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HEARING

ON

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2012

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED PROGRAMS

BEFORE THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON STRATEGIC FORCES HEARING

ON

BUDGET REQUEST FOR MISSILE DEFENSE PROGRAMS

HEARING HELD
MARCH 31, 2011

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FISCAL YEAR 2012 NATIONAL DEFENSE AUTHORIZATION BUDGET REQUEST FOR MISSILE DEFENSE PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES,
Washington, DC, Thursday, March 31, 2011.

The subcommittee met, pursuant to call, at 2:06 p.m. in room 2212, Rayburn House Office Building, Hon. Michael Turner (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. MICHAEL TURNER, A REPRESENTATIVE FROM OHIO, CHAIRMAN, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. TURNER. I call to order the meeting of the subcommittee.

And I would like to extend a warm welcome to our four distinguished witnesses here today to discuss the fiscal year 2012 budget request for missile defense programs: Dr. Bradley Roberts, Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy; Lieutenant General Patrick O'Reilly, Director of the Missile Defense Agency; and Dr. David Ahern, Deputy Assistant Secretary of Defense for Portfolio Systems Acquisition; Dr. Michael Gilmore, Director of Operational Test and Evaluation.

Members have several issues that they want to address, and we have votes that are actually pending, so I am hopeful that we can get through my opening statement and the statement of the witnesses before we actually depart for votes. And then perhaps we can return for the questioning portion.

First, I am deeply concerned about the Ground-Based Midcourse Defense system in Alaska and California, GMD. The back-to-back flight test failures this past year raise doubts about the reliability and effectiveness of this capability. I had the opportunity to talk with General O'Reilly yesterday. I appreciate his efforts to establish a rigorous failure review and mitigation process. However, I question the Administration's long-term commitment to getting it right.

While I understand there are some changes to the program this year, I have also observed the funding for GMD plummet over the past few years. In fiscal year 2010, the President's budget request slashed it by $445 million. Last year we saw a restoration of some funds, but then again this year the program was cut by $185 million. Furthermore, the out-year spending profile for GMD is $1 billion less than was projected a year ago.

With these levels of cuts, it is clear that something will be broke or something won't get done. I worry that these test failures may

be a harbinger of further setbacks if we don't make GMD a priority and devote the resources necessary to make it right. After all, what is at stake: GMD is currently the only missile defense system that protects the United States homeland from long-range ballistic attacks, and we have to get it right.

General O'Reilly, I know you are committed to that.

Second, a year ago, I was highly critical of the Administration for the lack of information it was providing to Congress on the Phased Adaptive Approach for missile defense in Europe. In the past several months, we have seen significant improvement and engagement with our committee, and I want to commend our witnesses for that.

Last month, while in Brussels, I had the opportunity to meet with Admiral Stavridis and other NATO [North Atlantic Treaty Organization] and European Command officials to discuss progress in PAA [Phased Adaptive Approach] implementation. I have also met with NATO parliamentarians and was pleased to see how far the missile defense discussion in Europe had advanced from just 3 years ago.

No doubt, there is significant work ahead that I would ask our witnesses to discuss today.

On the policy front, a near-term decision must be made on where to locate a forward-based X-band radar. Charting a path forward with Russia while also protecting our interests will continue to be challenging.

On the programmatic front, there is a substantial amount of development and testing required to ensure new systems and technologies planned for the PAA are proven. There are still considerable technology risks, reduction activities that must be accomplished in the—excuse me—technology risk-reduction activities that must be accomplished in the Standard Missile (SM)-3 Block IIA and the Block IIB programs, both of which are key to protecting Europe and the United States.

Some of us also remain concerned about the Department's hedging strategy for defense of the homeland in case the long-range threat comes earlier or technical issues arise in the development of a new SM–3 interceptor. I came away from our PAA hearing last December believing that the Department's hedging strategy was hollow. Since then, I understand the Department has worked in earnest to develop the strategy, and I hope our witnesses can discuss some of this.

Third, the budget request contains approximately $400 million in 2012 and another $400 million in 2013 for the Medium Extended Area Defense System, MEADS, a joint U.S.-German-Italian missile defense system that the Department does not plan to continue beyond design and development due to cost and schedule overruns. I understand the Government's contract termination obligations, but spending $800 million in this budget environment on a program that is not going forward into production doesn't make a whole lot of sense. These resources could be better spent on other missile defense priorities. And is the Department looking at other options to lower this liability?

Fourth, we need to continue to invest in innovative science and technology. Last year, our committee expressed bipartisan concern

that the budget request for directed energy research appeared insufficient to maintain the Airborne Laser Testbed aircraft, conduct flight experiments, and fund technology maturation of innovative directed energy concepts. This year, the budget request is less than last year's, which only heightens my concern that MDA [Missile Defense Agency] and the scientists and engineers it leverages lack the resources to make major advancements in this technology area.

On a final note, I would like to thank Dr. Roberts and General O'Reilly for their participation in this committee's "101" briefings. These sessions have provided Members with a greater understanding of the complex issues and programs that are within our subject matter jurisdiction of this subcommittee and, ultimately, they improve our ability to have effective oversight.

I want to thank you again, each of our witnesses, for their service and for being with us today. And I look forward to your testimony.

With that, I will turn to my ranking member, Ms. Sanchez, for any opening comments she might have.

[The prepared statement of Mr. Turner can be found in the Appendix on page 37.]

STATEMENT OF HON. LORETTA SANCHEZ, A REPRESENTATIVE FROM CALIFORNIA, RANKING MEMBER, SUBCOMMITTEE ON STRATEGIC FORCES

Ms. SANCHEZ. Thank you, Chairman Turner.

I would like to once again welcome everybody: Dr. Gilmore, Mr. Ahern, Dr. Roberts, General O'Reilly. Thanks for being before us again today.

I am interested in hearing about how the budget request supports plans to strengthen the hedge for homeland defense beyond the deployed interceptors that we have in California and Alaska, including plans at Fort Greely to mothball Missile Field 1 and adding a hedge of eight available silos at Missile Field 2, and also the upgrades to the Clear Radar, plans to locate an interceptor communication system on the east coast, and preparations toward Phase 4 of the Phased Adaptive Approach.

I know that, General O'Reilly, we have spoken several times this week, and I hope that the committee will get a good sense of where you all are with respect to these things I just mentioned.

I also look forward to hearing about the implementation of the PAA this year and about preparations as we move beyond Phase 1. I know you said we were on track, but maybe we can get a little bit more information on that. And I would like to specifically address three important issues.

First, the cost. The Ballistic Missile Defense Review stated that, "commitment to new capabilities must be sustainable over the long term." And in the context of the current budget environment, I would like to hear more about savings and management improvements resulting from efficiencies and, also, what the plans are for most efficiently closing out the MEADS program without wasting what I believe is nearly about a billion dollars of taxpayer money, if I read the report correctly.

And, second, on testing, BMDR [Ballistic Missile Defense Review] made the commitment that, before new capabilities are deployed,

they must undergo testing that enables assessment under realistic conditions. So I would like to hear about how the budget request supports effective testing to help us achieve mature and reliable technologies, including plans in the Integrated Master Test Plan for operational realistic testing.

And, third, I would like to thank the Administration for strengthening the international cooperation with our allies. I know that Chairman Turner was out in Europe this past week. I didn't have an opportunity to go, but I did hear good reports back. And I heard that especially our NATO allies were all on board and happy with the PAA and the process that we are going through. And, beyond cooperation with NATO and Israel and Japan and our other allies, I am pleased that we continue to keep informed on plans as you work through with some of the issues and try to engage Russia on missile defense.

So, preserving strategic stability is essential to U.S. and international security as we develop a defense against the threats from Iran and North Korea, in particular. And I am open to hearing what you all have to say. And I am sure our committee has many questions.

So thank you again for being before us.

[The prepared statement of Ms. Sanchez can be found in the Appendix on page 40.]

Mr. TURNER. We will now ask each of our witnesses to summarize their written statement in about a 5-minute oral statement.

Dr. Roberts, the floor is yours.

STATEMENT OF DR. BRADLEY H. ROBERTS, DEPUTY ASSISTANT SECRETARY OF DEFENSE, NUCLEAR AND MISSILE DEFENSE POLICY, OFFICE OF THE SECRETARY OF DEFENSE

Dr. ROBERTS. Thank you, Chairman Turner, Ranking Member Sanchez, and additional members of the subcommittee.

Thank you also for the opportunity to participate in the BMD [ballistic missile defense] 101 sessions. We also found that helpful from our perspective in terms of reaching out to you and creating a common foundation of information.

My written statement begins with a review of the scope, findings, and conclusions of the Ballistic Missile Defense Review issued now a year ago. I won't repeat these here. Clearly, over the last year, our focus has shifted from policy development to policy implementation. And, in our dialogue with you, four issues have emerged. And I would like to touch briefly on each of those in turn.

The first issue relates to the commitment in the Missile Defense Review to continue to closely monitor developments in the threat, and to assess our priorities in the light of new information. And although the unclassified nature of this hearing constrains our discussion of this particular topic, it is clear that we have had a lot of new information over the last year that confirms the basic intelligence community finding that the threat is continuing to develop, both quantitatively and qualitatively. And it has reinforced our principal conclusion that we need a balanced approach that continues to improve the defense of the homeland while, at the same time, accelerating regional protection.

The second main topic of continuing discussion between us has been about defense of the homeland. The Ballistic Missile Defense Review expressed two principal commitments: The first, to continue to improve the GMD system in order to ensure that we maintain our "currently advantageous position" *vis-à-vis* the threats that might emerge from states like North Korea and Iran to conduct limited strikes on the United States. And our second commitment was to be well-hedged against the possibility that those threats might emerge in a way and with a speed, quantitatively and qualitatively, that requires some significant shift in our posture.

All of us today have provided testimony with details about the commitments that we are making in support of strengthening, continuing to improve the GMD system. We have a lot of ongoing activity in this area and some additional initiatives beginning this year that we have proposed. And our conclusion is that the cumulative effect of these commitments is to ensure that we will maintain the advantageous position we have *vis-à-vis* first-generation threats.

The hedge we have also made a commitment to, as you know, not just as something we might do in the future but something we are doing now. We committed to the additional silos, both the completion of Missile Field 2 and the mothballing rather than decommissioning of the residual capabilities in Missile Field 1. And this puts us in a position to increase by 50 percent, if we were to choose to do so, the number of deployed GBIs [ground-based interceptors] in light of additional threat information.

We have also committed to assess in detail this basic hedge posture and to bring additional information forward. I believe you met with Dr. Jim Miller a month ago, and he expressed our commitment to bring to you, as soon as we had been to the Secretary, additional information in this area.

The third continuing topic of discussion between us has been about implementation of the Phased Adaptive Approach. And the Ballistic Missile Defense Review, of course, expressed this as a global approach, meaning an approach that would be pursued in each region. We elaborated in detail in the review the approach to Europe. And, as you know, the progress in the interim year has been, we think, strong, with both a ramp-up in the investments in the needed capabilities and working politically with our partners, whether multilaterally in NATO or bilaterally in the other regions, to strengthen our postures.

The fourth issue I would like to touch briefly is the commitment expressed in the Ballistic Missile Defense Review to strengthen international cooperation. And this is a global intent and one that we are realizing through our collaborations with our allies and partners in Europe, East Asia, and the Middle East. But, of course, the sensitive and important question today is about cooperation with Russia. We believe in the potential benefits for our national security, for the national security of our NATO allies, and also for Russia of cooperation in this area.

We are mindful that there are many challenges associated with this objective. We reject cooperation that would in any way limit our defenses. And you have heard the President say that NATO

will defend NATO, Russia will defend Russia, and we will try and reinforce each other's defenses cooperatively.

We will not compromise essential technologies. There is no discussion of providing hit-to-kill technology as a part of our cooperative activities with Russia. We have made clear that cooperation will require a successful conclusion of a Defense Technology Cooperation Agreement, as originally proposed and pursued by the Bush administration. And, of course, we are mindful of the fact that any classified information that might be discussed with Russia or any other international partner is subject to national disclosure policy.

As you know, we are pursuing two primary pathways of cooperation with Russia, the first bilaterally and the second in the NATO context. Bilaterally, our principal focus is on joint analysis in order to better understand what capabilities we might bring to the table at this time. And, clearly, from Russia's perspective, what they bring to the table at this time is only sensor information. And we are looking also bilaterally at, then, what might be possible in the way of exchanging data without compromising its integrity.

In the NATO context, we are working to explore the possibility of a cooperative system for the common defense of the European space. We have resumed our theater missile defense cooperation with Russia that had been pursued under the Bush administration. And we are also developing a joint analysis process there to support the NATO process.

So that is a quick review of our four key areas, I think, of continuing dialogue with the committee. And I look forward to answering your questions.

[The prepared statement of Dr. Roberts can be found in the Appendix on page 42.]

Mr. TURNER. General O'Reilly.

STATEMENT OF LTG PATRICK J. O'REILLY, USA, DIRECTOR, MISSILE DEFENSE AGENCY

General O'REILLY. Good afternoon, Chairman Turner, Ranking Member Sanchez, other distinguished members of the subcommittee. I appreciate the opportunity to testify before you today on the Missile Defense Agency's $8.6 billion fiscal year 2012 budget request.

We continue to enhance today's Ballistic Missile Defense System, which is capable of protecting our homeland from limited ICBM [intercontinental ballistic missile] attacks to countering the growing proliferation of increasingly capable ballistic missiles that threaten our deployed Armed Forces, allies, and friends.

By the end of 2012, we plan to complete the initial fielding of the Ground-Based Midcourse Defense system, or GMD, for homeland defense; deliver the first Theater High Altitude Area Defense, or THAAD, units to the Army; and test the next generation of Aegis missile for the Navy for regional defense. Our objective is, by the end of this decade, to enhance our current initial capabilities to achieve very robust missile defense against all ranges of threat missiles.

Like the rest of the Department of Defense, our fiscal year 2012 budget request was based on the assumption of approval of the fis-

cal year 2011 President's budget request. However, the impact of operating under a continuing resolution at the fiscal year 2010 budget level is significant for the Missile Defense Agency since our fiscal year 2011 request was $486 million more than our fiscal year 2010 budget, including a $324 million increase for homeland defense.

We have had significant accomplishments over the last year, including conducting 8 out of 8 planned flight tests, with 13 successful target flights; the first flight of a 2-stage ground-based interceptor; the third successful missile intercept by the Japanese Aegis program; a successful low-altitude intercept by the THAAD system. We started production of the THAAD Batteries 3 and 4. And we emplaced the thirtieth GBI; upgraded 2 additional GBIs; completed the upgrade of the early-warning radar in Thule, Greenland, to a missile defense radar; converted 2 Aegis ships, thus increasing our fleet to 20 operationally configured ballistic missile defense ships.

We delivered 25 SM–3 IA interceptors and demonstrated the ability for 2 space tracking and surveillance satellites to provide high-fidelity missile tracks. And, with our Airborne Laser Testbed, we destroyed two boosting missiles in flight. We have demonstrated command and control interoperability with the NATO Active Layered Theater Ballistic Missile Defense System on multiple occasions. And we supported Israel's successful intercept of a separating threat missile off the coast of California earlier this month.

Today, MDA's top priority is to confirm the root cause of the recent GBI flight test failure, verify the resolution of the problem, and successfully repeat the previous flight test. While the failure review board has only produced preliminary results, it is clear more ground testing and additional non-intercept flight tests of an upgraded GBI Exoatmospheric Kill Vehicle, or EKV, will be required before the next intercept.

For fiscal year 2012, we are requesting funding for the completion of the construction of the Ground-Based Midcourse Defense Missile Field 2; a second fire control node at Fort Greely, Alaska; the construction of a missile communication system on the east coast of the United States; placing Missile Field 1 at Fort Greely in a storage mode for possible upgrade for operational use in the future; procuring five new ground-based interceptors; upgrading existing ground-based interceptors; and upgrading the early-warning radar in Clear, Alaska.

Today, 30 operational GBIs protect the United States against a medium ICBM raid size launched from current regional threats. We closely monitor intelligence assessments with the intelligence community. And if this capability is deemed to be insufficient, we are developing options to increase the capacity of operational GBIs and accelerate the delivery of new sensors and interceptor capabilities. The Department is committed to brief Congress soon on our hedge strategy to mitigate against uncertainties in threat estimates.

Our execution of the European Phased Adaptive Approach is on track for meeting the timelines outlined by the President in September 2009.

For Phase 1, our initial capability against short-, medium-, and intermediate-range threats in Europe, our first Aegis ballistic mis-

sile ship deployment, the USS *Monterey*, is on station. The latest command and control system upgrades are being installed in the European Command. And the AN/TPY–2 forward-based radar will be available in August for deployment by the end of this year. Finally, a major test verifying the readiness of the EPAA [European Phased Adaptive Approach] Phase 1 against an intermediate-range ballistic missile will be conducted next month in the Pacific.

For Phase 2, our enhanced capability against medium-range ballistic missiles by 2015, the first flight test of the next-generation Aegis missile interceptor, the SM–3 IB, will occur this summer. And the associated upgrade to the Aegis fire control system is on track for certification by the Navy in 2012.

The design of the adaptation of the Aegis system for land basing, called Aegis Ashore, began last summer, with manufacturing beginning in fiscal year 2012. The Aegis Ashore site will be installed in Hawaii in 2013 and flight tested in 2014. And installation of the second Aegis Ashore system in Romania is also on track to occur in 2014, for full operation by 2015.

For Phase 3 of our enhanced capability against intermediate-range ballistic missiles by 2018, the SM–3 Block IIA interceptor is completing its preliminary design this year in support of flight testing in 2015 and deployment in 2018. The airborne infrared sensor for early missile tracking will begin flight testing of the next-generation sensor in 2012 and is on track for deployment of a missile defense sensor pod that could attach to any aircraft by 2016. Due to the fiscal year 2011 continuing resolution, the first flight of the Precision Tracking Space System satellite has now been delayed to 2016, and six more satellites, though, would then be on schedule for placement on orbit by 2018.

For Phase 4, or medium- and intermediate-range and ICBM early-intercept capability in Europe by 2020, we have completed the Government system studies and will award interceptor concept design contracts to three industry teams within the next week. Even though the SM–3 IIB requirements are less stringent than on other missile defense interceptors, we are allocating more time to develop the SM–3 IIB than the average time it has taken to develop other similar missile defense interceptors in order to ensure low development risk. While not necessary for the defense of the United States against limited attacks by early-generation ICBMs, the SM–3 IIB will greatly reduce the cost of homeland defense and will be effective against larger raid sizes of more sophisticated ICBMs from today's regional missile threats.

We are pursuing advanced technologies for applications beyond PAA Phase 4, such as our partnership with Lawrence Livermore National Laboratory to develop new laser technologies which offer great potential for high-efficiency compact and lightweight high-energy lasers for a variety of missions of interest to the Missile Defense Agency and the Department of Defense.

Finally, Missile Defense Agency also continues to engage in missile defense projects, studies, and analysis with over 40 countries.

In conclusion, our fiscal year 2012 budget funds the deployment of the initial missile defense capability and the creation of an international network of integrated ballistic missile defense capabilities that are flexible, survivable, affordable, and tolerant of uncertain-

ties of intelligence estimates of both nation-state extremist ballistic missile and non-nation-state extremist ballistic missile threats.

Thank you, Mr. Chairman, and I look forward to answering the committee's questions.

[The prepared statement of General O'Reilly can be found in the Appendix on page 57.]

Mr. TURNER. Thank you, General.

I believe our witnesses are aware that votes have been called. So, at this point, we will stand in recess, and we will return after votes.

[Recess.]

Mr. TURNER. I call the committee back together.

Mr. Ahern.

STATEMENT OF DAVID G. AHERN, DEPUTY ASSISTANT SECRETARY OF DEFENSE, PORTFOLIO SYSTEMS ACQUISITION, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY AND LOGISTICS

Mr. AHERN. Mr. Chairman, Ranking Member Sanchez, members of the committee, thank you for the opportunity to appear before you today.

I want to begin by addressing the Department's recent decision regarding MEADS. Beginning in the 1990s, MEADS is a ground-based air and terminal ballistic defense capability that would replace existing Patriot systems in the U.S. and Germany and the Nike Hercules system in Italy.

In 2004, the MEADS partner nations—Germany, Italy, and the United States—signed a memorandum of understanding for a cooperative design and development, or D&D, phase that anticipated readiness for production beginning in 110 months, or about 2014.

However, the NATO MEADS Management Agency program restructure proposal presented to the board of directors in November 2010 indicated that MEADS D&D would require 30 additional months beyond the original 110-month plan. Further, it would require nearly a billion dollars more of U.S. investment during fiscal year 2012 to 2017. And production would not begin earlier than 2018, with the first U.S. fielding around 2020.

As we built the fiscal 2012 budget, the Department was fully cognizant of the MEADS updated estimates for cost and schedule, and we were also informed by an independent cost estimate of the D&D phase by the Department's Cost Assessment and Performance Evaluation Office.

With those estimates in hand, the U.S. considered three potential courses of action: Terminate immediately; continue development within the funding limits set by the MOU [memorandum of understanding] that entered into force; and complete the planned D&D phase by adding additional funding and allowing additional time. The Department has decided the best course of action is to continue the D&D phase up to the previously agreed MOU cost ceiling.

However, the U.S. will not pursue procurement and production of MEADS. The Department believes the implementation of a proof-of-concept program using the remaining D&D funds contributed by the three nations is the best option for the following reasons: Funding MEADS up to the existing MOU ceiling enables all

partners to harvest technology from the large investment made to date. The U.S. cannot afford to purchase MEADS and make required upgrades to Patriot concurrently over the next two decades. The U.S. can achieve some of the capabilities that MEADS provides using existing assets. Our air and missile defense portfolio is based on integrating and fielding a diverse set of elements to provide expanded coverage against a wide range of threats. So, while we accept some risks due to the MEADS decision, the U.S. is still able to achieve some of the capabilities that MEADS was to provide.

The U.S. remains concerned with the overall track record of the program. The proof-of-concept effort will use the remaining D&D MOU funding in 2011 to 2013 to complete prototypes, demonstrate and document the capabilities of major system elements, and complete limited system integration. This work would allow Germany and Italy to continue MEADS development and production efforts after the current MOU funding is expended, if they so desire. The same options would be available to the United States should U.S. air defense plans change.

While the MEADS program of record performance might ordinarily make it a candidate for cancellation, terminating the program now, just after successful completion of the MEADS critical design review, would force the nations to devote significant funding to contractor termination costs instead of using this funding to bring development to a viable level of maturity.

Turning now to the Missile Defense Executive Board, I testified before this subcommittee 2 years ago describing the Board's structure, operation, and activities. The MDEB [Missile Defense Executive Board] was established in 2007 to recommend and oversee implementation of strategic policies and plans, program priorities, and investment options to protect our Nation and its allies from missile attack. The USD(AT&L) [Under Secretary of Defense for Acquisition, Technology and Logistics] has maintained the MDEB structure and operation in essentially the same form since its inception.

A notable MDEB achievement has been the creation of a Life Cycle Management Process. It has had a significant impact on the preparation and execution of MDA's plans and budgets. The LCMP [Life Cycle Management Plan] provides for the participation of the MDA, the Office of the Secretary of Defense, STRATCOM [United States Strategic Command], other combatant commanders, the JCS [Joint Chiefs of Staff], and the military departments in an annual process to identify capability and support requirements, balance resources and technical capabilities, and prepare a BMDS [Ballistic Missile Defense System] program and budget. For the last 2 years, the Department has executed the LCMP to derive comprehensive Department involvement and influence on the MDA's plans and budgets.

A key element which provides a foundation for the LCMP is an input derived from the Strategic Command's Warfighter Involvement Process. An output of this process is a Missile Defense Prioritized Capability List that documents operator capability requests and is reviewed and endorsed by the MDEB. The MDA provides a formal response which, in turn, facilitates MDEB assessment of MDA program plans against desired capabilities.

