisitions Face Synchronization, Transparency, and Accountability Challenges," dated October 29, 2010 (GAO Code 120900).

The Department understands this brief was provided to Congress prior to addressing the Department's concerns, but that there will be a final report which will include the information from the subject document. Although I would have preferred an opportunity for Department review and comment prior to presentation to Congress, the Department appreciates the opportunity to provide technical comments to address areas of potential misunderstandings or to clarify the facts for inclusion into the brief and the final report. I have enclosed a copy of the Department's critical and substantive technical comments that was provided on November 30, 2010.

In general, the Department disagrees with the GAO's approach to assess the EPAA in Europe as a near-distinct element of the Ballistic Missile Defense System rather than recognizing the Department's approach to employ missile defense capability in defense of Europe using existing Departmental processes. We believe the assessment described in this report inaccurately portrays the Department's acquisition plans as inadequate to making capability available to the warfighter should requests for deployment be generated by the combatant commanders.

I recommend that a technical comment resolution meeting be held in the near term with the Missile Defense Agency. I am willing to host that meeting, if desired.

My point of contact for this effort is Colonel David Arrieta, David.Arrieta@osd.mil, 703-695-7328.

Sincerely,

David G. Ahern
Deputy Assistant Secretary of Defense
Portfolio Systems Acquisition

Enclosure:
As stated

(120900)

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