Recent MDEB activities have included reviews of fiscal year 2012 MDA budget request, evaluation of operation and support funding responsibilities, force structure recommendations such as an addition of a TPY–2 radar to the BMDS acquisition planning.

One oversight focus area is the Department's assessment of BMDS elements' maturity for production and lead service operation. The Department's current criteria for missile defense element production include: An assessment of the depth and breadth of preparation; performance validated by testing results; funding to support the program plans; and an executable plan for operation and support. MDA, in conjunction with the designated lead military department, makes a recommendation for a production decision. USD(AT&L) is responsible for the review and decision.

The Department is ensuring proper management oversight of this complex portfolio through its effective utilization of the MDEB. We are taking prudent steps to transition individual elements to lead military departments at the appropriate time for operation and support. In that regard, the MDEB just agreed to guidelines for MDA and the military departments regarding funding responsibilities for BMDS element's development, operation, and support. Continued operation between the MDA, OSD [Office of the Secretary of Defense], the military departments, the Joint Staff, and COCOMs [combatant commands] are critical to long-term success of the BMDS.

I am grateful to the members of this committee for your support of the Defense Department's missile defense programs and look forward to your questions.

[The prepared statement of Mr. Ahern can be found in the Appendix on page 72.]

Mr. TURNER. Thank you.

Mr. Gilmore.

STATEMENT OF HON. J. MICHAEL GILMORE, DIRECTOR, OPERATIONAL TEST AND EVALUATION, OFFICE OF THE SECRETARY OF DEFENSE

Dr. GILMORE. Mr. Chairman, Ranking Member Sanchez, members of the committee, I will very briefly summarize my written statement.

In my view, General O'Reilly has brought outstanding rigor to missile defense testing through his implementation of the Integrated Master Test Plan, or IMTP. My office and I, myself, are substantively involved throughout the 6-month development and review process that the general is using to develop and update the IMTP.

The IMTP remains focused on conducting the live testing needed to demonstrate Ballistic Missile Defense System performance under selected critical engagement conditions and to collect the other empirical data required to rigorously accredit the models and simulations that will be used to assess the system's performance against the broad range of scenarios that could be encountered in real-world operations. And so another benefit here that the general has brought to his approach to missile defense testing is to tie the testing very rigorously and tightly to the development of the models and simulations and to their rigorous accreditation.

The IMTP now includes operational testing of the Ballistic Missile Defense System, and the first such test is now scheduled for the fourth quarter of fiscal year 2012. And it will demonstrate, among other capabilities, layered defenses, shot coordination, and the negation of a small raid. Those are all important capabilities to demonstrate.

General O'Reilly has summarized the testing that has occurred over the past year and that is planned in the near term. And, as he mentioned, there were two unsuccessful intercepts conducted using the ground-based interceptors of the Ground-Based Midcourse Defense system equipped with Capability Enhancement II kill vehicles. Each of those tests failed—each of those intercepts failed for different reasons. And the reason for the failure of the second intercept remains under investigation.

I think it is inevitable that the rigorous test regime General O'Reilly is executing will inevitably result in such failures. And those failures, although they may be perceived negatively, also provide information that is absolutely critical to assuring that the missile defense system will actually work if it is ever needed. And the failures also demonstrate why live-fire testing of the system, with all of the complexity and expense that it entails, is absolutely necessary.

The testing conducted during the past year has provided valuable information, although, because of the unsuccessful intercepts, not quite as much as we had hoped for. For example, there were supposed to be intercepts conducted against target complexes, including associated objects in the intercepts that failed.

And, although we have gotten additional very useful information, in my annual report I have not changed my assessment this year relative to last year in terms of demonstrated capability of the Ballistic Missile Defense System. I use a six-point scale to do that, ranging from one, where capabilities are estimated using engineering analysis and laboratory testing, to six, where capabilities are verified across the full range of scenarios and conditions possible in real-world operations using a combination of rigorous flight testing and rigorously accredited ground testing models and simulations.

So, a one to six scale. On that scale, Patriot has demonstrated level six against short-range ballistic missiles. That is not to say that Patriot meets all of its requirements, but it has been rigorously tested across a broad range of conditions and scenarios.

Aegis, with the so-called build 3.6.1, I assess at level five against short-range ballistic missiles and the lower end of the range capable of medium-range ballistic missiles. I assess Aegis 3.6.1 at level four against the upper end of the range possible for medium-range ballistic missiles and the lower end of intermediate-range ballistic missiles because it has yet to actually be tested against such threats.

Although, as General O'Reilly pointed out, next month we will conduct a test against an IRBM [intermediate-range ballistic missile] at 3,700-kilometers range. That will incorporate a queue from a forward-based AN/TPY–2 radar and, possibly, launch on remote of the Aegis interceptor. And those are all important capabilities to

demonstrate to support implementation of the Phased Adaptive Approach, Phase 1, to defense of Europe.

I assess that at level four against short-range ballistic missiles, and that is because it has been tested only against simple short-range ballistic missiles. And the limitations on testing in THAAD up to this point are, in part, due to the target failures that occurred last year. Otherwise, we would have tested against—if the target that failed to ignite upon launch from the C–17, if that had not failed, we would have been able to do a test against a more complex SRBM [short-range ballistic missile]. But, so far, we have only tested against simple short-range ballistic missiles and have not tested other advanced capabilities of THAAD. And it is at level three against medium-range ballistic missiles because it hasn't yet been tested against those.

And then, finally, I assess the Ground-Based Midcourse Defense system at level three because it has been tested only against IRBMs. The first ICBM test is now scheduled for the fourth quarter of fiscal 2017 in simple threat presentations with no silos, no simultaneous engagements, and many of the models are not accredited.

Thank you. That concludes my remarks.

[The prepared statement of Dr. Gilmore can be found in the Appendix on page 85.]

Mr. TURNER. Thank you.

Well, we have very good attendance at this meeting today, and I know Members have a great deal of questions. So I am going to start by trying to combine several questions that I have. And then, General O'Reilly, I am going to start with a series of them that relate to GMD.

There was acknowledgement, in both my comments and yours, of the two GMD flight tests that failed to achieve intercept. And it is our only missile-defense system that protects the U.S. homeland from long-range ballistic missile attacks. And, as you acknowledge and, certainly, we all believe, we have to get this right.

Also, in looking at the issue of acquisition, MDA plans to require a total of 52 GBIs to support the system's availability and reliability until 2032. Of these 52 GBIs, 30 are operational in Alaska and California, and 16 are designated for flight tests from fiscal year 2010 through fiscal year 2020. This leaves only six GBIs available for spares and testing from 2020 to 2032. Already, two of these six spares may be consumed to compensate for the failed flight test in 2010.

Then, also, the GMD program has, as I said in my opening comments, seen sizeable budget cuts in the past 3 years. In fiscal year 2010, it was reduced by $525 million. The fiscal year 2011 request restored $300 million of this, but under the current continuing resolution, MDA is spending $291 million less than it anticipated in fiscal year 2011. The fiscal year 2012 budget request further reduces the GMD program by $185 million.

Also, a few changes to the GMD program are reflected in this year's budget request. They include a decision to mothball Missile Field 1 in Alaska instead of decommissioning it, and beginning a preliminary design work to locate an interceptor communications terminal at an east coast site by 2015.

So, combining those, would you please speak to the issue of the failures and its impact on our GMD program; your acquisition pace and issues that we might need to address there for adequacy; the reductions in funding and their effect overall on the program at the same time that it is having these challenges from the failures; and if you would also address the issues of the changes resulting in the status for Missile Field 1.

Thank you, General.

General O'REILLY. Thank you, sir.

First of all, for the failure of the GMD system, we have two versions of the GMD missile. The first version is called Capability Enhancement I, and it is the kill vehicle that has performed five times on flight. It has done very well: Three intercept attempts, and it has intercepted three times. Those are flights out of—the target out of Kodiak, Alaska, and the intercept out of Vandenberg. That roughly equates to the geometry of a launch out of North Korea and an intercept coming out of Fort Greely, Alaska.

For those type of scenarios and for that system, the CE–I [Capability Enhancement I], we remain to have confidence in the system based on the data we have seen.

However, we started a second version of the missile kill vehicle in 2005 based on obsolescence reasons—parts, manufacturers, and so forth not producing parts anymore in the electronic systems that we needed. And, therefore, we redesigned the system, upgraded it, and actually gave it greater sensitivity and greater capability. However, it failed on the first flight test due to a quality control problem we identified in the plant. We corrected that quality control problem, and, in the second flight, it didn't happen.

However, we did have a failure at the very end of the second flight. And we have a failure review board that has been formed. It is working diligently. It combines industry, academia, the best of Government, FFRDCs [federally funded research and development centers], national labs. They are completing their analysis. Right now, it looks like we have a very good idea of what the failure mode was. But that is not enough. I need to have it verified and demonstrated, which they will do through testing across the summer.

But that is not enough. We really need to have the industry team, the GMD team, demonstrate to us they have corrected it. So I have requested in this budget support for a flight test which tests the missile very rigorously without an intercept, but the purpose of it is to verify the resolution of these issues. And then, as I said, we will have another flight test next year.

What that effectively does is, it has delayed our flight test program that Dr. Gilmore referred to for accrediting our models and simulations by approximately a year. And we will continue to update the committee as we go through this testing and verify that we have, in fact, corrected the issue.

That is for Capability Enhancement II. Most of the missiles which are deployed today are the earlier version which, again, we haven't had those issues with.

As far as the number of 52 GBIs, which was our original calculation, there are several assumptions we used which we now deem no longer valid. First of all, we did not take into account the last

two flight tests have been failures. I just mentioned another flight test that originally wasn't envisioned. And we are going to repeat the last flight test. So right there are—indicates four GBIs that we hadn't accounted to before.

I propose that the best way to make this decision is, as we do these tests over the next year, we determine what in fact is the failure, make the corrections, as I said, and then go back into production and make a decision based on that reliability information—again, what is the acquisition objective for the GBIs and whether it should be adjusted and what is that adjustment.

I would propose that that would be appropriate for the fiscal year 2013 budget so that the timelines of the decisions I just said would be in effect. However, we have proposed five new GBIs for this year. So the production lines will be up, they will be operating. And it is clear to me that there will be some increased number of GBIs that will be necessary.

As far as the budget cuts, most of the GMD system, over the last several years, has been investing in infrastructure. And we will complete Missile Field 2, the power plant power distribution, other upgrades, over fiscal year 2012. And that is one reason why you see a reduction in the budget after that, because, from then on, the investments is not into the infrastructure of the system; it is into testing and upgrades to the GMD system or procuring, which will be in our follow-on budget, additional GBIs.

However, I would point out that, inside that GMD budget, the operations and support funding, it is an R&D [research and development]-funded program, but the money to go to those type of activities has increased, which is indicative of a program which is fielded and operating.

The impact as a CRA [continuing resolution authority], as I said, is significant to GMD because that particular program was to receive $324 million more this year. It is exacerbated by the timing of the CRA that we are under right now. Normally, at this time of year, that is when we have the most significant hiring of the construction crews in Alaska. If we don't hire them over the next several weeks, they have opportunities further north in the oil fields. And we have become very adept at managing workloads, our contractor team has, in Alaska. And if we don't fund the hiring of these folks over the next several weeks, it will have a major impact in the summer construction season, which is where we do 90 percent of our annual construction.

So if this continuing resolution goes beyond the current date of 8 April, we then will face some significant setbacks to the construction schedule to complete that infrastructure. And I would propose to come back and repropose that funding for the following year so that we can, in fact, complete the infrastructure that I was referring to.

Mr. TURNER. General, the SM–3 Block IIB, an interceptor, is planned for deployment by 2020 to improve protection of the U.S. homeland against potential ICBM attack as part of Phase 3 of the Phased Adaptive Approach. The fiscal year 2012 budget request provides an additional $1.7 billion to the SM–3 Block IIB development program across the Future Years Defense Program, the FYDP.

Will the SM–3 Block IIB design be optimized for ICBM intercept capabilities?

General O'REILLY. It will be optimized to intercept missiles early in flight. And, if I may, to better answer that question more precisely, in early parts of flight, there is not a significant amount of distinguishment between an intermediate-range ballistic missile, or an ICBM. So the original design of this and the original concept was against intermediate-range ballistic missiles, 5,500 kilometers or less. And when we look to have effective capability for that range of missile, it became apparent that it would work. The capability doesn't fall off when you increase the interceptor velocity.

So, sir, its design space is to maximize its performance from a medium-range ballistic missile to an ICBM, not to an ICBM that is greater than on the order of 12,000 or more kilometers. It would not be effective against the very largest ICBMs, but it would be effective against ICBMs that are traveling at velocities that we are concerned about and distances we are concerned about for countries in the Middle East and Northeast Asia.

Mr. TURNER. Okay. Obviously, I would like to have an additional conversation with you about that, because the intent of 2020 and Phase 3 and then even 4 of the Phased Adaptive Approach is protecting the homeland. So I would just like to have an additional discussion about that subsequent to the hearing.

Mr. TURNER. Dr. Roberts, the Administration's decision in 2009 to adopt a Phased Adaptive Approach for missile defense in Europe was based in part on an assessment that the longer-range threat from Iran was slower to develop than previously estimated.

We just had Secretary Gates in today to talk about Libya; and in discussing Libya with him, we asked—I asked the question of, and what do they—in their discussions on engaging Libya, what were their concerns as to what the effect might be on Iran and our efforts for nuclear nonproliferation? Is there a prospect that it could make them go faster in their quest? And he said, "I don't think they could be going any faster." Which would lead me—that is certainly a statement of intent, which certainly gives everyone the concern that the threat from Iran could develop much faster than what the Phased Adaptive Approach is designed to respond to.

What is your current thought of how the threat is emerging and prospective gaps between the Phased Adaptive Approach and—recognizing, of course, our ground-based system, but just focusing on the issue of the Phased Adaptive Approach, trying to respond to a threat from Iran, what are your thoughts on the emergence of that threat and the potential gap?

Dr. ROBERTS. To be clear about your question, Phased Adaptive is, of course, focused on the defense of the regions. With, in the case of Europe, the addition of the Phase 4 capability that would offer some protection against intercontinental threats, but also improve protection in the early intercept mode against IRBMs. And the question we face in anticipating Iranian threats is how they might mature in a way that threatens both Europe more rapidly than PAA, and the American homeland in a way that would overwhelm our current posture. It is an interrelated question.

Without venturing into classified information, I think our fundamental view is that the regional threat from Iranian ballistic missiles is rapidly growing quantitatively and quantitatively, and that the threat from the intercontinental capability remains difficult to predict, precisely when and how it might emerge.

And I think that is about all there is to say about the threat at the unclassified level from Iran.

How does that measure up against the posture that we are trying to put in place? In the case of the regional protection posture, we are putting into the field as rapidly as we can the capabilities that MDA has been developing. And there we are in a race between their quantitative and qualitative improvements and our quantitative and qualitative improvements, and our phased approach is intended to take the advantage, as early as possible, for our own proven capabilities for the defense of Europe.

In terms of the protection of the American homeland, what we are trying to hedge against is something quite specific and not general. Let me begin with a quick summary of our baseline of homeland defense capability, because it is not just the interceptors in being today. It is the improvements that we expect over the coming two decades with the additional enhancements to the capabilities of the Ground-Based Midcourse Defense system and the addition in the out-years in the second decade of the SM–3 IIB. It is a complementary set of tools that will apply to the defense of the homeland over this time.

In addition, we have in place the hedge, such as it now exists, to increase from 30 to 44 the number of deployed GBIs in the case of a more rapid emergence of an Iranian threat between where we are today and 2020 when, presumably, we will have the SM–3 IIB to help supplement the defense of the homeland.

The need is not to be hedged against an initial ICBM capability from Iran or some other country. We are already well-hedged against that position. We have 30 deployed interceptors. Against—we have used the shorthand to distinguish first-generation threats from second-generation threats. First-generation threats being initial capabilities from proliferators in the intercontinental range with unsophisticated countermeasures. Second-generation threats would be in quantity sufficient to overwhelm the GMD system or advanced countermeasures or both. And our basic hedge concern is to be well prepared for the possibility that there might be a more rapid emergence of that second-generation threat than we are ready to meet because SM–3 IIBs are not yet in place.

Now, that involves some discussions of how confident you are in the intelligence that tells you that something is coming—low, moderate, or high—and how much risk you are willing to accept in the period—how much risk you are willing to except about the possibility of an emergent second-generation threat.

I'm sorry to dance around a subject that has a lot of classified information in it, but I hope is that addresses the thrust of your question.

Mr. TURNER. You did a very good job of shepherding through that, and I will take, since we are talking about missile defense, your asking about the thrust of the question as a very bad pun.

We will go to Ms. Sanchez.

Ms. SANCHEZ. Thank you, Mr. Chairman. Thank you, again gentlemen.

Let's see, Mr. Ahern, you said—you were talking about MEADS, and you said something to the extent of stopping the program, the costs versus completing it versus paying out the closing costs on the contracts that you have. Can you get back to us—we don't have to have it here unless you have it off the top of your head—what that calculation is just for the record, since you brought it up?

Mr. AHERN. Yes, ma'am. The phrase I used is that we would be, if we went into that scenario—my notes are here—but essentially that there has been an extensive amount of money—that is about what I said—on termination costs if we went in that direction.

The calculation that we have right now is that the remaining funding in the MOU, and that liability that we are into, and I want to be sure to explain that carefully. There was an original commitment written into the MOU of about $4 billion U.S. equivalent dollars shared between the three allies. Our share was $58 million, about $2.5 billion over that period, 110 months, that I mentioned earlier.

The way that it is written, if you withdraw from the MOU, then you are liable potentially to termination liability up to the level of your commitment under the MOU.

Currently, we have put in—and the numbers are about right—about $1.5 billion. So our remaining commitment to the MOU, therefore, our maximum termination liability, is about $800 million. $846 million, at some point, was the number that we had used.

Now, the other side of the coin is what do we—we have asked for $800 million in fiscal year 2012 and 2013 to continue to fund the MOU. So the point I was trying to make is that in balancing—to make a decision going forward, that the four reasons that I said going forward, one of the ways that was thought about is, if it is about the same amount of money—and this is my Dave Ahern paraphrasing—if it is about the $800 million to go forward and be able to get into the demonstration, show the prototyping, the capability of this system, that is a better use of that funding than it would be to unilaterally terminate, where you don't come away with anything at all.

Does that answer your question? That is what I was trying to do.

Ms. SANCHEZ. Yes, absolutely. I was trying to figure out what the magnitude of that was. Okay.

And, Dr. Gilmore, you said at one point, you had a phrase where you spoke about General O'Reilly's system testing or the way he set up his tests; and you said something to the effect of "it would almost lead to failures because it was such strict testing" or——

Dr. GILMORE. I said that rigorous testing will probably inevitably lead to some failures. They wouldn't be unexpected.

The same thing is true of missile defense systems that is true of all defense systems, which is these are some of the most complex systems that human beings try to build and get to work. And so when you test these systems—and this is true not just in missile defense interceptors and kill vehicles. It is true of Joint Strike Fighters. It is true of advanced anti-radiation guided missiles. It is true of virtually every program that I have to write a test report

about. When you test them realistically under operational conditions where they are first stressed to the max or much more than they have been in developmental testing, inevitably you find problems and there are failures.

Ms. SANCHEZ. So the more rigorous or calibrated you are trying to get to, there are more.

Dr. GILMORE. Actually, the rigorous testing can be less calibrated. It can be under conditions which are unexpected and, therefore, more stressful. But, in any event, if you test rigorously under operational conditions you will probably encounter failures, and that is true of missile defense interceptors as it is true of other defense systems.

Ms. SANCHEZ. Thank you for that.

Because I am coming back to a question for you, General O'Reilly. We had an earlier conversation when I spoke to you about having spoken to somebody else, and one of the comments that group made was that we might be a little bit less of a risk-taker in this arena.

Can you speak a little to where you are calibrating how much risk we should be taking? Because in some of the other systems that I was talking to you about with this group, they were having some quantum leaps, if you will, forward in theirs, and ours is more doggedly coming along. What is your sense of just how calibrated or how stringent you—or rigorous you are making the tests?

General O'REILLY. Ma'am, the way we are setting up our tests I do believe are representative. And I do work with Dr. Gilmore and the services operational test community, but I do believe they are representative of an actual scenario that the Ground-Based Midcourse Defense system, for example, could see. So my philosophy to testing for the agency is we need to assure it is going to work in combat; and, therefore, if there is a problem, I would rather find out now and fix it than, obviously, find out later. And I also have to report to the combatant commanders why they should have confidence that in battle these systems will work.

So we do stress it. We do ensure that we understand the minimum performance. For example, these flight tests I have done recently are very long in flight. And the reason we are doing that is to replicate the longest flight we could possibly have for defending the United States, for example, from Fort Greely, Alaska. And, again, our philosophy is we want to assure they work; and we also want to find out, if they don't work, let's find out now. We have an opportunity to fix them. Which is what we are doing in the Ground-Based Midcourse Defense program.

Ms. SANCHEZ. Thank you for that.

Another really subjective sort of question I have with you is how do you balance the need for ensuring an operationally effective missile defense with the pressure to deploy the missile defense systems quickly? And how does schedule and employment pressures, you know, that are obviously aimed at that—again, going back to this question of, you know, maybe we are lagging behind because we are being so risk-averse or more particular. And would the pressures that you see sometimes of people pushing, would they lead you to do shortcuts? How do you balance that? Because you are

really our guy trying to figure this out with respect to testing everything and working everything and getting the schedule on.

General O'REILLY. Ma'am, I believe the key to handling those situations where you are under a lot of pressure to deploy something and there is a great need—and we recognize, for example, against regional missile defense, we are outgunned in about every region of the world today. I think the need to balance that pressure versus verifying and making sure the system works correctly is—the approach should be to determine up front what is that criteria before you get in those high-pressure situations.

And, again, I greatly appreciate the help of the operational test community. We define in our Integrated Master Test Plan up front what is our purpose of testing, what is the success and failure criteria, and we do that early in the process, even in some cases years before we actually conduct the test. Therefore, once the test is done and we are looking at the results, that is not really the time to determine what is deemed a successful test or not.

Then, if we have a system that is not mature to the point that we had originally set up criteria for, at that point we go to the combatant commander and the operational test community and STRATCOM, prepare a document of what capabilities have we verified the system does have and what are the limitations that it has. And then the combatant commander has to make a determination. Does he want to accept those limitations or not accept the capability until we mature it further?

Ms. SANCHEZ. Okay. Thank you.

Dr. Roberts, can you talk to us a little bit about how consultations are proceeding with Russia? Or would you rather do that off record?

Dr. ROBERTS. Well, the details should be done in a different venue, because the state of discussions is sensitive.

In general, we see strong Russian leadership interest in moving forward with missile defense cooperation with the United States and NATO, reflected in presidential and prime ministerial statements. We see supporting activities in the various ministries aligned with the senior-level commitment. We see some concerns on their side akin to the concerns we have. We are concerned about sharing classified information; they are concerned about sharing classified information. They are concerned about some of their technology.

But I think the short answer would be we perceive that they are approaching this cooperative effort in a constructive and pragmatic way and with some realistic expectations about what we might be able to accomplish.

Ms. SANCHEZ. Thank you.

I will yield back.

Mr. TURNER. Mr. Franks.

Mr. FRANKS. Well, thank you, Mr. Chairman.

Gentlemen, thank you for being here. We appreciate what you do. I have got two little 2-year-old twins, so I especially appreciate what you do.

General O'Reilly, I hope the question has not already been asked. We get divided in our attentions here.

But the Ground-based Midcourse Defense system in Alaska and California is essentially all we have to defend the homeland from long-range missile attacks. And it has been my estimate, and I am going to ask you about it, the stockpile of these GBIs is dangerously low. And so I guess I would ask you just to refresh our memories on what the present stockpile is. And in your personal opinion—I will put you in a bad spot here, if you don't mind. In your personal opinion, not wearing your MDA hat, is the number of available GBIs sufficient, or do we need more? And coupled with that question, how will the $2.4 billion reduction in the Future Years Defense Program affect our GMD effectiveness?

General O'REILLY. Sir, we built the current acquisition objective, we call it, the quantity of how many of an acquisition item we believe we need to procure, including testing and development. And for GBIs today the number is 52. Thirty will be deployed. The others will be put into a pool which—again, the way our approach is to reliability of the GBI system is we continually learn about this system over time so we want to have a pool of interceptors that we can rotate through, which is not unusual to do with missiles. We do it with PATRIOT and plan to do it with THAAD and we do it with Aegis. You put them back into a depot, you test them, you take components out, you fire them off, and you keep improving your knowledge of how they are aging over time. So there is a calculation of how many missiles are necessary for that.

We do not have a lot of data that you would normally have before you field a system just due to the urgency, as you say, the need, because the GMD system is our only homeland defense system. So we put prototypes—they are more akin to prototypes than production representative missiles in the field. We watch them very carefully, and we have assessed that we needed 16 for flight testing and ground testing. And, as has been said before, that leaves you six for testing in 2020.

Well, there are some assumptions that we made at the time that have since no longer been valid. And that is we didn't anticipate the two flight test failures we have had. We also didn't anticipate my request for another flight to verify it works and then we are going to repeat the test. So right there are four GBIs we hadn't anticipated.

I believe over the next year it would be prudent to reassess the number of GBIs we ought to be buying. For our fiscal year 2012 budget, we are requesting five new GBIs. So the production lines will start, and that will commit the contractors probably to their limit—close to their limit to what they can do. That would be more GBIs than we have produced at one time in the past in one lot.

And so we believe we are going to sufficiently start the production line and, over the next year, I would recommend between now and the fiscal year 2013 budget submit, the Department reassess the total number we need to procure and then include that in the fiscal year 2013 President's budget.

Mr. FRANKS. Thank you, sir.

I will try to throw another question at you right quick. Related to directed energy, I know that the Airborne Laser test scheduled for last night had to be canceled, but, given what we have learned from the Airborne Laser program, do you foresee any near- or me-

dium-term applications for directed energy weapons in the ballistic missile defense architecture at this point or anything new?

And, secondly, can you tell us a little bit about the DDR&E [Director, Defense Research and Engineering] report on the directed energy technologies?

General O'REILLY. We have supported the effort of that study, DDR&E study, so I can talk from a point of view of us providing information to them. But the bottom line is that there are many applications of directed energy. Unfortunately, for this venue right here, they are highly effective. Most of them are classified.

I can tell you that last year twice, both against liquid-fueled systems that are very hard to shoot down—the lethality mechanisms was the theory they would be hard to shoot down—and solid-rocket motors, we have shot both of them down with our laser system at great ranges; and the destruction actually occurred much faster than we theoretically thought it would occur.

So there are some lethality effects that are greater than our theory had indicated. The bottom line is, it is extremely promising. We have effectively tracked and intercepted while a missile is boosting, which is ultimately where you would want to be in missile defense. Then you would never know how far the missile—whether it was an IRBM or ICBM—because you killed it while it was still boosting. Tremendous cost-effectiveness of having that ability. And we have demonstrated for the first time empirically over the last year our capabilities which allow us to upgrade our theory and our models and simulations.

Mr. FRANKS. Thank you. Mr. Chairman, thank you.

Mr. TURNER. Mr. Larsen.

Mr. LARSEN. Thank you, Mr. Chairman. General O'Reilly, a couple of questions with regards to SM–3 Block IIA. It is a co-development program between the U.S. and Japan. And in a letter to the Japanese Ministry of Defense you noted the project is rapidly approaching key milestones, that, absent a production agreement with the Government of Japan, the U.S. will assume it will produce the missiles in the United States. And I am curious as to what decisions you believe—MDA believes you need from the Japanese Ministry of Defense to move this from development to production with the Japanese; and if that does not happen, then what does happen to SM–3 Block IIA?

General O'REILLY. Sir, the SM–3 Block IIA, we have a commitment to utilize that weapons system. It is Phase Three of the Phased Adaptive Approach for the deployment of missile defense in Europe. As the President has stated, the SM–3 IIA will be part of that configuration. Therefore, it is my responsibility to ensure it is brought to production and produced.

Our current agreements with the Japanese Government are more based on timelines; and so by 2015, the current agreement is, that is when we would end our cooperative development of the SM–3 IIA.

It is not that they have decided not to finish the development with us, nor have they decided to participate in production of it. They haven't announced that they have made those decisions. My point in the letter was that in our budget process it would be very helpful if we understood their commitment, and we extended the

cooperative development and also made the agreements early on how we would produce it and how we would conduct work share and so forth.

Short of that information, I must assume that I have to put something in there to ensure—to submit to Congress the resources needed to deliver the SM–3 IIA by 2018. And so what I have done in the out-year budget, without having a commitment from the Japanese Government, has assumed that the United States will finish the development and production.

It was done only to have a comprehensive budget submission. It was not meant that we do not desire it. In fact, we would; and we have had great success with the Japanese. It is just that it would be very helpful for our budgetary purposes to understand what their intentions are for completing the development and to going into production. I, frankly, would imagine that after they——

Mr. LARSEN. Do you anticipate, then, meeting a time? Obviously, everything is down in Japan, and we are sensitive to that. But on this issue do you anticipate sometime this year meeting with them to try to find out what their intentions are?

General O'REILLY. Sir, we have several meetings planned this year to discuss this, and the sooner the better for us. But, obviously, we are very sensitive to the situation they are in. But they have not delayed our upcoming meeting that will occur in the next two months on this topic.

So that is where we stand on it, sir. And I may defer to OSD Policy, too, because they work this from the policy side.

Mr. LARSEN. Go ahead, Mr. Roberts. That is fine.

Dr. ROBERTS. Well, I would only add that we have every reason to expect continued strong partnership from Japan on this matter. Their commitment is clear, even if the terms of the next agreement are not yet finalized; and we think they are an excellent model of burden sharing with our allies in this area.

Mr. LARSEN. Mr. Gilmore, in your testimony—in your written testimony, you noted on the—back to the GMD and interceptors—you said because the number of GMD interceptors available for testing is limited and additional targets must be purchased to support this repeat testing, the FTG–11 has been eliminated. The point is that additional targets must be purchased, and we have heard this from General O'Reilly as well.

Putting that together—this is actually a question for Mr. Ahern, from MDEB's perspective, is this on your—is this yet on your radar? Or it has to be worked for the 2013 and then comes to you?

Secretary AHERN. That is correct, sir. I have not seen that come forward, the additional. But I understood what General O'Reilly indicated, and I expect that we will see it coming forward in 2013.

Mr. LARSEN. Thank you.

Thank you, Mr. Chairman. I will take a second round later.

Mr. TURNER. Mr. Lamborn.

Mr. LAMBORN. Thank you, Mr. Chairman.

General O'Reilly, I want to the build on a question or two that Representative Franks asked a moment ago. Is the funding for directed energy what it should be, given what we continue to learn about the greater and greater applications for directed energy?

General O'REILLY. Sir, I am a strong supporter of development of directed energy. I believe we have shown over the last year that it does have lethal effects, as we have desired. The Missile Defense Agency probably has the greatest application of high-energy megawatt-plus class lasers, so we are unique in that area. But at much lower energies, we have significant applications in missile defense to assist our interceptors if we have directed energy.

But for these—it is still in research and development in a large part, especially the next generation. We would like to see powerful lasers like we are working with Lawrence Livermore National Labs that is about the size of this table, rather than a 747, that would have tremendous lethality. And to achieve, that I believe the best way is almost like the approach I answered for test criteria. We establish technical milestones, and we establish a steady funding level. And until they hit that technical milestone, we keep a steady funding level that adds stability to the research team and, once they achieve it, then a decision is made to move to a higher funding level where you can then start applying that technology.

Where they are in this program—and we are prepared to move rapidly once they have achieved milestones. These are significant milestones associated that they are working right now with the efficiency of these lasers. Once they reach the type of efficiencies they are trying to achieve, which is greater we have ever seen before—and I do believe they are achievable; it just has to be demonstrated—then I believe that is the best strategy for justifying additional funding to apply that capability.

Mr. LAMBORN. Are we at least doing that initial stable R&D type of funding in the proposed budget?

General O'REILLY. Yes, in the proposed budget, we are.

Mr. LAMBORN. Okay. Secondly, I have heard that the Standard Missile-3 Block IIB program described as a high schedule risk. Do you see this as an important problem?

General O'REILLY. Sir, when we laid out the SM–3 IIB program, we looked at interceptors that are much more complex than this one.

If I may say, trying to intercept a missile in boost phase has some big advantages and actually is a more simplistic missile. The target you are trying to hit is very hot. You just finished boosting, and the accelerations of it—it is very clear to find it, to track it. And we have other classified requirements that are not applicable at the front end of a missile kill chain.

So the bottom line is, we don't believe the criteria are as great on this missile as it is on the, say, PAC–3 [Patriot Advanced Capability–3] or THAAD or Aegis. Yet we added time to the average development time, and we went back and looked at how long it takes to build missiles of this class. And so for this missile, from the beginning of product development to making a milestone decision for production, is 5½ years, which is longer than what the average is for a typical missile. So we do believe we have put margin, schedule margin, into the development of this missile.

Mr. LAMBORN. Okay, thank you very much.

And my last question for you is I was recently informed that the defense efficiency initiatives will be cutting 1,000 positions from the Missile Defense Agency over the next 2 years. What parts of

the agency are these cuts coming from? And can your agency absorb such a huge cut without an impact to the missile defense mission?

General O'REILLY. We were part of that process to determine what the efficiency goals were. Our input was along that line, and the majority of that is in the area of our contractor support for Government functions, the supporting functions. And it is a different way of contracting is what we have taken into mind. Instead of taking a path like we have in the past where we augment our staff, everybody inside the agency determines how many more technical support contractors they need, and we go out and procure for that number. We have turned it around, and we have made it competitive, and we will announce what are the tasks that need to be accomplished. And then we let the contractors come back to us and propose—industry to tell us how many people it would take, rather than we predetermining how many people.

We are about 50 percent through this new contracting process over the last year. The savings we have already identified for this year alone, over $100 million, where the actual proposals that we accepted was less than what the Government estimate was under the previous contracting approach.

So we believe the competition that has been added to this—we also are awarding larger contracts in this area. So instead of having a whole series of small contracts—we had over 400 for this agency—we are now pursuing 40 larger contracts which then have their own efficiencies because the Government does not have oversight over 400 contracts so there is the reduction on the Government side.

But most of that goal for the reduction of effectively a thousand full-time equivalent personnel is achieved through this new contracting approach of letting industry tell us and bid competitively on how much it would take in order to meet the tasks that we have.

Mr. LAMBORN. General, as a final follow-up, you have explained the process very well, but do you think any of the missions of MDA will be compromised?

General O'REILLY. No, we have determined up front what are the tasks that need to be done in order to accomplish our mission, and we are set out to contract to all of those tasks.

Mr. LAMBORN. Okay. Thank you, and thank you all for being here.

Mr. TURNER. Mr. Brooks.

Mr. BROOKS. Thank you, Mr. Chairman.

General O'Reilly, you addressed—and I am discovering what it is like to be a freshman, seems like all of my questions have been asked in one shape, form, or fashion, so I am modifying a little bit.

But you addressed the impact of a continuing resolution. As you know, we in the House and the Senate are facing a logjam of sorts with respect to CR [continuing resolution] versus a budget for the remainder of this year. Which is the lesser of the evils to you: Continuing throughout the remainder of the year on a CR basis, sporadic 3 or 4 weeks at a time or, if push comes to shove, having a partial Government shutdown of 2 or 3 weeks, something of that

nature, which may be required to force the parties to pass a budget for the remainder of this year? Which is easier for you?

General O'REILLY. I am sure everybody is anticipating my answer of what Congress should do.

Mr. BROOKS. Not what Congress should do, but which is easier for you to operate under? Which is the lesser of the evils?

General O'REILLY. I think between shutting down the Government and continuing contracting in a very inefficient way, I would rather continue the contracting in a very inefficient way. But, if I could, there are some impacts there that I would just like to clarify and make sure that I have represented correctly.

It is not only the Government operations but, obviously, all of the contracts out there. Especially as we proposed the Phased Adaptive Approach, there are a lot of new starts in this budget that we are not allowed to turn on.

And there are particular issues such as the National Defense Authorization Act in December authorized my agency to procure Iron Dome, the system that the Israelis have developed for short-range defense, $205 million. Even though the President has committed and it is in the authorization act, it is a new start for me, and so I can't even execute what the authorization act has asked me to do.

So it is that and it is the impacts to the workforce; trying to determine new contracts and things, whether or not they are going to be hired or laid off. It is buying material. We can't commit legally to buying material because we don't have the follow-on funding. As I said, up in Alaska we are missing at a critical time for hiring our construction workforce. It is extremely difficult, and it is extremely inefficient to operate this way, even though I said that would be better for me than stopping and not movingly forward at all with any of my—the work that the Government has asked me to execute.

Mr. BROOKS. So even if the Government shutdown was 2 to 3 weeks, something relatively short, sometime in April, you would prefer to have a CR off and on for the remainder of the year rather than risk a 2- to 3-week shutdown? That would be easier for you to operate under?

General O'REILLY. That is the worst of two evils, but at least we are accomplishing some work. If we completely shut down, then there are a lot of also inefficiencies associated with that, with having to terminate and start up activities.

Mr. BROOKS. Do you have a judgment as to whether you would qualify as an essential function and thereby MDA be exempt from the shutdown?

General O'REILLY. Sir, there are functions that we do that are in direct support of the combatant commanders; and it would affect, for example, our homeland defense system. We need to continue that operation and the oversight and the Government participation of GMD. And it is an operational system, and there are many others at the regional level that I would deem are in direct support of combat operations or ongoing military operations.

Mr. BROOKS. The GMD program, as you know, has seen sizable budget cuts in the past 3 years; and the fiscal year budget request further reduces the GMD program by $185 million. How are these

reductions impacting GMD operations, sustainment, and any modernization activities?

General O'REILLY. During this period of time, the operations aspects are actually increasing over time in that budget. What those budget reductions primarily reflect is the completion of a lot of construction up at Fort Greely that was originally intended, and now that work has come to an end.

However, we are starting new work. The upgrade of the Clear radar, for example, that is about $200 million. That is for the purpose of enhancing the homeland defense. So there are a lot of other activities that are being initiated which, in fact, support homeland defense but are not part of the GMD program.

But for O&S [Operations and Support], we are increasing over time because we have a greater operation—as more assets become operational, so does the need to maintain the system. But, primarily, those reductions were associated with power plants and other infrastructure, which we are now completing.

Mr. BROOKS. Okay. I am just about out of time, but in view of the most recent tests that were unsuccessful, does the fiscal year 2012 budget request still reflect your funding requirements for GMD?

General O'REILLY. Sir, they do. But some of that funding—some of the activity we will have to defer and accomplish in future budget requests.

Specifically, we have stopped the production of the enhanced kill vehicles as this time so that—because we don't know exactly what the solution is. We want to verify the solution and the correction and then upgrade those kill vehicles, make those corrections, and then continue the production line. So we do have a stop of about—for seven kill vehicles that are currently in production at this time. And because we are not completing it, there is a reduction in our need, our funding; and we are using that funding in order to support these other activities to return to flight testing.

Mr. BROOKS. Thank you, General O'Reilly and the other members of the panel; and, Mr. Chairman, I yield the remainder of my time.

Mr. TURNER. Ms. Sanchez.

Ms. SANCHEZ. Thank you, Mr. Chairman.

General O'Reilly and Dr. Gilmore, what do you consider will be the most demanding developments in terms of technology improvements that are required for the PAA Phase 2 and 4—I'm sorry—Phase 2 through 4?

Dr. GILMORE. To some extent the most demanding technologies and the most demanding capabilities for Phase 2 through 4 are common to all of missile defense. First of all, you have to demonstrate that you can actually discriminate if the threat comes with countermeasures. Because, if you can't, that is obviously a problem; you won't be able to intercept what you need to intercept.

That is a problem as you move towards trying to negate longer-range threats in particular. And as we move into later phases of the Phased Adaptive Approach, that could become a greater problem as time goes by.

Another thing that has to be demonstrated is the capability to do Engage-on-Remote. So you have forward-based sensors and for-

ward-based radars that are doing the tracking which then provide that information over communications net and through the Battle Management Command and Control system to the actual platform that will launch an interceptor. And that intercept will sometimes have to occur outside the field of view of the radar that might be organic to the intercept platform. That is another important capability that has to be demonstrated in order to realize all of the protection that would be provided by the Phased Adaptive Approach.

Those are just two things that come to mind, but, General O'Reilly, if you care to say something else?

General O'REILLY. Ma'am, I believe the individual development of the individual components—the sensors, the command and control processors, the missiles—they are not inherently more difficult to develop than ones we are developing and have successfully developed today. I believe the real challenge in 2, 3, and 4 is each time we move to a new level of capability with missile defense they become more—those capabilities become more interdependent on each other so that we can—the Aegis ship, for example, in Phase 2 doesn't need to see the missile before we go ahead and launch a missile because we are relying on some other radar. So it is the integration.

And just to give an idea, in the next two years the operational tests, for example, that Dr. Gilmore has referred to earlier, it is actually going to have two medium-range missiles in the air simultaneously, an Aegis ship in a position to shoot it down. But if it does not, THAAD has to be right behind it to be ready to shoot it down, and we are going to shoot another missile at THAAD simultaneously during that period of time that it has to worry about. And just when it is most difficult, we are going to launch a third missile so that a PATRIOT system underneath it has to operate with all the effects of the other intercepts.

So as we continue to become more and more complex, operate live fire testing is important, but the accreditation of our models and SIMS [simulations] so that we have confidence in them is going to become more important. All of this is geared toward the complexities.

Phase 3, we are now reaching out twice the range we were before. So not only do you have more complex scenarios, but they are spread out over a greater period of time.

But Phase 4 actually becomes easier. Because if you are going to—it is just like our laser interceptions last year of a boosting missile. The targets don't cost very much because there is no target—there is no payload because we are trying to destroy it early in the flight. Or, if it is, it is a simplistic payload. And the range infrastructure, all of that is much smaller because the entire flight from which we are trying to destroy the missile occurs in 2 or 3 minutes, rather than 30 minutes, over a much smaller piece of land.

So that capability of the SM–3 IIB will actually drive us to more cost-effective missile defense and more cost-effective testing and deployment. So I believe the challenge is for Phase 2 and 3 primarily to demonstrate all of the integration which is necessary.

Ms. SANCHEZ. Thank you.

Thank you, Mr. Chairman.

Mr. TURNER. Mr. Larsen.

Mr. LARSEN. Thank you, Mr. Chairman.

Mr. Ahern, with regards to—is it "ME–ADS" or "MEADS"? How do we pronounce that?

Mr. AHERN. "ME–ADS" is the way I do it, sir.

Mr. LARSEN. I'll use "ME–ADS" so we will be talking the same language. At least we will start off talking on the same page here.

From the staff memo, it says the penalty on the termination is $846 million. Is that about right?

Mr. AHERN. That is what I was trying to describe earlier. That is the subtraction between our original MOU commitment and what we have already provided. And that is about the right number today, yes, sir.

Mr. LARSEN. And then the 2012 and 2013 budgets anticipate about $104 million——

Mr. AHERN. $804.

Mr. LARSEN. $804 million. So a difference of about $42 million between terminating it today and what we plan on spending over the next two budget cycles; is that about right?

Mr. AHERN. Yes, the maximum termination liability, $846 million, and that is just based on a snapshot in time.

Mr. LARSEN. Right.

Mr. AHERN. And then the request for the budget is based on our MOU commitment for 2012 and 2013. So, within that range, yes, sir, those numbers are correct.

Mr. LARSEN. When does the MOU commitment end and the threat of a termination penalty end with it?

Mr. AHERN. I am not an attorney, but I am going to tell you my understanding is, when the money has expired, then the MOU is over. I think I have the MOU available. I will take the question for the record, but I want—this is an opportunity to do this.

[The information referred to can be found in the Appendix on page 95.]

Mr. AHERN. We have no obligation to put more money into the MEADS program after we have executed 2012 and 2013. So, from the standpoint of are you worried that I will be back again asking for money in 2014 or 2015 for MEADS, no, sir. It would require an amendment to that MOU in order to be able to put more money into it. We have no intention of amending that MOU. Had we decided to go forward with what I described in my opening statement as the third option of adding the additional funding, that would have required an amendment.

So I think that my right answer to your question is, there is no termination liability when the last dollar on the last contract is expended.

Mr. LARSEN. If you planned to come up here in 2014 and ask for more money I would make sure that the chair, or whoever it was, didn't invite you so you couldn't come up here and ask for more money because—I am half joking, but it just seems that, between the penalty and what we put in the budget, it is almost the same. I am just trying to understand better the decisionmaking process to get us to this point.

But I think you have also—just one issue, when does this end? We haven't really delved into MEADS too much over the last several years as much as we have done other parts of the Missile De-

fense Agency budget, and it might be worth us maybe doing a look back on MEADS a little bit on this side of the microphone.

Mr. AHERN. Yes, sir. I am not sure—I think—I am not sure where the question is, but I think that the effort going forward, how the decision was made, as I described—tried to describe, it was that going through the rationale of our commitment to our allies, what we had accomplished, what we had expected to accomplish, the affordability aspect of it. Because were we to commit to continuing—there was that billion dollar bill plus, really, implicit in Dave Ahern's mind, if you are going to do that you really have to commit to production. And we were not ready to do that. There was a recognition of the risk.

So I think that is all wrapped up there. And it is a fact our maximum termination liability is within reason, with small estimating, whatever percentage that is, of what our obligation to the contract is. But I don't think that was—it was not what I was thinking of, anyway. And I am not the decisionmaker, but I was certainly involved in it. It was those four reasons: You are close; you have got the CDR [Critical Design Review]; you have got allies; do what you can, but recognize that you are not going to go any farther.

So I won't be up here in 2014, sir. And then also you are taking some risk with the rest of the portfolio.

Mr. LARSEN. And if I may, Mr. Chairman, what I understand from the decision that MDEB has made with regard to MEADS, though, is we go forward for the next 2 years on this and then we end up with a prototype that provides a set of capabilities that could be used for something else later. Is that what I gathered from your written testimony at least?

Mr. AHERN. Sir, let me make one correction. The MDEB had nothing to do with the decision on MEADS. That is a straightforward Army, OSD, going forward to up the SECDEF [Secretary of Defense] decision.

But at the end of the 2½ years we will have demonstrated if the plan works as we expected. And that is part of my job, is to ensure that we do. We will have the fire control radar. We will have shot a couple of live shots with the MSE [Missile Segment Enhancement] missiles. We will have used the command and control system. We will have done, as Dr. Gilmore mentioned in one of the other systems, an Engage-on-Remote. So there are some realistic, focused achievements in the "system of systems" kind of aspect for MEADS to demonstrate that it is—that the concept is proven.

And then there will be technologies. Our technologies—this is a big phased array—or not that big—but phased array antennas, mobile, lightweight, in X band and in UHF band, and they are modern electronic.

So it is both a system of systems and a technology that will have been demonstrated available not only to the United States but also to Germany and Italy.

Mr. LARSEN. And one more question, Mr. Chairman.

This is for Dr. Roberts and has to do the Phased Adaptive Approach, whether it is EPAA or APAA or the regional aspect of this, and having to do with the numbers of destroyer platforms that you anticipate will be available. Can you talk to us a little bit about coordination of your policy shop with the U.S. Navy and how you

anticipate having the adequate number of Aegis destroyer platforms to implement this? Plus knowing full well we have a lot of other things our destroyers need to do?

Dr. ROBERTS. The missing voice today on this panel is the Joint Staff. And Admiral Macy, I believe, is on foreign travel and is not available today.

But, fundamentally, the answer to that question comes from them, meaning the Joint Staff is responsible for adjudicating competing requests from combatant commanders for scarce resources. And our function has been to set some policy goals, support the development of an acquisition strategy that grows capability as rapidly as we can afford, and to provide what policy context is needed for the Joint Staff to adjudicate these competing demands.

And I think that is—it is fundamentally a responsibility of the Joint Staff.

Mr. LARSEN. Thanks. We will follow up with them.

Thank you, Mr. Chairman.

Mr. TURNER. Thank you, gentlemen. I want to thank you for your dedication and your expertise.

I want to personally thank Dr. Roberts and General O'Reilly for your work with the committee, both in the 101 sessions and in the private briefings that we have had and the classified briefings. I can tell you that, you know, this is substantial progress that has been made from our hearings a couple of years ago. I think certainly our European allies were all very impressed with what has occurred and what has been achieved there and their support for the Phased Adaptive Approach.

I appreciate you working cooperatively with the committee, and I think what this has allowed us to do is to hone in on what the remaining items are, what the to-do list is, those items where we might need to exchange additional information. But I do greatly appreciate the way and the manner in which you are working with the committee and the members, and I think it really helps. By the time we get to this committee hearing, a lot of the questions that we have, a whole lot of background has been exchanged between us, and that really helps. So thank you very much.

With that, we will be adjourned.

[Whereupon, at 4:25 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 31, 2011

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 31, 2011

Opening Remarks
Honorable Michael Turner
Chairman, Subcommittee on Strategic Forces
House Armed Services Committee

Hearing on the Fiscal Year 2012 National Defense Authorization Budget Request for Missile Defense Programs

March 31, 2011

I would like to extend a warm welcome to our four distinguished witnesses here today to discuss the Fiscal Year 2012 Budget Request for Missile Defense Programs:

- Dr. Bradley Roberts, Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy;
- Lieutenant General Patrick O'Reilly, Director of the Missile Defense Agency;
- Mr. David Ahern, Deputy Assistant Secretary of Defense for Portfolio Systems Acquisition; and
- Dr. Michael Gilmore, Director of Operational Test and Evaluation.

Members have several issues they want to address today, so I will keep my remarks brief and would ask our witnesses to summarize their statements so we can spend the bulk of our time on questions and discussion.

First, I am deeply concerned about the Ground-based Midcourse Defense (GMD) system in Alaska and California. The back-to-back flight test failures this past year raise doubts about the reliability and effectiveness of this capability. I had the opportunity to talk with General O'Reilly yesterday, and I appreciate his efforts to establish a rigorous failure review and mitigation process. However, I question the Administration's long-term commitment to 'getting it right.'

While I understand there are some changes to the program this year, I have also observed the funding for GMD plummet over the past few years. In Fiscal Year 2010, the President's budget request slashed it by $445 million. Last year, we saw a restoration of some funds, but then again this year, the program is cut by

$185 million. Furthermore, the outyear spending profile for GMD is $1 billion less than was projected a year ago. With these levels of cuts, it is clear that something will be broke or something won't get done. I worry that these test failures may be a harbinger of further setbacks if we don't make GMD a priority and devote the resources necessary to make it right. After all remember what is at stake: GMD is currently the only missile defense system that protects the United States homeland from long-range ballistic missile attacks. We have to get it right.

Second, a year ago, I was highly critical of the Administration for the lack of information it was providing to Congress on the Phased Adaptive Approach (PAA) for missile defense in Europe. In the past several months, we have seen significant improvement in engagement with our committee, and I want to commend our witnesses for that.

Last month while in Brussels, I had the opportunity to meet with Admiral Stavridis and other NATO and European Command officials to discuss progress in PAA implementation. I also met with NATO parliamentarians and was pleased to see how far the missile defense discussion in Europe had advanced from three years ago.

No doubt, there is significant work ahead that I would ask our witnesses to discuss today. On the policy front, a near-term decision must be made on where to locate a forward-based X-band radar. Charting a path forward with Russia while also protecting our interests will continue to be challenging.

On the programmatic front, there is a substantial amount of development and testing required to ensure new systems and technologies planned for PAA are "proven." There are still considerable technology risk reduction activities that must be accomplished in the Standard Missile (SM)-3 Block 2-A and Block 2-B programs; both of which are key to protecting Europe and the U.S.

Some of us also remain concerned about the Department's hedging strategy for defense of the homeland in case the long-range threat comes earlier or technical issues arise in the development of a new SM-3 interceptor. I came away from our PAA hearing last December believing that the Department's hedging strategy was

hollow. Since then, I understand the Department has worked in earnest to develop the strategy, and I hope our witnesses can discuss some of this.

Third, the budget request contains approximately $400 million in 2012 and another $400 million in 2013 for the Medium Extended Area Defense System (MEADS) — a joint U.S., German and Italian missile defense system that the Department does not plan to continue beyond design and development due to cost and schedule overruns. I understand the government's contract termination obligations, but spending $800 million – in this budget environment – on a program that is not going forward into production makes no sense. These resources could be better spent on other missile defense priorities. Is the Department looking at options to lower this liability?

Fourth, we need to continue to invest in innovative science and technology. Last year, our committee expressed bipartisan concern that the budget request for Directed Energy Research appeared insufficient to maintain the Airborne Laser Testbed aircraft, conduct flight experiments, and fund technology maturation of innovative directed energy concepts. This year, the budget request is less than last year's, which only heightens my concern that MDA, and the scientists and engineers it leverages, lack the resources to make major advancements in this technology area.

On a final note, I would like to thank Dr. Roberts and General O'Reilly for their participation in the committee's '101' briefings. These sessions have provided members with a greater understanding of the complex issues and programs within our subcommittee's jurisdiction, and ultimately, they improve our ability to do effective oversight.

Thank you again to all of our witnesses for their service and for being with us today. I look forward to your testimony.

With that, let me turn to the Ranking Member, Ms. Sanchez, for any opening comments she may have.

House Armed Services Committee, Subcommittee on Strategic Forces
Hearing on the FY12 National Defense Authorization Budget Request
for Missile Defense Programs
March 31, 2011

Ranking Member Loretta Sanchez
Opening Statement

Thank you Chairman Turner.

I would like to join Chairman Turner in welcoming Dr. Roberts, General O'Reilly, Dr. Gilmore and Mr. Ahern to this hearing on the FY12 budget request for Missile Defense Activities.

Thank you for being with us today.

I am interested in hearing about how the budget request supports plans to strengthen the hedge for homeland defense beyond the

- deployed interceptors we have in California and Alaska,
- including plans at Fort Greely to mothball Missile Field 1 and adding a hedge of eight available silos at Missile Field 2;
- as well as upgrades to the Clear radar;
- plans to locate an interceptor communications system on the East coast;
- and preparations towards Phase 4 of the Phased Adaptive Approach.

I also look forward to hearing about the implementation of the Phased Adaptive Approach this year, and about preparations as we move beyond Phase 1, as the PAA is critical to countering the most pressing threats to our troops and allies.

I'd like to specifically address three important issues:

First, on cost. The Ballistic Missile Defense Review (BMDR) stated that "the commitment to new capabilities must be sustainable over the long-term."

In the context of the current budget environment, I'd like to hear more about the savings and management improvements resulting from the efficiencies, and also what the plans are for most efficiently closing out the MEADS (Medium Extended Air Defense System) program without wasting nearly a billion dollars of taxpayer money.

Second, on testing. The BMDR made the commitment that "before new capabilities are deployed, they must undergo testing that enables assessment under realistic conditions."

I'd like to hear about how the budget request supports effective testing to help us achieve mature and reliable technologies, including plans in the IMTP (Integrated Master Test Plan) for operationally realistic testing.

And third, I commend the Administration for strengthening international cooperation. We have seen significant progress in working closely with NATO as we implement the PAA.

Beyond cooperation with NATO, Israel, Japan and our other allies, I am pleased that we have been kept informed on plans to engage Russia on missile defense.
Preserving strategic stability is essential to US and international security as we develop a defense against the threats from Iran and North Korea's nuclear program.

Again, welcome. I look forward to the discussion.

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THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF

DR. BRAD ROBERTS
DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR AND
MISSILE DEFENSE POLICY
BEFORE THE HOUSE ARMED SERVICES COMMITTEE
MARCH 31, 2011

NOT FOR DISTRIBUTION UNTIL RELEASED BY
THE HOUSE ARMED SERVICES COMMITTEE

Chairman Turner, Ranking Member Sanchez, and members of the subcommittee, thank you for the opportunity to testify on the Department's ballistic missile defense programs. Ballistic missile defense is a key strategic issue for the United States and I look forward to testifying and answering your questions about our policies and plans.

The 2010 Ballistic Missile Defense Review

A year has passed since the Obama administration released its review of ballistic missile defense policy. It is important to recall that this was the first ever comprehensive review of ballistic missile defense policy and that it was undertaken with congressional direction in order to inform our national debate about policies, strategies, plans, and programs. As we continue to work within the framework set out in that report, it is useful here to recall its main elements.

The review began with an assessment of the ballistic missile threat. Among its key findings were the following:

- The threat is increasing both quantitatively and qualitatively and is likely to continue to do so over the coming decade.
- Several states are developing nuclear, chemical, and/or biological warheads for their missiles and may attempt to use the resulting capabilities for military advantage in conflict but also to coerce states near and far.
- Regional actors such as North Korea and Iran continue to develop long-range missiles that will be threatening to the United States. There is some uncertainty about when and how this type of ICBM threat to the U.S. homeland will mature.
- But there is no uncertainty about the existence of regional missile threats. They are clear and present and increasing at a particularly rapid pace.
- Although confident predictions about the future of the threat are difficult to make, there are some clear trends. These include the progress from short- to longer-range missiles and an increasingly open market in technologies, materials, and expertise. There is also the troubling possibility that non-state actors might acquire weapons of mass destruction and the means to deliver them.

We drew two key conclusions from this threat analysis. First, U.S. defense investments must be balanced in a way that enables the effective defense of the U.S. homeland and of U.S. forces, allies, and partners overseas in both the near and long term. Second, our defensive capabilities must be adaptable to unexpected threat developments. Threats may mature more rapidly or more slowly than predicted, may appear in unexpected locations, or may involve novel technologies or concepts of operations. It is essential that the United States be well hedged and has a strong posture against unpredicted threat developments.

The Review identified the administration's main policy priorities.

1. *The United States will continue to defend the homeland from limited ballistic missile attack.* These efforts are focused on protecting the homeland from a ballistic missile attack by a regional actor such as North Korea or Iran. The U.S. homeland is currently protected against limited threats and possesses a capacity to counter the projected threats from these states. But the United States must maintain this advantageous position as the threat matures. Through our continued commitment to maintain and develop the ground-based mid-course defense (GMD) system, the United States seeks to dissuade such states from developing an ICBM, deter them from using an ICBM if they develop or acquire such a capability, and defeat an ICBM attack by states if deterrence fails.
2. *The United States will defend against regional missile threats to U.S. forces, while protecting allies and partners – and enabling them to defend themselves.* Regional approaches must be tailored to the unique deterrence and defense requirements of each region, which vary considerably in their geography, in the history and character of the threat, and in the military-to-military relationships on which to build cooperative missile defenses. The review reflected our commitment to strengthen regional deterrence architectures with missile defense. It also set out the phased adaptive approach to regional missile defense. It is phased in that it will incorporate improving U.S. capabilities as they become available. It is adaptive in that it is tailored to unique regional requirements and opportunities. Because the demand for missile defense assets within each region over the next decade will exceed supply, we must focus on developing capabilities that are mobile and relocatable.

3. *Before new capabilities are deployed, they must undergo testing that enables assessment under realistic operational conditions.* This commitment reflected our assessment that it is no longer necessary to pursue a high-risk acquisition strategy that simultaneously develops and deploys new systems. The Integrated Master Test Plan announced in June 2009, and updated every six months since, reflects the Missile Defense Agency's new approach.
4. *New capabilities must be fiscally sustainable over the long term.* This commitment reflects our leadership's assessment that tough decisions must be made to ensure the long term viability of the investment program. As such, we are pursuing lower-cost interceptors and enabling early intercepts to minimize the inventory required to negate a missile launch. The more constrained fiscal environment has only reinforced our sense of resolve on this matter.
5. *BMD capabilities must be flexible enough to adapt as threats change.* This conclusion derives from the threat assessment described above.
6. *The United States will seek to lead expanded international efforts for missile defense.* This is essential to the implementation of the phased, adaptive approach to regional missile defense. More broadly, it supports the objective of creating an environment in which the development, acquisition, deployment, and use of ballistic missiles by regional adversaries can be deterred.

BMDR Implementation

Over the last year, our focus has shifted from policy formulation to policy implementation. In the continuing executive-legislative discussion of implementation, four key issues have emerged, and I will address each in turn.

1. Monitoring the threat: the BMDR expressed a commitment to maintain a strong focus on threat developments and to rigorously assess defense planning in light of new information. What have we learned?
2. Protecting the Homeland: the BMDR expressed a commitment to continue to improve the GMD system in order to maintain the currently advantageous offense-defense balance

against limited strikes, and to be well hedged against threat developments. What additional steps are needed at this time?

3. Pursuing phased adaptive regional missile defense: the BMDR expressed a commitment to deploy the phased adaptive approach in Europe and apply the approach in East Asia and the Middle East. How much progress has been made?
4. Seeking expanded international cooperation: the BMDR expressed a commitment to lead expanded international efforts for missile defense. This includes a commitment to work to establish a cooperative BMD relationship with Russia. What opportunities and challenges have emerged?

Monitoring the Threat

The last year has brought abundant confirmation that the threat is continuing to grow quantitatively and qualitatively. A central focus remains on Iran and North Korea as sources of potential threat to the United States and to our allies. In addition, a number of states are developing or acquiring Anti-Access/Area Denial capabilities such as anti-ship cruise missiles or anti-ship ballistic missiles. These capabilities are intended to deny our forces access to key regions, and to blunt the operations of forces that do deploy forward.

Iran already possesses the largest inventory of ballistic missiles in the Middle East, and is developing more of them. In addition to its growing missile and rocket inventories, Iran is boosting the lethality and effectiveness of those stockpiles, through accuracy improvements, new submunitions, and salvo launch capabilities. Furthermore, Iran's Simorgh space-launch vehicle shows that Iran is making the technological progress needed for the development of an intercontinental ballistic missile.

Iran also shows continued interest in pursuing its nuclear-related programs, though the Obama administration's economic sanctions program has clearly begun to bite more deeply than the present regime might have expected. Although we do not know if Iran will eventually decide to build nuclear weapons, the prospect of a nuclear-armed Iran is deeply concerning to the United

States and the global community, and there is a risk that Iran's continued efforts along these lines may prompt neighboring states to pursue national nuclear programs.

North Korea is modernizing every aspect of its deployed missile forces – including short-, medium-, and intermediate-range systems. It has reinforced its long-range artillery forces near the DMZ with a substantial number of mobile ballistic missiles that could strike targets in South Korea, Japan, and U.S. bases in the Pacific. North Korea has not successfully tested an ICBM, but we expect it to continue to test-launch missiles, including the Taepo Dong-2 (TD-2). With further TD-2 tests, North Korea may develop an intercontinental ballistic missile capable of reaching the United States. In addition, Pyongyang has a long history of ballistic-missile proliferation, and likely will continue to market and potentially export missile technologies to a number of countries – including Iran and Syria.

North Korea's nuclear-weapons program only increases our concerns about that nation's missile capability. According to the Director of the Defense Intelligence Agency, "The North may now have several plutonium-based nuclear warheads that it can deliver by ballistic missiles and aircraft as well as by unconventional means."

The ballistic-missile threat from North Korea is especially relevant in light of recent provocative behavior by the regime. A multinational Joint Civilian-Military Investigation Team concluded that a North Korean midget submarine sank South Korea's naval corvette Cheonan on March 26, 2010 near the contentious Northern Limit Line in the West Sea, causing the loss of 46 South Korean sailors. Then, in the first attack against a civilian-inhabited area since the Korean War, North Korea shelled Yonpyong Island on November 23, killing two South Korean marines and two civilians.

These assessments reinforce the administration's commitment to a balanced approach that continues to improve the defense of the homeland while also accelerating protection against regional threats.

Defending the Homeland

As noted above, the BMDR expressed a commitment to continue to improve the GMD system in order to maintain the currently advantageous offense-defense balance against limited strikes, and to be well hedged against threat developments. What additional steps are needed at this time?

The assessment that the United States is currently protected against limited strikes derives from the strength of the current posture against the current threat to the homeland. Today, the United States is protected against limited ICBM attacks as a result of investments made over the past decade in the ground-based midcourse defense (GMD) system. Thirty Ground-Based Interceptors (GBIs) are now deployed to defend the homeland. To enable successful intercepts by these missiles, radars are now in place in Alaska, California, Greenland, and the United Kingdom. They are also deployed at sea aboard Aegis destroyers and cruisers, at Shariki, Japan, and in the form of the Sea-based X-band radar. These capabilities are enabled by a sophisticated command and control infrastructure. Looking to the future, this posture will provide continued protection against initial ICBM deployments.

The commitment to continue to improve the GMD system is reflected in a number of on-going activities and in the associated FY2012 budget. We continue to:

- Test and upgrade the system to increase reliability and survivability
- Develop and upgrade Ballistic Missile Defense System (BMDS) sensors
- Procure GBIs (in FY12, we will procure five more)
- Implement GBI refurbishment and reliability sustainment programs (in order to sustain the fleet for another two decades)
- Upgrade GMD Fire Control ground system software
- Enhance the Command, Control, Battle Management and Communications system to handle larger raid sizes
- Develop and deploy new sensors in a variety of settings – including forward bases in Europe, unmanned vehicles in the skies, and platforms in space
- Develop early-intercept concepts to help defeat countermeasures and reduce the inventory required to negate missile launches

Additionally, we are developing the Standard Missile 3 (SM-3) Block IIB for deployment against future IRBM and ICBM threats in the regional defense architectures (as discussed further below), which is an important part of the long-term defense against future ICBM threats to the homeland.

The performance of the GMD system will also be strengthened with new investments that will result in better sensor information reaching the GBI during its flight. The FY2012 budget includes new funding for an In Flight Interceptor Communications System (IFICS) Data Terminal (IDT) on the East Coast and for upgrades to the Early Warning Radars at Clear, Alaska, and Cape Cod, Massachusetts. Looking to the longer term, the administration is also investing to develop next generation missile defense capabilities. This includes continued work to research the potential of directed energy systems for missile defense.

We are sustaining these commitments even as the Department has identified efficiencies and cuts as a result of government-wide budget limitations.

These capability enhancements will contribute significantly to preservation of the currently advantageous posture of the United States against limited strikes if or as ICBM threats develop from Iran and North Korea, or other regional threats. But they may not be enough. The United States must also be well hedged against the possibility that threats might evolve more rapidly than planned capability enhancements. It must also be well hedged against the possibility that those capability enhancements may be delayed for technical reasons. After all, development programs involve inherent technical risk.

To strengthen the U.S. hedge posture, the administration has taken the following steps:

- Construction of Missile Field 2 at Ft. Greely, Alaska is being completed in a 14-silo configuration to accommodate a contingency deployment of eight additional GBIs if needed.
- Six GBI silos at Missile Field 1 at Ft. Greely are being mothballed instead of decommissioned, allowing their return to service within two years if necessary; and

- Testing and assessment of a two-stage Ground-Based Interceptor is continuing in order to preserve future deployment options.

The administration is considering additional steps to strengthen the U.S. hedge posture. We have been studying threat developments, future capabilities, and deployment options for a range of scenarios. We have been evaluating the deployment timelines associated with fielding additional capabilities with an eye to enabling rapid responses to triggering events. Our objective is to enable aggregate improvements that increase probability of kill, raid capacity, and battle space. This work involves a significant amount of classified information from both the intelligence community and the system developers. We have committed to brief this subcommittee on the results in a classified setting in the next several weeks.

A key issue of continuing congressional interest is the role of the two-stage GBI in the hedge strategy. The BMDR explicitly recognized this role. The classified analysis addresses this matter directly, as well as the continued role of GBIs more generally. DoD will ensure that it preserves the capacity to provide additional GBIs to missile field two and possibly missile field one should such decisions be taken in the future. The decision to procure five additional GBIs, together with the ongoing refurbishment program, will keep GBI production lines warm for several years. This in effect provides us with additional decision time on the need to procure additional GBIs without letting the production lines go cold.

Pursuing Phased Adaptive Regional Missile Defense

The BMDR expressed a commitment to deploy the phased adaptive approach (PAA) in Europe and apply the approach in East Asia and the Middle East. How much progress has been made? In brief, the progress has been significant.

Required Capabilities

To support PAA implementation, we are procuring a pool of missile defense assets that will allow us to address current regional threats and surge missile defenses into troubled regions in a

time of political-military crisis. To date, MDA has delivered two THAAD batteries and seven AN/TPY-2 radars. By the end of FY2012, a total of 29 Aegis ships will have BMD capability and there will be a total of 15 U.S. PAC-3 battalions. The FY2012 budget continues the procurement of additional THAAD batteries, forward-based radars, as well as the conversion of additional Aegis ships, and SM-3 interceptors. This commitment to additional regional capabilities will allow for increasingly robust regional architectures over the decade.

Europe

The BMDR set out the main elements of the application of the phased adaptive approach in Europe. The European Phased Adaptive Approach (EPAA) is phased to incorporate improving U.S. capabilities and adaptive to the particular geopolitical landscape of Europe. The Obama administration is committed to the deployment of all four phases. Toward that end, it has begun to deploy initial capabilities. It has also developed a diplomatic strategy with allies and partners in Europe.

The first deployment of EPAA capabilities came on March 7 when the guided missile cruiser USS Monterey, carrying SM-3 Block IA interceptors, deployed to Europe. This deployment is supported by other decisions within a comprehensive force management process, led by the Joint Staff, that adjudicates competing requirements from the combatant commands.

We are currently in discussions with potential host nations for the deployment of an AN/TPY-2 forward-based radar to southeastern Europe. While no decision has been made, we expect to meet our 2011 deployment timeline. Looking ahead to Phase 2 in 2015 and the deployment of land-based SM-3 interceptors in southeastern Europe, Romania has agreed to host the site. Looking further ahead to Phase 3 in 2018, Poland has agreed to host the second land-based SM-3 site.

Within NATO, considerable progress has also been achieved. This past November at the Lisbon Summit, NATO's leaders took the unprecedented step of deciding to pursue full coverage and protection for the Alliance's populations, territories, and forces in Europe against ballistic missile

attacks. NATO also decided at Lisbon to expand its existing missile defense command and control backbone — the Active Layered Theater Ballistic Missile Defense — to encompass territorial missile defense, which will make current and future Alliance missile-defense assets interoperable. These decisions send a strong signal that NATO will not allow itself to be defenseless against ballistic missile coercion or attack.

Other Regions

The same basic approach is being pursued in East Asia and the Middle East, but in a way that is tailored to the existing foundations of cooperation and unique regional requirements. Capabilities will be phased in as they become available for deployment, but in a manner adapted to specific regional circumstances.

In East Asia, a strong foundation of missile defense capabilities and cooperation already exists. The U.S. deploys Aegis BMD-capable ships in the region. Japan has a layered missile defense system that includes Aegis BMD ships with SM-3 interceptors, PAC-3 fire units, early-warning radars, and a command-and-control system. Japan also hosts an AN/TPY-2 radar. U.S. and Japanese forces regularly train together and have successfully executed simulated cooperative BMD operations. We are also engaged in cooperative development of the next generation SM-3 Block IIA interceptor, which is projected to enter service in 2018.

Australia participates in our Trilateral Missile Defense Forum with Japan, and takes part in the Nimble Titan missile-defense exercise series hosted by U.S. Strategic Command. Australia is also acquiring ships that would be compatible with U.S. Aegis BMD systems, should they choose to pursue that capability.

With South Korea, we have engaged in bilateral missile-defense cooperation discussions and have recently signed a Terms of Reference and an agreement that will enable our two nations to carry out a requirements analysis so that South Korea can make informed decisions about the utility of any future BMD program.

One of the key differences between East Asia and Europe is the absence of a multilateral alliance framework based on collective defense. Thus our plans to strengthen the regional missile defense architecture have had to be built on the foundations of bilateral cooperation and a variety of security interests and perceptions.

The administration has also sought dialogue with China on ballistic missile defense, with little success. We have sought to explain U.S. intentions and capabilities and also to better understand China's concerns that such defenses might negate China's strategic deterrent. We have also sought to convey long-standing U.S. concerns about the pace and scope of China's current military modernization efforts, which encompass a wide range of advanced air, air-defense, naval, missile, space and cyberspace capabilities. We believe that such a dialogue could help to reduce mistrust, enhance mutual understanding, and broaden cooperation. China deploys a limited but growing number of conventionally armed, medium-range ballistic missiles, and it likely is nearing deployment of a medium-range anti-ship ballistic missile. It has more than 1,000 conventional short-range ballistic missiles opposite Taiwan for a variety of precision-strike missions. China is also forming more missile units, upgrading some older missile systems, and developing methods to penetrate missile defenses.

In the Middle East as in East Asia, the absence of a multilateral security framework means that the regional approach must be built on the foundation of bilateral relationships.

In the Persian Gulf, the United States maintains a robust mix of missile-defense assets to protect our troops and facilities in the region. We have built a series of bilateral missile defense agreements with the nations of the Gulf Cooperation Council (GCC) to address the regional ballistic missile threat from Iran. U.S. Central Command continues to work on establishing air defense and missile defense architectures for the GCC nations. In addition, the United States has approved the sale of PATRIOT and THAAD systems to the United Arab Emirates. We are also working with Saudi Arabia to refurbish its PATRIOT systems and recertify the interceptors for those systems.

We have also taken steps to ensure that Israel will remain capable of countering the full range of Iranian ballistic missile threats that may emerge. In doing so, we have built on a long-standing relationship with Israel on BMD. In addition to conducting major missile-defense exercises over the last several years, the United States and Israel meet regularly and coordinate extensively on a range of missile-defense programs, including the Arrow weapon system and a new program for defeating short-range ballistic missiles, known as David's Sling, as well as various other shared plans and operations.

In both East Asia and the Middle East, new capabilities will be phased in as appropriate to address regional threats, and as they become available through the comprehensive joint force management process identified above. This will help to ensure that the requirements of the different combatant commands are met in a responsible manner as additional asserts become available.

Seeking Expanded International Cooperation

The BMDR expressed a commitment to lead expanded international efforts for missile defense. The intent here is global—to work with allies and partners generally to strengthen cooperation. A key priority is to establish a cooperative BMD relationship with Russia. Significant opportunities have emerged, along with some challenges.

Our pursuit of missile defense cooperation with Russia occurs against the backdrop of broader changes in U.S.-Russian relations. Over the past year, there has been important progress in these relations such as ratification and entry into force of the New START Treaty, the joint pressure applied to Iran's nuclear program, and new steps to strengthen the NATO-Russia Council. Russia's leaders have accepted proposals from the United States and NATO to pursue cooperation on missile defense to enhance our common security against common threats and as part of the broader re-set of U.S.-Russia relations.

Cooperation with Russia on missile defense would be significant for a number of reasons. Cooperation could offer tangible security benefits to Europe, Russia, and the United States in the

form of stronger protection against missile threats than would be possible if pursued separately. Most significantly, by beginning missile defense cooperation now, Russia, the United States and NATO will gain information, experience, and confidence that will strengthen strategic stability and help to shape and bring closer together our security strategies.

Officials from the Department of Defense and Russian Ministry of Defense have been working to initiate a joint analysis of opportunities for enhanced missile defense cooperation. In addition to our bilateral efforts, NATO and Russia agreed to resume missile defense cooperation, and to study ways in which we might cooperate on territorial missile defense in Europe.

As President Obama has stated, we are pursuing ballistic missile defense cooperation "even as we have made clear that the system we intend to pursue with Russia will not be a joint system, and it will not in any way limit United States' or NATO's missile defense capabilities." NATO alone will be responsible for defense of NATO territory, just as Russia should be responsible for defense of Russian territory. We would operate our respective systems independently but cooperatively, in a way that reinforces their performance without putting them at risk.

A requirement for the safeguarding of sensitive information in support of cooperation is a Defense Technology Cooperation (DTC) Agreement, which will provide the legal framework for undertaking cooperative efforts. The proposed DTC Agreement (which we began to negotiate in 2004) contains an annex that addresses the sharing of classified information. But this on its own will not constitute authorization to provide classified information to Russia. Exchange of classified information with Russia would still be subject to U.S. National Disclosure Policy and the associated careful review, just as it is with other partners.

Expectations for cooperation with Russia are running high, but it is important to be realistic about both the opportunities and challenges ahead. That said, I do believe we have an opportunity for meaningful cooperation that will enhance the security of the United States, our NATO Allies, and Russia.

Conclusion

A year after release of the Ballistic Missile Defense Review, implementation is well launched. Capabilities are in place to protect the homeland from limited attack, and steps are being taken to continue to improve those capabilities. Capabilities are also in place to protect U.S. forces, their families, and our allies from regional attacks, and the first steps have been taken to implement the phased adaptive approach. We have put in place investment programs aligned with our policy priorities.

We have also tried to put in place the political foundations for a long-term commitment by the United States in this area, building on the important work of our predecessors. Missile defense is a long-term challenge that requires sustained support from a succession of administrations and Congresses. As Secretary Gates has argued, "The protection of the United States from the threat of ballistic missile attack is a critical national security priority. The threat to our deployed military forces and to our allies and partners is growing rapidly. This threat has significant implications for our ability to project power abroad, to prevent future conflicts, and to prevail should deterrence fail."

I am grateful for the opportunity to be here today to make our case for your support and I look forward to your questions.

Unclassified Statement of

Lieutenant General Patrick J. O'Reilly

Director, Missile Defense Agency

Before the

House Armed Services Committee

Subcommittee on Strategic Forces

Regarding the

Fiscal Year 2012 National Defense Authorization

Budget Request for Missile Defense

Thursday, March 31, 2011

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Lieutenant General Patrick J. O'Reilly, USA
Director, Missile Defense Agency
Before the
House Armed Services Committee
Strategic Forces Subcommittee
March 31, 2011

Good afternoon, Chairman Turner, Ranking Member Sanchez, other distinguished Members of the subcommittee. I appreciate the opportunity to testify before you today on the Missile Defense Agency's (MDA) $8.6 billion Fiscal Year (FY) 2012 budget request to develop protection for our Nation, our Armed Forces, allies, and friends against a growing threat - the proliferation of increasingly capable ballistic missiles. We continue to improve and integrate sensor, fire control, battle management, and interceptor systems into the Ballistic Missile Defense System (BMDS) to defeat large raids of a growing variety of regional ballistic missiles over the next decade. By the end of FY 2012, we will complete the initial fielding of the Ground-based Midcourse Defense (GMD) system for homeland defense against potential future intercontinental ballistic missiles (ICBMs) being developed by current regional threats and our initial fielding of regional defenses against today's short-range (1,000km or less), medium-range (1,000 to 3,000km), and intermediate-range ballistic missiles (3,000 to 5,500km), or SRBMs, MRBMs and IRBMs, respectively.

Fiscal Year 2010 Accomplishment Highlights

This past year our improvements to homeland defense included emplacing the 30th Ground Based Interceptor (GBI), upgrading two additional GBIs, installing a training node at Fort Greely, Alaska (FGA), and completing a significant upgrade of the Early Warning Radar in Thule, Greenland. Additionally, we had a successful two-stage Ground Based Interceptor (GBI) booster test and conducted a three-stage GBI intercept

test where we did not achieve our primary objective, but we did demonstrate integrated sensors and command, control, battle management, and communication (C2BMC) during the longest range flight test to date. During the past year, we also improved our regional defenses by converting two Aegis BMD ships, delivering 25 SM-3 IA interceptors, and increasing the Aegis BMD fleet to 20 operationally configured BMD ships. Aegis BMD ships carrying SM-3 IAs are currently deployed and on-station in forward operating areas, including the USS Monterey as part of the first phase of the European Phased Adaptive Approach (EPAA). We also commenced production of Terminal High Altitude Area Defense (THAAD) Batteries 3 and 4 and the associated interceptors. We accelerated the refurbishment of an AN/TPY-2 radar for phase 1 of the EPAA and installed a C2BMC system and prepared a second AN/TPY-2 for deployment to U.S. Central Command. Moreover, we successfully flew 14 target missions and 13 successful flight tests, including a successful intercept of a separating MRBM with our Japanese allies using an SM-3 IA interceptor (thus completing the first BMD Foreign Military Sales (FMS) case), and conducted a successful intercept of a unitary SRBM with THAAD. For future capabilities, we demonstrated the ability of the two Space Tracking and Surveillance System (STSS) satellites to provide stereo, high-fidelity tracking capabilities and transfer tracks into C2BMC. Our Airborne Laser Test Bed successfully destroyed two boosting ballistic missiles. We achieved our goal of demonstrating NATO Active Layered Theater Ballistic Missile Defense interoperability with the U.S. C2BMC in Joint Project Optic Windmill. Finally, we completed U.S. and Israeli Government project agreements on the Arrow 3 Upper Tier Interceptor, the

David's Sling Weapon System, and an Israeli Test Bed. Recently, we supported Israel's successful intercept mission of a separating threat missile off the coast of California.

Enhancing Homeland Defense

MDA's top priority is to confirm the root cause of the most recent GBI flight test failure, verify the resolution of the problem, and successfully repeat the previous flight test. While the Failure Review Board (FRB) has only produced preliminary results, it is clear more ground testing and an additional non-intercept flight test of an upgraded GBI Exo-atmospheric Kill Vehicle (EKV) will be required before the next intercept.

We are requesting $1.16B in FY 2012 in RDT&E funding for the GMD program (including completing the construction of Missile Field 2 at FGA), which will complete the initial fielding of the defense of our homeland against limited ICBM attacks. In FY 2012, we also will continue to upgrade existing GBIs and acquire new GBIs to meet our minimum requirement of 26 operational GBIs at FGA, 4 at Vandenberg Air Force Base (VAFB), California, and 22 GBIs for testing, stockpile reliability testing, and spares. Key to an effective GBI sustainment program is examining the results of flight tests (including the loss of two GBIs during recent flight testing) and reliability testing on the ground to assess the need for additional GBIs while the production line remains open. In parallel, we continue GBI component vendor requalifications for the future GBI avionics upgrade and obsolescence program. The new missile field (Missile Field 2) will replace the prototype Missile Field 1, which will be placed in a storage mode for possible upgrade for operational use in the future. We will complete the construction of a second fire control node at FGA to allow testing or exercises to be conducted while simultaneously controlling the operational system. In addition to completing the

upgrade of our new hardened backup power plant at FGA in FY 2011, we will also complete the upgrade of the communications system at FGA in FY 2012. Additionally, we will begin the planning, design and environment work for a GBI In-Flight Interceptor Communication System (IFCS) Data Terminal (IDT) on the east coast of the United States by 2015. This East Coast IDT will enable communication with GBIs launched from FGA and VAFB for longer flights, thus improving the defense of the eastern United States against ICBM threats. We also are requesting $177.1M in RDT&E funding for the Sea-Based X-band (SBX) radar in FY 2012 for software upgrades to improve its discrimination capability.

In addition to GMD upgrades, we are requesting $222.4M in FY2012 for BMDS Sensors for homeland defense, including support of the Upgraded Early Warning Radars (UEWRs) and AN/TPY-2 radars. Integration of the Thule, Greenland radar in FY 2012 will make it a fully operational UEWR in the BMDS. We continue to upgrade the Clear Early Warning Radar in Alaska for full missile defense capability by 2016. In addition, a forward-based AN/TPY-2 X-band radar will be deployed to southern Europe to provide early tracking for both enhanced homeland and regional defense. We will continue to upgrade system software to address new and evolving threats, including enhancing Exo-atmospheric Kill Vehicle discrimination algorithms by 2015, improving GBI avionics, and increasing GBI interoperability with the Command and Control, Battle Management and Communications (C2BMC) system.

After last year's successful initial flight of a two-stage GBI, we plan to conduct an intercept flight test with a two-stage GBI as a potential hedge to allow for a longer intercept window of time if ICBMs were launched against the United States from

Northeast Asia or the Middle East. However, as a consequence of the need to repeat the failed three-stage GBI flight tests, we plan to delay the first intercept test of the two-stage GBI from FY 2012 to FY 2014. Finally, we will continue development of the Standard Missile 3 (SM-3) IIB to protect our homeland in the future by having the capability to intercept first generation ICBMs within the regions from which they were launched.

Hedge for Protection of the United States

Today, 30 operational GBIs protect the United States against a medium ICBM raid size launched from current regional threats. If at some point in the future this capability is determined to be insufficient for protection of the U.S. homeland, we are developing options to increase the capacity of operational GBIs and accelerate the delivery of new sensor and interceptor capabilities. These hedge options could be implemented in anticipation of or following indications and warnings of a large or complex ICBM threat or if the SM-3 IIB or BMD sensor technology efforts incur significant technical delays. The Department is committed to brief Congress soon on the results of our ongoing BMD hedge analysis and our recommended hedge strategy.

Enhancing Regional Defense

We are also deploying our initial missile defense capability against SRBMs, MRBMs, and IRBMs. Over the next decade we are enhancing this initial capability by developing increasingly enhanced missile defense capabilities that can be adapted to the unique circumstances of each Combatant Command region In regions where ballistic missile threats are a concern, the United States will tailor Phased Adaptive Approaches (PAAs) (like the European PAA, or EPAA) to plan the establishment of

command and control, sensor, fire control, and interceptor infrastructures to provide fundamental defenses and facilitate the effective surge of transportable missile defense assets to their regions when needed.

The EPAA focuses on addressing missile defense interoperability with NATO and our allies and partners as the threat from the Middle East is anticipated to increase over the next decade. In November 2010, NATO Heads of State and Government agreed to develop an Alliance territorial missile defense capability to "provide full coverage and protection for all NATO European populations, territory and forces against the increasing threats posed by the proliferation of ballistic missiles." The United States has committed to provide the EPAA as a national contribution to this capability, built on the Active Layered Theater Ballistic Missile Defense (ALTBMD) command and control system, and we are encouraging our allies to field and provide national capabilities as well.

Initial SRBM, MRBM, and IRBM Capability in Europe - to be completed by the end of 2011. In this phase, our goal is to achieve an initial missile defense capability in Europe using the Aegis BMD 3.6.1 weapon system with SM-3 IA interceptors, forward-based AN/TPY-2 and SPY-1 radars, and the C2BMC system at Ramstein Air Force Base, Germany, which will improve connections to NATO command and control structures. The USS Monterey is at sea today and, when paired with the AN/TPY-2 radar, will provide initial BMD protection of southern Europe from existing SRBM, MRBM and IRBM threats. Additionally, THAAD batteries will be available for deployment in this and subsequent phases. The Army activated a second THAAD battery in October 2009, which is scheduled to complete training by the end of calendar

year 2011. We are requesting $290.5M in RDT&E funding to enhance communications and enable THAAD's launch-on-sensor network capability, which will allow THAAD to be more interoperable and connected to the BMDS. We also request $833.2M for the production of 68 THAAD interceptors, six launchers, and one Tactical Station Group to be delivered by FY 2014, and $380.2M for the production of two AN/TPY-2 radars.

Enhanced MRBM Defense in Europe by 2015. Our goal in this phase is to provide a robust capability against SRBMs and MRBMs by deploying several interceptors to engage each threat missile multiple times in its flight. The architecture includes the deployment of the Aegis BMD 4.0.1/5.0 weapon systems with SM-3 IB interceptors at sea and at an Aegis Ashore site in Romania. When compared to the current SM-3 IA, the IB will have an improved two-color seeker for greater on-board discrimination and producibility, and it will have improvements to enhance reliability of the SM-3 IB's divert and attitude control system. These improvements also provide an enhanced capability against larger sized raids. We are requesting $565.4M for the production of 46 SM-3 Block IB interceptors to be delivered by FY 2014 and $960M for Aegis BMD to fund continued development and testing of the SM-3 IB as well as spiral upgrades to Aegis 5.0 to support the operation of the SM-3 IB and IIA interceptors and associated flight tests. In FY 2012, we are requesting $306.6M to begin acquiring three Aegis Ashore Missile Defense Systems (land-based SM-3) batteries—one for testing at the Pacific Missile Range Facility (PMRF), one for deployment in Romania by FY 2015, and another for deployment in Poland by FY 2018. We request $364.1M for the C2BMC program for continued spiral development of software and engineering to incorporate Enhanced C2BMC capability into the C2BMC battle management

architecture and promote further interoperability among the BMDS elements, incorporate boost phase tracking, and improve system-level correlation and tracking.

Enhanced IRBM Defenses in Europe by 2018. The SM-3 Block IIA interceptor, being co-developed with the Japanese government, is on schedule to be deployed at an Aegis Ashore site in Poland and at sea in 2018 to provide enhanced protection for European NATO countries from all ballistic missile threats from the Middle East. The FY 2012 request for SM-3 Block IIA co-development is $424.5M. Additional BMDS improvements during this phase include expanded coordination of missile defense fire control systems and improvements to radar discrimination. Likewise, the Precision Tracking Space System (PTSS) satellites will detect and track hostile ballistic missiles over their entire flight and enable earlier engagements to improve homeland and regional defense. Furthermore, the deployment of the Airborne Infrared (ABIR) sensor will provide the capability to provide early track of large ballistic missile raids from forward locations, decreasing the time between the enemy's launch of the first ballistic missile and the first launch of a ballistic missile defense interceptor.

Early Intercept Defense in Europe by 2020. The SM-3 IIB will provide an early intercept (pre-apogee) capability against MRBMs and IRBMs and provide an additional layer for a more enhanced homeland defense against ICBMs launched from today's regional threats. In FY 2012, we are requesting $123.5M to fund multiple industry teams to conduct concept development of the SM-3 IIB while MDA develops advanced propulsion and lightweight material technologies relevant to the SM-3 IIB interceptor. Advanced discrimination technologies also will be deployed during EPAA Phase 4 and

GMD's use of network sensors (including enhancements from PTSS and ABIR sensor capabilities) will be enabled to improve homeland defense.

Proving Missile Defense Works through Enhanced Testing

In FY 2012, we are requesting nearly $1B of RDT&E funding for Testing and Targets. In collaboration with the Director, Operational Test and Evaluation (DOT&E) and the Operational Test Agencies (OTAs), MDA updated its Integrated Master Test Plan (IMTP). The updated test plan (version 11.1), consisting of 53 flight tests and 74 ground tests from FY 2011 through FY 2016, promotes cost-effectiveness by conducting fewer flight tests to achieve more objectives in each test.

It is the Agency's goal in the third quarter of FY 2011 to conduct an Aegis BMD flight test (FTM-15) using an SM-3 IA interceptor cued by data from the AN/TPY-2 radar passed through the C2BMC system to intercept an IRBM target. Later this summer FTM-16 will demonstrate Aegis BMD 4.0.1 fire control and the first flight test of the SM-3 IB interceptor. We also will conduct two critical ground tests this year to demonstrate the EPAA Phase 1 capability for defending European allies and deployed forces from multiple and simultaneous SRBM and MRBM threats.

We will hold a series of system-level operational flight and ground tests to demonstrate the initial capability against SRBMs and MRBMs for theater/regional defense as well as planning in FY 2012 the first entirely operational testing of the defense of the homeland by 2015. Each operational test will be conducted as realistically as possible and involve multiple targets of different ranges. This is where the Agency will test how well these layered defenses work. These tests are being planned and will be executed in concert with the BMDS OTA and under the oversight of

the DOT&E. The BMD system under test will be operated by the soldiers, sailors, and airmen assigned to their respective missile defense equipment and placed under realistic wartime conditions to truly document the capabilities and limitations of the system. Finally, in FY 2011, THAAD will execute a near-simultaneous engagement of an MRBM and SRBM.

Developing New Capabilities

In FY 2012, we plan to develop BMDS capabilities and technologies that can adapt as threats change and are fiscally sustainable. Early intercept capabilities should provide additional opportunities to kill threat missiles, enlarge protection areas, and improve the overall performance of the BMDS.

After completing all of its original on-orbit testing in 2010, we continue to operate the two Space Tracking and Surveillance System (STSS) demonstration satellites to conduct cooperative tests with other BMDS elements and demonstrate the capability of STSS satellites against targets of opportunity. These tests demonstrate the ability of a space sensor to provide high precision, real-time tracking of missiles and midcourse objects that enable closing the fire control loops with BMDS interceptors. We are requesting $96.4M for the STSS system in FY 2012. Lessons learned from the two STSS demonstration satellites inform Precision Tracking Space System development decisions. We are requesting $160.8M for PTSS in FY 2012. The PTSS, a new program start in cooperation with Johns Hopkins University Applied Physics Laboratory, Navy Research Laboratory, Air Force SPACECOM, and industry will use simple designs and mature technologies to provide persistent classification and tracking capability of enemy ballistic missiles for areas of the globe that have ballistic missile

activity. PTSS project scope includes the delivery of PTSS ground segments and the launch of the first two PTSS spacecraft in FY 2017.

In FY 2012, we are requesting $46.9M for the Airborne Infrared (ABIR) program. The ABIR program will provide a capability to track large ballistic missile raids with an airborne forward-based sensor, decreasing the time between the enemy's launch of the first ballistic missile and the first launch of a ballistic missile interceptor. Initially, we will integrate a sensor from the Multi-spectral Targeting System family of infrared sensors onto an MQ-9 Reaper Remotely Piloted Vehicle to prove that we can close the Aegis fire control loop with a forward–based airborne asset. In FY 2012, using platforms and operators supplied by the Air Force and working closely with the Navy, we propose to demonstrate the ability to provide external cueing, sensor performance, and timely and accurate ballistic missile tracking. Working with the Air Force, our objective is to integrate the ABIR sensor into a pod that can be attached universally to the wing of a variety of aircraft. Additionally, in FY 2012 we are enhancing our command and control capability to handle larger threat missile raid sizes and leverage airborne and space sensor missile tracking data networks. We will continue our development and testing of a multi-sensor application (ABIR and space sensors) tasking and signal processing capability that will provide data with sufficient quality to close the Aegis, THAAD, and GMD fire control loops and to launch interceptors.

In FY 2012, we are requesting $96.3M for Directed Energy Research ($92.6M for Airborne Laser Test Bed). Following the successful shoot downs of liquid-fueled and solid-fueled boosting ballistic missile targets with an airborne laser in FY 2010, the Assistant Secretary for Defense Research and Engineering designated the Airborne

Laser Test Bed (ALTB) as a science and technology test bed for high power laser research and development. In FY 2012, we are teaming with the Air Force's Research Laboratory to use the ALTB for testing advanced directed energy technologies and conducting beam propagation and lethality testing. A primary objective of our directed energy program is to continue our partnership with Lawrence Livermore National Laboratory to develop Diode Pumped Alkaline-gas Laser System (DPALS) technology, which offers great potential for high efficiency, electrically-driven, compact, and light-weight high energy lasers for a wide variety of missions of interest to MDA and the Department of Defense.

International Cooperation

As stated in the 2010 Ballistic Missile Defense Review (BMDR), developing international missile defense capacity is a key aspect of our strategy to counter ballistic missile proliferation. In Europe, we remain committed to working with our NATO allies to make NATO lower layer missile defense assets interoperable with U.S. upper-tier missile defense assets deployed under the EPAA through NATO's territorial missile defense capability. In East Asia, we are improving missile defenses through bilateral relationships. And in the Middle East, we continue to work with long-term partners and pursue strengthened cooperation with other countries that have expressed interest in missile defense. MDA is currently engaged in missile defense projects, studies and analyses with over twenty countries, including Australia, the Czech Republic, Denmark, France, Germany, Israel, Japan, Kuwait, NATO, Poland, Romania, Saudi Arabia, South Korea, the United Arab Emirates, and the United Kingdom.

MDA continues its close partnership with Japan on the SM–3 IIA interceptor

(Japan is leading the development efforts on the SM-3 IIA second and third stage rocket motors and the nosecone), studying future architectures, and supporting that nation's SM-3 IA flight test program. We also continue collaboration with Israel on the development and employment of several missile defense capabilities that are interoperable with the U.S. BMDS. Last month, at a U.S. test range off the coast of California, the Arrow Weapon System successfully intercepted a target representative of potential ballistic missile threats facing Israel today. We are requesting $106.1M for Israeli Cooperative Programs (including Arrow System Improvement and the David's Sling Weapon System) in FY 2012. We are working with our partners from the United Arab Emirates on the development of a Foreign Military Sales (FMS) case for the THAAD system that would represent the first sale of this capability. Our goal is to have an approved FMS case in 2011.

Additionally, MDA is actively engaged with the Russian Federation through three missile defense working groups led by the State Department, Office of the Secretary of Defense, and the Joint Staff. We are optimistic from the outcomes of both the NATO Russia Council meeting at Lisbon and the U.S. bilateral working groups that we will make meaningful progress this year in cooperating with the Russian Federation on missile defense, starting with leveraging the combined early warning and surveillance radars of both countries.

Conclusion

Our FY 2012 budget funds completing the initial deployment of SRBM, MRBM, IRBM, and ICBM defenses while meeting the war fighters' near-term missile defense development priorities. Subsequently, we will build on that initial capability with the

long-term goal of creating an international and enhanced network of integrated BMD capabilities that is flexible, survivable, affordable, and tolerant of uncertainties of estimates of both nation-state and extremist ballistic missile threats.

Thank you, Mr. Chairman. I look forward to answering the committee's questions.

HOLD UNTIL RELEASED BY THE
HOUSE COMMITTEE
ON ARMED SERVICES

STATEMENT OF

MR DAVID G. AHERN

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

BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

SUBCOMMITTEE ON STRATEGIC FORCES

March 31, 2011

HOLD UNTIL RELEASE BY THE
HOUSE COMMITTEE
ON ARMED SERVICES

Ballistic Missile Defense Program Progress
Mr. David G. Ahern
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(Acquisition, Technology, and Logistics)

Good morning Mr. Chairman, Congressman Sanchez, and Members of the Committee. Thank you for the opportunity to appear before you today to discuss Department of Defense missile defense activities. I am pleased to address the Department's recent decision on the Medium Extended Air Defense System (MEADS) and the Department's oversight of missile defense via the Missile Defense Executive Board (MDEB).

Medium Extended Air Defense System (MEADS)

MEADS is a NATO-managed cooperative development program that was conceived in the mid-1990's to develop a ground-based air and terminal ballistic missile defense capability that would replace existing Patriot systems in the United States and Germany and the Nike Hercules system in Italy. MEADS is designed to significantly reduce strategic lift requirements into theater, reduce logistics and operator workloads, and provide enhanced surveillance and intercept capabilities over existing Patriot systems. The MEADS program has experienced a number of technical and management challenges over the past two decades. While the program has shown marked improvement in recent years, it has consistently failed to meet schedule and cost targets. MEADS successfully passed Critical Design Review (CDR) in August 2010. As required in the MEADS Memorandum of Understanding, or MoU, the partner nations

conducted a major program review after the CDR to assess if the Design and Development (D&D) phase of the program could be continued with full confidence of achieving the MEADS objectives at acceptable risk and within agreed costs. This key tri-national milestone was known as the System Program Review. The decision I will now describe was the U.S. output of the MEADS System Program Review.

According to program plans from the mid 1990's, MEADS was to have begun production in 2007. The original D&D program plan in 2004 called for MEADS production to begin in 2014. However, the NATO MEADS Management Agency (NAMEADSMA) program restructure proposal presented to the MEADS Board of Directors in November 2010, would have extended the D&D phase some 30 months from the original 110-month program established in 2004, and would have required at least $974 million more U.S. investment during fiscal years 2012 to 2017 than planned at the beginning of D&D. Under this proposal, production would have begun no earlier than 2018, with the first U.S. fielding opportunity around 2020 following completion of additional U.S. integration and testing.

In view of the need for nearly $1billion in additional U.S. investment and a projected slip in fielding of more than two years, the U.S. considered three potential courses of action during the System Program Review:

1. Terminate immediately;
2. Continue development within the funding limits set by the Memorandum of Understanding that entered into force in early 2005 or

3. Complete the planned D&D phase by adding additional funding and allowing additional time.

As described in the February 14, 2011 MEADS Fact Sheet provided to the Congress, the Department has decided that the best course of action is to continue the D&D phase by providing funding up to the previously agreed $2.3 billion U.S. share of the overall MoU cost ceiling of $4 billion. This decision was reflected in the Fiscal Year 2012 President's Budget request. While the U.S. will continue to honor our commitments to our partners under the current MoU, the U.S. will not pursue procurement and production of MEADS due to significant affordability concerns.

In continuing development within the funding limits set by the MoU, the U.S. has proposed to the MEADS partners to focus the remaining activities to implement a 'proof of concept' effort with remaining MoU funds that will provide a meaningful capability for Germany and Italy and a possible future option for the U.S. This refocused proof of concept D&D program would end by 2014, and would be consistent with the current MoU expiration date and cost ceiling. The MEADS Board of Directors has agreed to pursue further discussion with a view toward implementation of this proof of concept effort if approved by the National Armament Directors of the partner nations.

As part of the Joint Army and Office of the Secretary of Defense System Program Review process, the Department carefully considered fiscal realities, capability needs (both for currently fielded systems and what was expected to be provided by MEADS), program performance, political-military factors, and risk to air and missile defense capabilities given various options. Implementation of a proof of concept D&D program,

using the remaining D&D MoU funds contributed by the three nations, is the best option for all MEADS partners for the following reasons:

1. Funding MEADS up to the agreed MoU cost ceiling enables partners to harvest technology from our large investment to date. The U.S. has provided approximately $1.5 billion to date for D&D, with Germany and Italy combined contributing more than $1 billion more. NAMEADSMA has begun developing an implementation plan for a D&D proof of concept effort that will use the remaining D&D MoU funding in 2011-13 to complete prototypes, demonstrate and document the capabilities of the major system elements, and complete limited system integration. This work would place the D&D program on stable footing should Germany and Italy wish to continue MEADS development and production efforts after the current MoU funding is expended. The same options would be available to the U.S. should U.S. air defense plans change. Terminating the program now, just after successful completion of the MEADS Critical Design Review, would force the nations to devote significant funding to contractor termination costs preventing the nations from using this funding to bring MEADS development to a viable level of design maturity.
2. The U.S. cannot afford to purchase MEADS and make required upgrades to Patriot concurrently over the next two decades. The current NAMEADSMA program office estimate to complete the D&D program, which would extend into 2017, would require at least $974 million of additional U.S. investment during fiscal years 2012 to 2017. This additional funding requirement is on top of the

approximately $804 million the U.S. has already programmed for MEADS. The U.S. cannot afford this additional research and development funding. Moreover, an additional $800 million would be required to complete U.S.-unique national certification, test and evaluation requirements, and integration of MEADS elements in the U.S. air and missile defense systems-of-systems if MEADS were fielded. Further, due to the substantial delays in the development of MEADS, the U.S. Army would not be able to purchase MEADS to replace Patriot as early as originally planned. Given necessary U.S. integration and testing, MEADS fielding would not begin until about 2020. Consequently, the costs of completing MEADS development and procuring MEADS to eventually replace Patriot would also require a significant concurrent investment in Patriot sustainment and modernization over the next ten to twenty years. Together, these costs are unaffordable in the current budget environment.

3. The U.S. can achieve some of the capabilities that MEADS provides using existing assets. Because air and missile defense systems are relatively few in number and high in demand, the U.S. air and missile defense portfolio is based on the concept of integrating and fielding a diverse set of elements to provide expanded coverage against a wide range of threats. In Europe, we are focused on implementing the European Phased Adapted Approach (EPAA), which includes systems like the AN/TPY-2 radar, SM-3 interceptors, and AEGIS BMD-capable ships to counter the ballistic missile threat. The missile defense portfolio must also address threats in Asia and the Middle East with these ballistic missile

defense systems, as well as other air defense systems such as Patriot and the Joint Land Attack Cruise Missile Defense Elevated and Netted Sensor (JLENS) system. The U.S. is willing to accept some risk in our air defense portfolio in the near term in order to increase investments in new capabilities that our soldiers can use today to counter threats in Forward Operating Bases in Afghanistan, such as capabilities to counter-rockets, artillery and mortars. By fielding a diverse set of existing systems, the U.S. will be able to achieve some of the expected MEADS capabilities, such as 360-degree coverage and extended range air defense in the near term, at less cost.

4. The U.S. remains concerned with the overall track record of the program. While the partner nations and NAMEADSMA have worked aggressively over the past few years to define a restructured program that balances cost, schedule, system performance, and risk, the U.S. remains concerned that difficulties in program management and system engineering experienced in the early stages of the program continue to subject the program to a high degree of risk through the end of development and into the integration and test program phases.

While the MEADS program's record of performance might ordinarily make it a candidate for cancellation, given the late stage in the D&D contract effort and the U.S.'s expected liability to pay costs associated with contract termination in the absence of a decision of all the MoU partner nations to terminate the effort, the U.S. stands to gain more from a restructured contract than from paying to terminate the contract. The DoD therefore assesses that the benefits to all the partner nations of continuing development

within the MoU limits warrant completing the effort instead of terminating it. Allowing the program to proceed to a limited set of flight tests will demonstrate the design and performance of the MEADS elements, providing benefit from the remaining funding. After demonstration the nations will have the opportunity to assess any contributions the developed and tested MEADS elements might make in their respective air and missile defense portfolios and thus might warrant further evaluation. For Italy and Germany, the proof of concept effort will be useful as they consider whether to proceed into production and deployment of a version of the MEADS system. At this time, the U.S. does not plan to produce and deploy the MEADS system, but the proof of concept will provide valuable information that may inform future weapons systems decisions. Options for harvesting or future use of MEADS Major End Items or technology will be assessed by the Department during the proof of concept effort. The results of the proof of concept effort, as well as the Army's continuing evaluation of air and missile defense needs, will inform future decisions on any development, production, or deployment of MEADS components or technology harvested from the MEADS proof of concept effort.

Plans and Procedures for the Management and Oversight of the Missile Defense Agency

I testified before this subcommittee two years ago describing the structure, operation, and activities of the Missile Defense Executive Board (MDEB). The Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) continues to exercise the full authority and responsibility necessary to exercise comprehensive and effective oversight of the Missile Defense Agency (MDA) and its programs through the

MDEB. The USD(AT&L) has maintained the MDEB's structure and operation in essentially the same form since its inception providing consistency in the Department's oversight. The MDEB was established "to recommend and oversee implementation of strategic policies and plans, program priorities, and investment options to protect our Nation and allies from missile attack." The MDEB authorities and responsibilities extend to comprehensive oversight of all of the MDA's activities including those outside the scope of the traditional milestone review process for individual programs (e.g., assessments and potential influence on policy, threat assessments, capability requirements, budget formulation, and fielding options).

Supporting the MDEB are four committees: Policy, Test and Evaluation, Operational Forces, and Program Acquisition and Budget Development (PA&BD). The Policy Committee advises the Board on strategic missile defense policy direction, conducts and oversees international activities, and represents the Department in inter-Agency matters. The Test and Evaluation Committee oversees the T&E planning and resource roadmap. It provides technical recommendations and oversight for the conduct of an integrated T&E program and investment strategy. The Operational Forces Committee oversees fielding schedules and deployments. It also oversees agreements, documentation, and requirements between MDA, the DoD components, and the fielding organizations for ensuring appropriate funding policies for operational and support resources. The PA&BD Committee ensures that MDA program and budget development is integrated effectively into the MDEB's oversight role and that missile defense programs are properly aligned with missions. The PA&BD Committee oversees

implementation of missile defense acquisition guidance to include transition and transfer of responsibilities/authorities of BMDS elements to the Services and oversight of BMDS procurement, operation and support.

Since I testified before you in 2009, the MDEB has conducted 12 meetings and the USD(AT&L) has issued 12 Acquisition Decision Memorandums. Thus, it continues to meet more frequently than a Defense Acquisition Board (DAB) would meet for a typical program. Through the MDEB the Department maintains early and continued visibility into MDA programs and is able to provide the necessary guidance to achieve Missile Defense priorities within cost and schedule constraints.

One oversight focus area is the Department assessment of a BMDS element's maturity for production and Lead Service operation. The Department's current criteria for missile defense element production decisions includes: an assessment of the depth and breadth of preparation including element progress; performance validated by testing results; reports by the Director, Operational Test and Evaluation; funding to support program plans; and an executable plan for operation and support. MDA, in conjunction with the designated Lead Military Department makes the recommendation for a production decision. The USD(AT&L) is responsible for the production review and decision. In the past year, the MDEB reviewed development progress on the Terminal High Altitude Area Defense (THAAD) element of the Ballistic Missile Defense System, and endorsed the acquisition of THAAD Batteries 3, 4 and 5 and associated equipment. A similar review of the Aegis Ballistic Missile Defense element is also planned.

Recent MDEB activities have also included reviews of the Fiscal Year 2012 Missile Defense Agency budget request, clarification of Operation and Support (O&S) funding responsibilities, and force structure recommendations such as the addition of an AN/TPY-2 radar to BMDS acquisition planning. The MDEB also established a Defense Science and Technology Advisory Group which reviews and assesses critical technologies that support missile defense missions and their maturity levels. Another example of the MDEB's oversight of and influence on missile defense programs was the decision to acquire capabilities recommended by the Joint Staff-performed Joint Capability Mix II study. The Joint Capability Mix study assessed the mix of upper tier missile defense weapons and sensors required for near simultaneous Major Combat Operations. I'd also like to address the significant impact the Deputy Secretary of Defense mandated Ballistic Missile Defense System Life Cycle Management Process (LCMP) has had on the preparation and execution of the Missile Defense Agency's plans and budgets. The September, 2008 guidance provided for the participation of the MDA; the Office of the Secretary of Defense; the Strategic Command Commander; other Combatant Commanders; the Joint Staff and the Military Departments in an annual process to identify capability and support requirements, balance resources and technical capabilities, and prepare a Ballistic Missile Defense System program and budget. For the last two years, the Department has executed the LCMP to derive comprehensive Departmental involvement and influence on the Missile Defense Agency's plans and budgets. A key element, which provides the foundation for the LCMP is the input provided by the OFSC derived from the Strategic Command's Warfighter Involvement

Process. An output of this process is a Missile Defense Prioritized Capability List that documents operator capability requests and is reviewed and endorsed by the MDEB. MDA provides a formal response which in turn facilitates our assessment of MDA program plans against desired capabilities. This is an example of how the Department is ensuring warfighter involvement in the development of missile defense programs and is similar to the Joint Capabilities Integration Development System that generates requirements for other programs.

The MDEB has provided a consistent venue for missile defense prioritization, planning and execution. With continued interest across the Department and the involvement by a broad range of stakeholders, the MDEB will continue to be a force as BMDS operations continue.

Conclusion

In summary, the Department's missile defense activities continue at a high pace. While development of air and missile defense capabilities remains of critical importance, we have made hard choices in this portfolio in the FY2012 budget. The MEADS decision was but one of these hard choices. The Department will continue to seek ways to wring out the maximum capability from our investments in air and missile defenses.

The Department is ensuring proper management and oversight of this complex portfolio through its effective utilization of the Missile Defense Executive Board. We are taking prudent steps to transition and transfer individual elements to the Lead Military Departments at the appropriate time for operation and support. Continued cooperation

between the MDA, OSD, the Military Departments, the Joint Staff, and COCOMs will be critical to long-term success of the BMDS.

We are grateful for the continued support of Congress which has been critical to the success to date in developing and fielding missile defenses. Thank you for this opportunity to testify on our management and oversight of the Department's missile defense program. I look forward to answering any questions you might have.

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COMMITTEE ON ARMED SERVICES
U.S. HOUSE OF REPRESENTATIVES

STATEMENT

BY

J. MICHAEL GILMORE

DIRECTOR, OPERATIONAL TEST AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE

BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

STRATEGIC FORCES SUBCOMMITTEE

NOT FOR PUBLIC RELEASE
UNTIL APPROVED BY THE
COMMITTEE ON ARMED SERVICES
U.S. HOUSE OF REPRESENTATIVES
HASC – MARCH 31, 2011

J. Michael Gilmore
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Chairman Turner, Congresswoman Sanchez, distinguished Members of the Committee, thank you for the opportunity to discuss missile defense test planning, processes, and programs, including my assessment of the Ballistic Missile Defense System, or BMDS, Integrated Master Test Plan. I will focus my remarks in three areas:

First, my assessment of the Missile Defense Agency, or MDA, flight test program during the past year, the details of which are in my annual report submitted to you on February 11th;

Second, the major events this last fiscal year that influenced both the mid-year update to the Integrated Master Test Plan, or IMTP, version 10.2, and the most recent version 11.1; and

Finally, my assessment of the current IMTP.

Fiscal Year 2010 Flight Test Program

When Fiscal Year 2010 began, the MDA planned to conduct three intercept flight tests and two non-intercept flight tests. With one exception which I will discuss in a moment, these flights test were all included in version 10.1 of the IMTP which DOT&E approved on February 26, 2010.

Aegis Ballistic Missile Defense, or Aegis BMD, planned to accomplish a non-intercept flight test, FTX-06, the first radar tracking test of the new BMD 4.0.1 software. Aegis BMD completed this test as planned.

Ground-based Midcourse Defense, or GMD, planned to accomplish one intercept flight test, FTG-06, and one non-intercept flight test, BVT-01, the first flight of the 2-stage interceptor. The MDA accomplished both tests; however, the intercept planned in FTG-06 was unsuccessful.

At the beginning of the fiscal year, *Terminal High Altitude Area Defense, or THAAD*, planned to accomplish two intercept flight tests, FTT-11 and FTT-12. THAAD completed one flight test, but, due to target problems, it was neither FTT-11 nor FTT-12. Before IMTP 10.1 was approved, FTT-11 experienced a target failure which also affected FTT-12. The MDA pulled FTT-14 forward from Fiscal Year 2012 to June 28, 2010, using an available target originally planned for Airborne Laser testing. The MDA later added FTT-11a and rescheduled FTT-12 in Fiscal Year 2013 and Fiscal Year 2011 respectively.

Additionally, the MDA successfully supported two Japanese Aegis BMD flight tests and two Patriot flight tests by providing the targets for those tests. All four of these flight tests were successful.

There was no operational testing during Fiscal Year 2010. However, the MDA continued to incorporate elements of operational realism in all flight tests to the extent possible.

Events Affecting Test Planning

Two significant events occurred as version 10.1 of the IMTP was being developed for approval in February 2010. On December 9, 2009, the first quarter of the fiscal year, during THAAD flight test FTT-11, the target failed to deploy properly after it was released from a C-17, and was lost. Then on January 31, 2010, the second quarter of the fiscal year, during GMD flight test FTG-06, the kill vehicle failed to intercept the target.

The THAAD target failure resulted in the decertification and requalification of the target contractor, a process that is still incomplete at this time. The result is that re-accomplishment of THAAD flight test FTT-11 has been delayed twice, first to the first quarter of Fiscal Year 2013, and subsequently to the third quarter. One of the targets to be used for flight test FTT-12 has also been changed, delaying the test to the fourth quarter of Fiscal Year 2011. The targets now planned for use in FTT-12 will not allow all of the objectives originally planned for the test to be accomplished. Those objectives will now be accomplished in flight tests conducted during the next two years. FTT-13, the first intercept of a complex separating medium range target with associated objects, subsequently added by IMTP 10.1 in the second quarter of Fiscal Year 2011, had to be delayed one year to the second quarter of Fiscal Year 2012 by IMTP 11.1 due to target availability. As a result, THAAD will not demonstrate capability against true medium range ballistic missiles before the Army must make its material release decision for fielding the first two operational THAAD batteries.

The FTG-06 failure was noteworthy for two reasons. First, it highlighted the technical complexities associated with using the Sea-Based X-band radar. Second, it prevented GMD from successfully demonstrating the performance of the Capability Enhancement II, or CE-II, kill vehicle. As a result, FTG-06 had to be repeated. GMD attempted to do this with FTG-06a on December 15, 2010, after analyzing the causes for the FTG-06 failure and implementing fixes. The Sea-Based X-band radar performed as expected; however, the CE-II kill vehicle again failed to intercept the target. The causes of the most recent failure, which are different from those of the original FTG-06, remain under investigation. The test must be repeated for a second time and is tentatively planned for the third quarter of Fiscal Year 2012 as FTG-06b. Because the number of GMD interceptors available for testing is limited, and additional targets must be purchased to support this repeat testing, FTG-11 has been eliminated. The objectives for FTG-11, the first salvo flight test of two interceptors on one target missile, have been moved to the second operational flight test, FTO-02, planned for the fourth quarter of Fiscal Year 2015. In the interim, less data will be collected to verify, validate, and accredit the GMD models and simulations necessary for comprehensive operational testing.

Assessment of the Current IMTP

The Director of MDA, General O'Reilly, has brought rigor to the IMTP development process that continues to produce an excellent, well-justified set of tests. My office is substantively involved throughout the six-month review and revision process MDA is using to develop and update the IMTP. This process has worked extremely well during preparation of the three versions - 10.1, 10.2, and 11.1 - that I have approved jointly with General O'Reilly. The process used has enabled each of these versions of the IMTP to be revised in a timely manner consistent with policy changes, such as the President's Phased Adaptive Approach for missile defense in Europe, flight test results (including unsuccessful intercepts) such as those I have mentioned previously, or, fact-of-life changes in budgetary resources. Version 11.1 of the IMTP is a rigorous plan for obtaining the test information needed to assess BMDS performance quantitatively.

However, as I noted in my testimony last year, the IMTP is, for the most part, success-oriented. It does not incorporate explicitly repeat, or backup, tests that could be used to compensate for unsuccessful tests. Therefore, the effects of unsuccessful tests, such as the delays in data collection resulting from the unsuccessful intercepts occurring in FTG-06 and FTG-06a, can be significant. Nonetheless, the process of six-month revisions to the IMTP allows for adjustments to be made to create flexibility when it is needed. For example, General O'Reilly recognized the importance of the information to be collected during the upcoming Aegis BMD flight test FTM-15 to support implementation of

Phase 1 of the Phased Adaptive Approach for missile defense in Europe. During FTM-15, Aegis BMD will demonstrate for the first time its capability to negate the longer-range threats that must be countered in Phase 1. Consequently, six months ago the IMTP was revised to conduct FTM-15 in April 13, 2011, vice June 8, 2011, providing time to conduct another test if that becomes necessary.

Conclusion

The ability to conduct comprehensive quantitative assessments of BMDS capability remains a number of years away. Executing the IMTP will enable collection of the data needed to validate the models required to perform those assessments. Steady progress is being made towards achieving that goal. The rigorous testing incorporated in the IMTP will inevitably lead to flight test failures. Those failures, although often perceived as setbacks, provide information absolutely critical to assuring ballistic missile defenses will work.

This concludes my remarks and I welcome your questions.

WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING

MARCH 31, 2011

RESPONSE TO QUESTION SUBMITTED BY MR. LARSEN

Mr. AHERN. Per the MEADS Design and Development (D&D) MOU (Memorandum of Understanding), Section 19.9, and absent a unanimous decision by the Partner nations to terminate the D&D effort early, the MOU will remain in effect until the successful completion of the D&D project or September 2016, whichever comes first.

The termination liability is tied to our overall MOU funding commitment. Section V of the MOU states that the total program phase cost ceiling is $4 Billion equivalent U.S. dollars (EUSD) (in 2004 dollars) and that each Participant will contribute its equitable share of the full costs of the MEADS project. The U.S. cost share of the MOU cooperative program is 58%, for a ceiling of $2.324B EUSD (2004 dollars). In February 2011 (the time of the President's FY12 budget announcement), the remaining MOU funding commitment for the U.S. was $846 million. Since February, the U.S. provided the remaining FY11 funding for the program per our MOU commitment. The U.S. obligation toward cooperative MOU program costs for NATO MEADS Management Agency in FY 12 and FY 13 are $350M and $338M, respectively, totaling $688M. The remainder of the U.S. FY 12 and FY 13 budget amount, which is approximately $116M, is required for U.S.-specific MEADS work—including Government Furnished Property (GFP) obligations under the MOU—implemented through the US Army National Program Office.

In the event of a unilateral MOU withdrawal by a Partner nation, the remaining partners would have 6 months to determine whether to terminate or to restructure the contract and proceed. Should the remaining nations proceed, the withdrawing nation would be responsible for restructure costs up to their MOU obligation limits (up to $804M for the United States, as noted above). Should the remaining Partners choose to terminate NATO MEADS Management Agency (NAMEADSMA) contracts, contract termination costs would be based on a termination proposal from the prime contractor as well as any related U.S. GFP termination costs. Because our MEADS Partner nations have made it clear that they have no interest in pursuing termination, NAMEADSMA has not requested detailed contract termination proposals. Contract termination costs (and related government termination costs) in a contract termination scenario would be driven by existing obligations like long-lead item procurements and orders, targets, test and integration infrastructure, and other contract costs (leases, support contractors, etc). In a unilateral withdrawal, the withdrawing nation would be liable for termination or restructure costs up to the MOU commitment ceiling. [See page 29.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MARCH 31, 2011

QUESTIONS SUBMITTED BY MR. TURNER

Mr. TURNER. On March 10, 2011, Under Secretary of State Ellen Tauscher was in Moscow to propose the establishment of a "Missile Defense Data Processing Center" that would synthesize U.S./NATO and Russian sensor data. Can you describe this concept in more detail and describe what data and technology would be shared and how they would be shared?

Dr. ROBERTS. Ballistic missile defense (BMD) cooperation with Russia is an Administration priority. To this end, we are pursuing BMD cooperation in the following three separate, but related, bilateral tracks:

Defense Relations Working Group: Defense Secretary Gates and Defense Minister Serduykov established this working group to further practical cooperation in a number of areas, including missile defense.

International Security and Arms Control: Under Secretary Tauscher and Deputy Foreign Minister Ryabkov are engaged in a dialogue that includes such topics as strategic stability.

Military Cooperation Working Group: Chairman of the Joint Chiefs of Staff Mullen and Chief of the General Staff Makarov meet periodically to discuss a range of cooperative efforts including missile defense.

We are also pursuing multilateral BMD cooperation with Russia through the NATO–Russia Council (NRC). The effort in the NRC is synchronized with our bilateral efforts.

I am prepared to provide more details in a classified setting on the specific proposals we have made to Russia and the outlook for progress in these areas.

Mr. TURNER. The November 2010 Lisbon Summit Declaration expressed NATO's desire to work with Russia on missile defense: "We are actively pursuing cooperation with Russia on missile defence, including through the resumption of theatre missile defence exercises." Describe the scope of any missile defense exercises that are being considered, and what systems or capabilities Russia would have to provide to make these exercises equitable and beneficial for both parties?

Dr. ROBERTS. NATO and Russia agreed to resume theater missile defense cooperation that is likely to include exercises. The NATO–Russia Council (NRC) Missile Defense Working Group is establishing a program of work that will include a joint analysis and exercise proposals.

The scope of missile defense exercises will be determined within the NRC Missile Defense Working Group, but our view is that the exercises should have a greater scope and scale than previous exercises, which focused on tactical missile defense cooperation.

Mr. TURNER. A few changes to the GMD program are reflected in this year's budget request. These include a decision to "mothball" Missile Field 1 in Alaska instead of decommissioning it, and beginning preliminary design work to locate an interceptor communications terminal at an East Coast site by 2015. Why did MDA make these changes—is there a specific development which motivated MDA to adopt these changes? Is MDA considering other changes to the GMD system to improve its reliability and operational effectiveness, or to enhance its ability to protect the U.S. homeland against evolving threats?

General O'REILLY. In coordination with OSD Policy, MDA decided to place Missile Field 1 in a non-operational state ("mothball") instead of permanently decommissioning the missile field. While in a mothball status, the 6 silos in missile field 1 can be hardened and reactivated in two years at a cost of approximately $200M as a hedge against any future change in threat to the Homeland. There are no current threats dictating the need, nor plans to reactivate MF–1 in the future; however, we determined preserving the asset in a non-operational status was prudent over destruction based in uncertainties inherent in threat estimates.

MDA is adding an East Coast interceptor communication terminal (IDT) to provide additional and redundant communication with GBIs launched from Fort Greely, AK, and Vandenberg AFB, CA. These additional communication opportunities allow additional GBI updates from sensors to improve performance against threats to the eastern United States from the Middle East. MDA originally planned

to install an East Coast IDT in 2004, but delayed it while focusing on a 3rd GMD site in Europe. We concur with the previously identified need and are proceeding with its installation.

The GMD's reliability and operational effectiveness continue to improve through upgrades to existing GBI components and system software. Our ongoing GBI upgrade program replaces older items with new higher-reliability components to enhance mission readiness. Our ongoing stockpile reliability program evaluates system components throughout their service life to identify any negative trends needing correction. Also, we are improving the GMD's ability to utilize additional sensor data and better discriminate threat objects during flight. Finally, we continue to develop the 2-stage GBI. After last year's successful initial flight test, we plan to conduct an intercept with a two-stage GBI as a potential hedge to allow for a longer intercept window of time if ICBMs were launch against the United States from Northeast Asia or the Middle East.

Mr. TURNER. The SM–3 Block IIB interceptor is planned for deployment by 2020 to improve protection of the U.S. homeland against potential ICBM attack as part of Phase 3 of the EPAA. The FY12 budget request provides an additional $1.7 billion to the SM–3 Block IIB development program across the Future Years Defense Program (FYDP). Can you describe the key technology risk areas associated with the SM–3 Block IIB and MDA's plans for retiring that risk?

General O'REILLY. The SM–3 Block IIB will counter short, medium, intermediate, and long range threats, including ICBMs, earlier in their trajectories than is currently possible. We are focusing SM–3 Block IIB design on enhancements over existing SM–3 variants including increasing interceptor velocity, improving the ability of the kill vehicle to maneuver, and increasing the range at which the kill vehicle seeker can discern the threat. The SM–3 Block IIB will leverage existing and planned Aegis Weapon System and Mk41 Vertical Launching System interfaces. Today, we are executing a two-pronged strategy to achieve capability goals and plan for the product development phase. In early April, MDA awarded three Concept Definition and Program Planning contracts (Boeing, Lockheed Martin and Raytheon). Each contractor will conduct missile trade studies to define SM–3 Block IIB concepts, challenges, and associated program plans. Concept definition products will include detailed performance characterizations, technology maturity assessments, and demonstration of key technologies. In addition, we are executing technology risk reduction efforts to mature key interceptor components that increase performance and potentially reduce cost. Specifically, we are investing now with multiple vendors in kill vehicle divert and attitude control systems, upper stage propulsion, advanced seekers, and lighter weight structures and materials to reduce inert mass.

Mr. TURNER. The SM–3 Block IIA interceptor also requires the maturation of key technologies. An additional $19 million was provided in the FY12 budget to do this, but no additional funds were added to the FYDP. Are you confident that the funds in the FYDP are sufficient to complete development and start testing and production of the SM–3 Block IIA interceptor? Please provide any fact-of life revisions to the FYDP funding profile and schedule, including changes in any milestones, since the release of the FY12 budget request.

General O'REILLY. The funds requested in the FYDP for the SM–3 Block IIA missile are sufficient to complete development and start testing and production. The SM–3 Block IIA development plan is currently under review to determine the lowest risk development approach to achieve a 2018 deployment. While the overall development timeline remains the same, the sequencing and timelines associated with flight testing in 2015–2017 may be adjusted based on results of ground and early testing in 2014 and 2015. Production plans remain as requested in PB12.

Mr. TURNER. Former MDA Executive Director, Mr. David Altwegg, said there is a "big-time quality problem" and "a lack of attention to detail" across the board for systems delivered to MDA. Recent examples include the air-launched target intended for a THAAD intercept test and the exo-atmospheric kill vehicle (EKV) on the ground-based interceptor (GBI). Is MDA considering changes to its contracts to create stronger defect or quality control clauses and increase contractor liability for poor performance?

General O'REILLY. MDA is currently developing a defect clause to increase contractor liability for poor performance. MDA is looking at the fee and the profit that we are providing our contractors and evaluating our ability to go beyond the scope that we currently have defined in our award fees for quality control and extending it to a much greater pool of award fee money, to include even past awarded money. This will enable the government to be compensated for egregious errors in quality control.

QUESTIONS SUBMITTED BY MS. SANCHEZ

Ms. SANCHEZ. Do you think the ICBM threat from Iran and North Korea is developing more quickly than anticipated and do you think the current hedging policy is adequate to respond to the threat to our homeland and the threat to our deployed troops and allies, and why?

Dr. ROBERTS. Regional actors such as North Korea and Iran continue to develop long-range missiles that could threaten the United States. Although there is some uncertainty about when and how this type of ICBM threat to the U.S. homeland will mature, the United States already possesses a capacity to counter the projected ICBM threats from these States.

In order to maintain this advantageous position, the Administration is taking several steps to maintain and improve the protection of the homeland from the potential ICBM threat posed by Iran and North Korea. These steps include the continued procurement of ground-based interceptors (GBIs); the procurement and deployment of additional sensors; and upgrades to the Command, Control, Battle Management, and Communications (C2BMC) system.

In addition to these improvements, the United States must also be well hedged against the possibility of rapid threat developments or delays in U.S. technological advances. The Administration has already taken the following decisions to strengthen the U.S. hedge posture:

- The construction of Missile Field 2 at Fort Greely, Alaska, including a 14-silo configuration to accommodate a contingency deployment of eight additional GBIs, if needed;
- Six GBI silos at Missile Field 1 at Fort Greely are being mothballed instead of decommissioned, allowing their return to service within two years, if necessary; and
- The development and assessment of a two-stage GBI, which will continue to preserve future deployment options.

The Administration is considering additional steps to strengthen the U.S. hedge posture. We are studying threat developments, future capabilities, and deployment options for a range of scenarios. In addition, we are evaluating the deployment timelines associated with fielding additional capabilities, with an eye to enabling rapid responses to triggering events. Our objective is to enable aggregate improvements that increase probability of kill, raid capacity, and battle space. This work involves a significant amount of classified information from both the Intelligence Community and the system developers. We have committed to brief the Committee on the results of this work in a classified setting once it is complete.

Ms. SANCHEZ. Preserving strategic stability with Russia and China is important as we defend ourselves against the threats posed by the nuclear programs in Iran and North Korea. Are there any plans to engage China? What are the risks of not engaging Russia and China?

Dr. ROBERTS. It is important to engage Russia and China on strategic issues, including missile defense, to further our understanding, develop trust, and avoid misunderstandings that can lead to dangerous miscalculations.

The Administration is committed to substantive and sustained dialogue with China, with the goals of enhancing confidence, improving transparency, and reducing mistrust on strategic security issues.

We are pursuing a broad agenda with Russia focused on shared early warning of missile launches, technical cooperation, and even operational cooperation. Cooperation with Russia could offer some important tangible benefits for the United States—and also Russia. Cooperation is also the best means for Russia to gain an understanding of our ballistic missile defense (BMD) plans and programs in order to build confidence that our European missile defenses neither target Russia, nor pose a threat to Russia's strategic forces.

As we pursue missile defense discussions with Russia and China, the Administration will continue to reject any negotiated restraints on U.S. ballistic missile defenses.

Ms. SANCHEZ. Could you outline what savings were derived from efficiencies? Have these reductions increased the risk for any program or impacted your ability to respond to requirements?

Dr. ROBERTS. The Missile Defense Agency (MDA) did not have any program adjustments; these were efficiencies to purchase same program scope with fewer dollars. The efficiencies were generated from changes with respect to manufacturing process efficiencies, savings through competition of major contracts and consolidation of tests to achieve objectives with fewer events.

MDA implemented a more efficient approach to the Airborne Infrared program to focus on development and integration of the sensor package and software that would enable the capability.

Additionally, with a more efficient acquisition strategy, MDA was able to revise the cost of the AN/TPY–2 radars. MDA also reduced the Aegis 5.1 Aegis Weapons System cost by aligning the schedule to the Navy's Advanced Capability Build (ACB) 16 effort.

Ms. SANCHEZ. The March 2011 GAO report on missile defense notes that after 14 years of development and $5 billion, the Airborne Laser achieved its first successful short-range intercept in February 2010, though a second intercept during that test did not occur due to the laser shutting down prematurely. Could you outline the challenges stemming from the second part of this February 2010 test and the subsequent failed tests in September and October 2010, and explain what has delayed the March 2010 test? Should we remain optimistic about this program?

Dr. ROBERTS. In February 2010, the Airborne Laser Test Bed (ALTB) successfully shot down a threat-representative short-range ballistic missile; however, the second intercept during this same flight did not end in destruction of the missile. The ALTB successfully engaged the missile, a Terrier Black Brant, but the safety abort system functioned as designed and shut down the laser early upon detecting stray light in its internal sensors. Chemical contamination within the laser caused this stray light. Although destruction of the second target did not occur, numerous other test objectives were accomplished for this mission: engaging multiple targets in the same mission; delivering a high-energy laser (HEL) beam to the boosted target; and demonstrating acquisition, track, and pointing of high- and low-power lasers.

During testing in September/October 2010, the ALTB experienced two additional technical problems that resulted in unsuccessful engagements. In the first mission, a software issue in the beam-control system steered the high-energy laser slightly off center. The ALTB safety abort system worked as designed, detected this shift, and shut down the laser. The second technical problem was a micro-switch failure in a laser subsystem, which prevented a successful mission test. The laser incorrectly reported it was not ready, and a safety-default aborted the engagement. The failure investigation determined the cause to be a single micro-switch on an iodine valve that incorrectly reported a closed-valve condition. Both technical problems have been corrected.

As a prototype, non-operational test bed, the ALTB incorporates cutting-edge technology and systems that can be challenging to maintain and operate. The program upholds stringent

Go/No-Go criteria that ensure air and ground crew safety and minimize failed launch attempts. Meeting these criteria, coupled with range availability and weather, delayed the March 2011 test.

The ALTB employs and incorporates highly advanced technologies and is credited with numerous groundbreaking directed energy capability demonstrations. These activities are carried out according to the highest safety standards to ensure that a catastrophic mishap does not occur. As such, some delays are to be expected. However, the ALTB continues to collect Science and Technology data in accordance with a plan developed by the Department of Defense to support the development of future airborne ballistic missile defense systems. The Department annually evaluates the contribution of ALTB to the development of directed-energy technologies as part of the annual budget development process.

Ms. SANCHEZ. Do you think the ICBM threat from Iran and North Korea is developing more quickly than anticipated and do you think the current hedging policy is adequate to respond to the threat to our homeland and the threat to our deployed troops and allies, and why?

General O'REILLY. [The information referred to is classified and is retained in the subcommittee files].

Ms. SANCHEZ. After two GMD flight test failures in a row, why should we have confidence that the GMD system can defend the United States?

General O'REILLY. There are two versions of the GMD interceptor. The two most recent flight test failures involved a new version of the GMD EKV, called the Capability Enhancement II (CEII) EKV.

Today there are 20 operational Capability Enhancement I (CEI) EKVs in the emplaced fleet. In its last three flight tests, the CEI has intercepted three times in a row. These CEI flight tests were conducted against appropriate threat scenarios.

Based on current intelligence, the CEI fleet of interceptors are sufficient while MDA addresses and corrects the deficiencies associated with the CEII EKVs.

Ms. SANCHEZ. How do you balance the need for ensuring an operationally effective missile defense with the pressure to deploy missile defense systems quickly? Will scheduling and deployment pressures lead to short-cuts in testing?

General O'REILLY. The Missile Defense Agency follows a comprehensive, systems engineering approach in developing and testing ballistic missile defense capabilities.

The Agency remains committed to the testing processes and program decisions based on rigorous engineering analysis of test data, as described in the Integrated Master Test Plan jointly developed by MDA, Operational Test Agency and DOT&E. The specific data required for comprehensive testing of the BMDS has been identified and is updated in our Integrated Master Test Plan every six months to ensure that scheduling and deployment pressures will not lead to shortcuts in testing.

Ms. SANCHEZ. How many successful operationally realistic GMD tests have we had? (How many included countermeasures and have we designed a test scenario that envisioned more than one incoming ICBM?)

General O'REILLY. We have conducted three successful operationally realistic GMD intercept tests against first generation ICBMs, Flight Test Ground-based Interceptor (FTG)–02, FTG–03a, FTG–05. On FTG–02 and FTG–03a, there were no countermeasures, and on FTG–05, the planned countermeasures did not deploy. All future GMD intercept tests include countermeasures of increasing complexity. FTG–06b in FY13 is the next planned intercept with countermeasures.

The Integrated Master Test Plan (IMTP) currently plans for 2 operational tests, Flight Test Operational (FTO)–02 and –03. FTO–03 will demonstrate a multiple simultaneous engagement (MSE) of one ICBM threat with countermeasures and one IRBM threat with countermeasures.

Ms. SANCHEZ. What are you doing to ensure that if poor performance by the contractor results in test failures, cost liability is shouldered by the contractor, not MDA? Are you ensuring that this clause is improved and rectified in future contracts?

General O'REILLY. MDA is currently developing a defect clause to increase contractor liability for poor performance. MDA is looking at the fee and the profit that we are providing our contractors and evaluating our ability to go beyond the scope that we currently have defined in our award fees for quality control and extending it to a much greater pool of award fee money, to include even past awarded money. This will enable the government to be compensated for egregious errors in quality control.

Ms. SANCHEZ. Can you describe how the Integrated Master Test Plan (IMTP) will ensure that we mature technologies based on operational testing? What is the value of operational effectiveness for deployment?

General O'REILLY. The IMTP contains both developmental and operational tests. Through the collaborative efforts of test designs, test objectives (described as Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME)), tests are constructed and data is gathered to determine a technology's maturity, system design achievement, and to validate models. The data acquired through ground and flight tests allows MDA, DOT&E, the OTAs, and Combatant Commanders (COCOMs) to assess the system performance, effectiveness, and suitability of the capabilities prior to making procurement or deployment decisions. The current IMTP, v11.1 has a total of 73 CECs and 61 EMEs that shape the design of flight and ground testing programs; and inform system assessments and the maturity of technologies. This IMTP also includes a series of element (ie: Aegis, THAAD, etc) operational tests and BMDS system level operational tests (ie: FTO–01) that the Operational Test Agencies use to formulate their assessment of system maturity. The Operational Test Agencies are fully engaged in the development, and execution of the IMTP and they, with the Director, MDA, approve each version of the IMTP.

Operational effectiveness is defined as the overall degree of mission accomplishment of a system when used by representative personnel in the environment planned or expected for operational employment of the system considering organization, doctrine, tactics, survivability, vulnerability, and threat. The Operational Test Agencies (OTA) use data collected from flight and ground testing to make a statement of operational effectiveness after MDA determines that the deploying system is functioning within its technical design specifications. MDA bases its technical declaration upon a series of hardware-in-the-loop ground tests (integrated and distributed), operational flight tests, and a final system integration and check-out event (SICO) upon deployment. The Services or Combatant Commanders use both the technical declaration and operational effectiveness assessments in their determinations to accept and deploy weapon systems.

Ms. SANCHEZ. What is the cost of a GMD intercept test?

General O'REILLY. Each flight test is unique. The results and findings from previous flight tests are reviewed and adjustments to testing scenarios adopted as re-

quired. Overall, MDA builds on the successes of each flight test, and future tests are designed to be more complex. Following is a breakdown of MDA's most recent GM tests.

Ms. SANCHEZ. The current acquisition plans envision an inventory of 52 GBIs. This includes 30 deployed GBIs, 16 for tests, and 6 for spares. Should you need additional GBIs for additional tests or other requirements, when would this decision have to be made? How long will the GBI production line remain warm? Would the costs necessarily increase if we wait, and by how much?

General O'REILLY. The Department has the option of purchasing additional GBIs on the upcoming GMD Development and Sustainment Contract (DSC) to meet testing or operational requirements through 2016 without incurring a production break of our unique component suppliers. The GBI supplier base will remain warm through 2016. First and second- Tier suppliers will remain warm beyond that time through a combination of new manufacturing and GBI upgrades. MDA does not anticipate a cost increase beyond the current GM program plan for purchasing additional GBIs if the decision is made prior to 2016.

Ms. SANCHEZ. Given the impacts of the continuing resolution, is the FY12 budget request adequate?

General O'REILLY. The MDA budget for 2011 through 2015 is based on the missile defense priorities set forth in the Ballistic Missile Defense Review (BMDR. MDA is in a position to execute planned PB11 activities.

Ms. SANCHEZ. Could you outline what savings were derived from efficiencies? Have these reductions increased the risk for any program or impacted your ability to respond to requirements?

General O'REILLY. MDA did not have any program adjustments; these were efficiencies to purchase same program scope with fewer dollars. The efficiencies were generated from changes with respect to manufacturing process efficiencies, savings through competition of major contracts and consolidation of tests to achieve objectives with fewer events.

MDA implemented a more efficient approach to the Airborne Infrared program to focus on development and integration of the sensor package and software that would enable the capability. Additionally, with a more efficient acquisition strategy, MDA was able to revise the cost of the AN/TPY–2 radars. MDA also reduced the Aegis 5.1 Aegis Weapons System cost by aligning the schedule to the Navy's Advanced Capability Build (ACB) 16 effort.

Ms. SANCHEZ. What risk is there of a production gap between the end of production of SM3–IA missiles and SM3–IB missiles?

General O'REILLY. FY11 Congressional funding actions have reduced the risk of a production gap between the loss of the SM–3 Block IA unique vendors and the start of the SM–3 Block IB production line. The Missile Defense Agency intends to procure up to 30 additional SM–3 Block IA missiles in FY11 for delivery in FY13. An updated PB12 SM–3 Buy/Delivery Plan is attached. [See page 105.]

PRE-DECISIONAL WORKING PAPERS

Aegis BMD SM-3 Missile Buy–Deliver Plan
(Includes Add'l FY11 SM-3 Block IA)

		FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
SM-3 Blk I / IA Missiles												
SM-3 Blk I (11)	11											
SM-3 Blk IA (32 + 1 (Pathfinder))	33											
CLIN 1 (27)	19	8			Transition out of Darnden							
CLIN 3 (24)		3 6 8	4 3	6								
CLIN 4 (18)			6 6	6								
CLIN X (26) New		BLKIA Rate Capability: 4-5/ month		2 3	7 9 5							
subtotal	63	88	107	118	134	139						
SM-3 Blk IB Missiles												
Pathfinder (1)		1										
CLIN 16/17 ~~(36)~~ 24			3	6 6	6 3							
~~FY11 DWP (8)~~												
FY12 DWP (46)				Huntsville Online: 4 @ 2Blt5	Huntsville Online: 12 @ 2Blt5	11 11 12 12						
FY13 DWP (62)							15 15 15 17					
FY14 DWP (73)								18 18 18 19				
FY15 DWP (82)									18 20 22 22			
FY16 DWP (68)										15 17 18 18		
subtotal		1	4	16	25	71	133	206	288	356		
SM-3 Blk IIA Missiles												
RDT&E (14)								1 1 1 2	1 1 1 2	1 1 1 1		
DWP (15)											3 3 3 4	2
subtotal								5	10	14	27	29
Cum. U.S. Deliveries (FY)	**63**	**89**	**111**	**129/134**	**155/159**	**201/210**	**263/272**	**341/350**	**428/437**	**500/509**	**513/522**	**515/524**

▲ Contract Award
2 / 5 / 8 = 2 shifts, 8 hours / 5 days
Changes Requested in BLUE

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PRE-DECISIONAL WORKING PAPERS

Attachment

Ms. SANCHEZ. Are you confident that we will get assurances from the Japanese that they can provide the capabilities and meet the production timelines for manufacturing the SM3–IIA missile?

General O'REILLY. The U.S. and Japanese governments are engaged in a series of discussions on SM–3 Blk-IIA production requirements. The U.S. has made it clear we expect each side to meet the other's production requirements; that position is understood by Japan. We intend to continue these bilateral discussions with the expectation of reaching agreement on a set of production principles later this year that would form the basis of future formal government to government production agreements.

Japanese industry is planning to meet future production demand. For example, Mitsubishi Heavy Industries made capital investment to increase its capability to produce nosecones in its Komaki Plant. Additional machinery can be easily procured to meet production obligations. Ishikawajima-Harima Heavy Industries Aerospace Takasago Plant has excess floor space to build second and third stage rocket motors that can be used to meet production requirements.

We are confident that these measures by the joint U.S.-Japan government-industry teams will result in the ability to meet future production timelines.

Ms. SANCHEZ. The March 2011 GAO report on missile defense notes that after 14 years of development and $5 billion, the Airborne Laser achieved its first successful short-range intercept in February 2010, though a second intercept during that test did not occur due to the laser shutting down prematurely. Could you outline the challenges stemming from the second part of this February 2010 test and the subsequent failed tests in September and October 2010, and explain what has delayed the March 2010 test? Should we remain optimistic about this program?

General O'REILLY. On February 3, 2010, the Airborne Laser Test Bed (ALTB) successfully shot down a solid propellant Terrier Black Brant (TBB). On February 11, 2010, the ALTB successfully shot down a threat-representative liquid propellant ballistic missile. The ALTB subsequently engaged an additional TBB on February 11, 2010, but the safety abort system functioned as designed and shutdown the laser early upon detecting stray light in its internal sensors. Chemical contamination within the laser caused this stray light.

In September 2010, ALTB experienced two other technical issues that resulted in unsuccessful engagements. In the first mission, a software issue in the beam control system steered the high energy laser slightly off center. The ALTB safety abort system worked as designed, detected this shift and shut down the laser. A micro-switch failure in a laser subsystem prevented a successful mission in October 2010. The laser incorrectly reported it was not ready and a safety-default aborted the engagement. The failure investigation determined the cause to be a single micro-switch on an iodine valve that incorrectly reported a closed-valve condition. Both issues have been corrected.

As a prototype, non-operational test bed, the ALTB incorporates cutting-edge technology and systems that can be challenging to maintain and operate. The program upholds stringent Go/No Go criteria that ensure air and ground crew safety and minimize failed launch attempts. Meeting these criteria, coupled with range availability and weather delayed the March 2011 test.

The ALTB employs and incorporates highly advanced technologies and is credited with numerous groundbreaking directed energy capability demonstrations. For example, in the past 9 months, ALTB has had 14 successful non-intercept flight tests where unprecedented high energy laser atmospheric propagation data has been collected to greatly enhance our confidence in previously theoretical models and simulations. One test verified that ALTB can deposit lethal energy of more than twice the range previously demonstrated in the February 2010 shoot downs. These activities are carried out with the highest safety standards to ensure that a catastrophic mishap does not occur. As such, some delays are to be expected. However, ALTB continues to collect Science and Technology data in accordance with a plan developed by the Department of Defense to support the development of future airborne ballistic missile defense systems. The Department annually evaluates the contribution of ALTB to the development of directed energy technologies as part of our annual budget development process.

Ms. SANCHEZ. The current acquisition plans envision an inventory of 52 GBIs. This includes 30 deployed GBIs, 16 for tests, and 6 for spares. Should you need additional GBIs for additional tests or other requirements, when would this decision have to be made? How long will the GBI production line remain warm? Would the costs necessarily increase if we wait, and by how much?

Mr. AHERN. The Department has the option of purchasing additional GBIs on the upcoming GMD Development and Sustainment Contract (DSC), expected to be

awarded in November 2011, to meet testing or operational requirements through 2016 without incurring a production break of our unique component suppliers.

The GBI supplier base will remain warm through 2016. First and second-Tier suppliers will remain warm beyond that time through a combination of new manufacturing and GBI upgrades.

We do not anticipate a cost increase beyond the current GM program plan for purchasing additional GBIs if the decision is made prior to 2016.

Ms. SANCHEZ. Could you outline what savings were derived from efficiencies? Have these reductions increased the risk for any program or impacted your ability to respond to requirements?

Mr. AHERN. The efficiencies savings ($332.3 million in Fiscal Year 2012) were generated as a result of a variety of actions aimed at improving performance, such as freezing civilian manpower, changes with respect to manufacturing processes, savings through competition of major contracts, and consolidation of testing events to achieve multiple objectives with fewer events. The MDA did not have any program adjustments that would impact risk levels; these were efficiencies that will allow the purchase of the same program scope with fewer dollars.

Ms. SANCHEZ. How do you balance the need for ensuring an operationally effective missile defense with the pressure to deploy missile defense systems quickly? Will scheduling and deployment pressures lead to short-cuts in testing?

Dr. GILMORE. Balancing adequate testing with the pressures of operational need is continually a challenge. This is especially true with the highly complex Ballistic Missile Defense System (BMDS) and its key interceptor elements: Ground-based Midcourse Defense (GMD), Aegis Ballistic Missile Defense (Aegis BMD), and Terminal High Altitude Area Defense (THAAD). The decision either to field early or to first perform adequate testing involves evaluation of many competing and complex risks. GMD was fielded early, Aegis BMD initial capability was fielded after a substantial number of flight tests, including an operational evaluation by the Navy, and THAAD will undergo an initial operational test and evaluation later this year to support a full-rate production decision. Dedicated testing of follow-on Aegis BMD capability supporting the President's Phased Adaptive Approach for the Defense of Europe is defined in the Integrated Master Test Plan (IMTP) that General O'Reilly and I approved recently. The first such test was conducted last month and was successful. The IMTP includes dedicated operational testing. If successfully executed, the IMTP will provide information sufficient to support rigorous quantitative estimates of BMDS performance.

My office will continue to work closely with the MDA, the Combatant Commands, and the BMDS Operational Test Team. The default fielding strategy is to assure that system capabilities are adequately demonstrated by realistic testing prior to transitioning those systems to the acquiring services. The Department's leadership continually evaluates the information available from testing of BMDS performance as it decides how to respond to the evolving threat.

Ms. SANCHEZ. Dr. Gilmore, you stated in your written testimony that the Integrated Master Test Plan (IMTP) is, for the most part, "success oriented" and "does not incorporate explicitly repeat, or backup, tests that could be used to compensate for unsuccessful tests."

The GMD test track record counts 7 failures out of 15 tests since 1999. This is difficult technology. Do you think there is enough flexibility in the plan to account for potential future failures? Does it adequately minimize cost and schedule delays that would result from potential future failed or canceled tests?

Dr. GILMORE. In the Integrated Master Test Plan (IMTP), each test is designed to collect data for verification, validation and accreditation of models and simulations. These data elements are defined as either Critical Engagement Conditions (CECs) or Empirical Measurement Events (EMEs). The IMTP is revised every six months. When a test failure occurs, preventing collection of planned CECs/EMEs, the IMTP revision process, in which my office participates, reviews the current test program for opportunities to collect the CECs/EMEs using other tests or to add new tests, as necessary. This was the case with the recent failure during FTG–06. FTG–06a was planned and incorporated in a revised IMTP. When FTG–06a failed, the GMD flight test program was revised again in the IMTP General O'Reilly and I recently approved.

No test plan as complex as the IMTP has ever been executed exactly as planned. There are always unforeseen system responses and failures that occur and require adjustments to the test plan. If such problems do not arise, it likely means that the testing being conducted is not robust. The delays in collecting data caused by test failures could vary from several months to more than one year depending upon many details including the BMDS element involved in the test and the targets used

in the test. Costs and schedule delays are accommodated in part by the six-month revision process currently used to update the IMTP.

Ms. SANCHEZ. How many successful operationally realistic GMD tests have we had? (How many included countermeasures and have we designed a test scenario that envisioned more than one incoming ICBM?)

Dr. GILMORE. The Missile Defense Agency (MDA) and my office jointly published operational realism flight test criteria in 2005 as required by the Fiscal Year 2005 National Defense Authorization Act. There are nine criteria: Operationally-Representative Interceptor; Threat-Representative Target; Complex Countermeasures; Operational Sensor(s); Operational Fire Control Software; Tactics, Techniques, and Procedures (TTPs); Warfighter Participation; Unannounced Target Launch; and End-to-End Test.

Every Ground-based Midcourse Defense (GMD) flight test since then has demonstrated at least some of the nine operational realism criteria. No test has yet demonstrated all nine criteria. FTG–05, conducted in December 2008, was the most operationally realistic test of GMD conducted to date, demonstrating at least partial operational realism for eight of the nine criteria. Although simple countermeasures were planned for FTG–05, a malfunction prevented deployment. The targets for both FTG–06 and FTG–06a successfully deployed simple countermeasures but the GMD kill vehicles malfunctioned before they could complete their intercepts in the countermeasures environments.

No GMD tests against a true intercontinental ballistic missile (ICBM) have yet been conducted. A multiple simultaneous engagement of two ICBM targets by two GMD interceptors launched from Vandenberg AFB, California, is currently under consideration for inclusion in the third operational flight test, FTO–03, included in the Integrated Master Test Plan that General O'Reilly and I recently approved.

Ms. SANCHEZ. Can you describe how the Integrated Master Test Plan (IMTP) will ensure that we mature technologies based on operational testing? What is the value of operational effectiveness for deployment?

Dr. GILMORE. Operational test and evaluation will provide the Combatant Commanders with definitive understanding of the warfighting capabilities the BMDS provides, as well as the capabilities it does not provide. The test program defined in the IMTP was constructed so as to collect Verification, Validation, and Accreditation (VV&A) data for the models and simulations that may be used to support evaluations of the BMDS, while also demonstrating progressive capability of the BMDS and its associated elements through increasingly complex testing. Nearly every flight test has both developmental and operational test objectives. There are also three designated operational flight tests of the BMDS and an initial operational test and evaluation of the Terminal High Altitude Area Defense (THAAD) system. The IMTP is a rigorous plan for obtaining the test information needed to assess element and BMDS performance quantitatively. If the Missile Defense Agency can execute the IMTP, the data needed to validate models and perform rigorous quantitative assessments will become available.

The Missile Defense Agency (MDA) plans for and my office assesses each test against the operational realism criteria developed and submitted to Congress in 2005. I will ensure appropriate operational testing is accomplished in compliance with Title 10 USC. This testing is scheduled for THAAD later this year and was accomplished by the Navy for the initial Aegis Ballistic Missile Defense capability. Ultimately, the number of purely operational tests conducted will depend upon a number of considerations including: capability demonstrated in the developmental test programs; estimated or demonstrated performance and reliability of the various missile components; experience with other similar missile systems; and availability of operational assets for testing or for replacement on operational status if missiles are expended during reliability testing. In the case of the BMDS, the entire test program—developmental testing, combined developmental/operational testing, and operational testing—will be required and used to determine operational effectiveness, suitability and survivability.

Ms. SANCHEZ. The March 2011 GAO report on missile defense notes that after 14 years of development and $5 billion, the Airborne Laser achieved its first successful short-range intercept in February 2010, though a second intercept during that test did not occur due to the laser shutting down prematurely. Could you outline the challenges stemming from the second part of this February 2010 test and the subsequent failed tests in September and October 2010, and explain what has delayed the March 2010 test? Should we remain optimistic about this program?

Dr. GILMORE. The problems incurred during Airborne Laser Test Bed (ALTB) flight tests subsequent to the February 2010 lethality demonstration demonstrate the challenge of developing and fielding a reliable system as complex as the ALTB. Not only must the ALTB demonstrate lethality under realistic conditions and threat

scenarios, it must also demonstrate that it can be depended upon to operate successfully when required. I discuss many of these issues in my Assessment of Operational Effectiveness, Suitability, and Survivability of the Airborne Laser which I submitted to Congress in January 2010. Currently, the ALTB is not an operational system and a substantial amount of additional work and funding would be required to make it an operational system.

QUESTIONS SUBMITTED BY MR. LAMBORN

Mr. LAMBORN. Space is an integral part of the Missile Defense Agency, we have read much in the press and media over the past several months regarding the performance and success being demonstrated by the Space Tracking and Surveillance System (STSS) satellites. Can you discuss the specifics of what these two satellites have accomplished to date?

General O'REILLY. The two Space Tracking and Surveillance System (STSS) Demonstrator satellites were launched in September 2009. From September 2009 to January 2011, the satellites accomplished their Early on Orbit Test (EOT) period, involving system functionality testing and payload/subsystem initialization and calibration activities.

During the EOT period, the satellites also supported seven BMDS flight tests demonstrating the ability to track missiles with both the acquisition and track sensors, conduct an acquisition sensor to track sensor handover of a missile in flight, track aircraft in afterburner, and track resident space objects (satellites). The calibration and system functionality test results showed the satellites are performing at or better than system specifications.

Since the completion of EOT, STSS activity has focused on expanding the performance envelope of the BMDS system and reducing risk for the follow-on operational capability, the Precision Tracking Space System (PTSS). In March 2011 during FTM–16, STSS demonstrated for the first time, space based sensor tracking of a missile flight from start to finish. STSS observed the target missile from launch through reentry and collected valuable data for Aegis BMD, PTSS and the Standard Missile-3 (SM–3), Block IIB programs. One week later, in FTX–16, STSS demonstrated stereo tracking from birth to death, again collecting valuable data. These tests serve to reduce risk for the Aegis Launch on Remote and Aegis Engage on Remote campaigns. These campaigns will demonstrate the functionality of the BMDS space layer integrated with the Aegis weapons system and extend Aegis coverage beyond the ship based radar envelope.

In April 2011, STSS participated in a flight test (FTM–15). This associated test demonstrated the functions required of an operational BMDS space layer system. At the time of the target launch, both STSS satellites (SV1 and SV2) were out of view over the horizon. The STSS ground system received a cue from the Enterprise Sensors Lab formed from a TPY–2 radar track of the outbound target via C2BMC X–Lab. This emulates PTSS receiving a cue from SBIRS GEO. This cue was passed via the Air Force Satellite Control Network (AFSCN) to STSS space vehicle 2 (SV2) which processed the cue and acquired and tracked the target. When SV1 was able to view the target, the cue was passed through SV2 to SV1 across the STSS communication crosslink and SV1 acquired and tracked the target. SV1 remained out of AFSCN ground contact for the entire duration of the test, and SV1 track information was passed back through SV2 to the ground mission data processor which formed a stereo track of the target. This stereo track was used to cue a simulated interceptor launch from an Aegis system simulator prior to the target missile entering the Aegis radar system coverage (Launch on Remote). At the time of the actual intercept, SV2 was out of view, and SV1 observed the successful intercept.

Mr. LAMBORN. The FY12 budget request includes funds for a program called Precision Tracking Space System or PTSS. It appears that the MDA is moving forward with yet another clean sheet design for the Space Layer within the Ballistic Missile Defense System and doing so without fully completing the STSS tests and Knowledge Points. Can you explain the rational for this approach, and why the need to have such a system initiated via government labs and not within industry?

General O'REILLY. The Space Tracking and Surveillance System—Demonstration (STSS–D) completed all the tests necessary to demonstrate System Stereo Track Fully Calibrated Performance Knowledge Point (KP) and satisfy design requirements for PTSS.

The STSS–D design uses a Space-Based Infrared System, Low Earth Orbit (SBIRS–Low) heritage gimbaled sensor design. The PTSS incorporates a Northern Hemisphere staring sensor which is far less complex, takes advantage of other Bal-

listic Missile Defense System (BMDS) functionality, and is expected to be more cost effective than the STSS–D gimbaled sensor.

STSS–D demonstrated the first ever cradle-to-grave tracking from space in a series of flight tests (FTX–16, FTM–15 and FTM–16). These tests exercised the entire BMDS kill chain for the first time. The STSS–D also demonstrated launch-on and engage-on track accuracy in flight tests FTX–16 and FTM–15. STSS–D is a pathfinder for how PTSS will close the fire control loop with Aegis Ballistic Missile Defense from space. PTSS will take advantage of technical and design lessons learned from the STSS–D.

PTSS is to be developed as an integrated part of the BMDS. This will require extensive participation of all elements as the preliminary design is developed. PTSS development phase will have involvement of Federally Funded Research Laboratories (Johns Hopkins Applied Physics Laboratory, MIT Lincoln Laboratory, Naval Research Laboratory, Space Dynamics Laboratory, Sandia National Laboratory); dedicated Service Cells of the Air Force and Navy; and an industry-partnered Integrated System Engineering Team (Ball Aerospace, Boeing, Lockheed Martin, Northrop Grumman, Orbital Sciences and Raytheon). These PTSS stakeholders will develop a non-proprietary, government-owned design and intellectual property to enable full and open competition for industry to produce the PTSS.

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QUESTIONS SUBMITTED BY MR. BROOKS

Mr. BROOKS. Last month, Director of National Intelligence Clapper testified that Iran's long range ballistic missile program was more advanced than previously estimated—with Iran perhaps having a missile capable of reaching the USA in the 2015 to 2020 timeframe. The Administration's decision in 2009 to adopt a Phased Adaptive Approach (PAA) for missile defense in Europe was based, in part, on an assessment that Iran's short- and medium-range ballistic missiles were developing more rapidly than previously projected, while the longer-range missile threat had been slower to develop than previously estimated.

What trends in Iranian ballistic missile developments have you seen over the last two years that might change this assessment? Has the threat changed and to what degree?

Dr. ROBERTS. The Intelligence Community continues to assess and evaluate Iranian progress toward achieving ICBM and nuclear capabilities that could threaten the U.S. homeland.

A key factor in the decision to adopt the European Phased Adaptive Approach was that although Iran and other regional actors have not yet acquired or deployed ICBMs, the threat from shorter-range missiles has developed very quickly. For example, Iran already has hundreds of ballistic missiles that threaten its neighbors and U.S. forces, and it is actively developing and testing ballistic missiles that can reach beyond its neighbors and further into Europe. This capability poses a clear and present danger to U.S. deployed forces, Allies, and partners. Over the past two years, we have seen this trend continue.

It is important to remember that our current ballistic missile defense posture already protects us from the potential emergence of an Iranian ICBM threat. The initial long-range threat from Iran would likely be ICBMs that are few in number. In order to maintain this advantageous position, the Administration is taking several steps to improve the protection of the homeland from the potential ICBM threat posed by Iran and North Korea. These steps include the continued procurement of ground-based interceptors (GBIs); the deployment of additional sensors; and upgrades to the Command, Control, Battle Management, and Communications system.

Improvements to the Ground-based Midcourse Defense (GMD) system will better protect us against future ICBM threats, whether from Iran, North Korea, or other regional actors.

Mr. BROOKS. As discussed in the Ballistic Missile Defense Review, a hedging strategy would provide a robust defense of the U.S. homeland in case the Iranian long-range threat comes earlier or the later models of the SM–3 interceptor experience technical development problems. When Dr. Miller testified before the subcommittee last month, he discussed ongoing work within the Department to complete its hedging strategy. At what point do you believe a decision would be necessary if a hedge is to be employed and what criteria would be used to make such a decision? Does the FY12 budget request fund continued development and test of the two-stage ground-based interceptor (GBI)? Are other hedging options beyond the two-stage GBI being considered? Can you describe those options and the timeframes in which they may be available?

Dr. ROBERTS. The current ballistic missile defense posture for the United States protects against ICBMs that might be deployed by States like North Korea or Iran. Improvements to the existing sensors and software, in addition to the procurement of additional ground-based interceptors (GBIs) and radars, will continue this protection against future ICBM threats from States like North Korea and Iran.

In addition to these improvements, the United States must also be well hedged against the possibility of rapid threat developments or delays in U.S. technological advances. The Administration has already taken the following decisions to strengthen the U.S. hedge posture:

- The construction of Missile Field 2 at Fort Greely, Alaska, including a 14-silo configuration to accommodate a contingency deployment of eight additional GBIs, if needed;
- Six GBI silos at Missile Field 1 at Fort Greely are being mothballed instead of decommissioned, allowing their return to service within two years, if necessary; and
- The development and assessment of a two-stage GBI, which will continue to preserve future deployment options.

The Administration is considering additional steps to strengthen the U.S. hedge posture. We are studying threat developments, future capabilities, and deployment options for a range of scenarios. In addition, we are evaluating the deployment timelines associated with fielding additional capabilities, with an eye to enabling rapid responses to triggering events. Our objective is to enable aggregate improvements that increase probability of kill, raid capacity, and battle space. This work involves a significant amount of classified information from both the Intelligence Community and the system developers. We have committed to brief the Committee on the results of this work in a classified setting once it is complete.

Mr. BROOKS. With MEADS no longer planned as the replacement for Patriot in the 2017 timeframe, what actions and investments are required by the Army, and when, to operate and sustain the legacy Patriot system beyond 2017? Are any of these funded in the FY12 request? Does the Army see a need to improve or upgrade Patriot's capabilities? If so, what is the estimated cost of such improvements or upgrades as compared to the cost to complete MEADS development and production?

Dr. ROBERTS. The U.S. Army can achieve some of the capabilities that MEADS would provide using existing assets. Because air and missile defense (AMD) systems

are relatively few in number and high in demand, the U.S. AMD portfolio is based on the concept of integrating and fielding a diverse set of elements to provide expanded coverage against a wide range of threats. Our first priority in AMD is the Phased Adapted Approach (PAA) in Europe, which includes systems like THAAD, TPY–2, and AEGIS to counter the ballistic missile threat. The portfolio must also address threats in Southwest Asia and the Pacific with these ballistic missile defense systems, as well as other air defense systems such as Patriot and Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS).

The United States is willing to accept some risk in our air defense portfolio in the near term in order to increase investments in new capabilities that our soldiers can use today to counter threats in Forward Operating Bases in Afghanistan, such as capabilities to counter rockets, artillery, and mortars (C–RAM). By fielding a diverse set of systems, and integrating them, the United States is able to achieve some of the capabilities using existing assets, such as 360- degree coverage and extended range air defense, that MEADS is designed to provide.

The U.S. Army has budgeted for fact-of-life upgrades to Patriot units necessary to keep these systems viable and up-to-date. The U.S. Army and the Office of the Secretary of Defense will conduct a thorough review of the air and missile defense portfolio as we do each year in light of budgets, capability needs, and the program changes made in the FY 2012 budget to ensure our programs are delivering what the warfighter needs. In addition, we will evaluate the results of the MEADS Proof of Concept to determine if MEADS elements could contribute to the U.S. air and missile defense architectures.

Mr. BROOKS. This committee has heard testimony that MEADS technology will be "harvested" and "put on the shelf" for integration into a future system or systems. What technologies can be "harvested" from MEADS for a future system(s)?

How much will it cost to integrate these harvested technologies into a future system? Has a cost-benefit analysis been performed to show that it save money and increase capability to harvest technology for integration into Patriot or other systems versus completing and fielding MEADS? If so, can you provide that analysis to the Committee? If not, why not? And what did you base your decision to not procure MEADS upon?

Dr. ROBERTS. The U.S. Army is developing plans to integrate sensor and interceptor components from U.S. Army air and missile defense systems like Patriot, JLENS, and Sentinel into the U.S. Army Integrated Air and Missile Defense (IAMD) network. This effort, when complete and fielded with the U.S. Army Integrated Battle Command System (IBCS), will mitigate some risks to meeting the validated Patriot/MEADS Combined Program requirements, and will allow the United States to employ more flexible and effective air and missile defense task force configurations. Given the decision to not procure MEADS, the U.S. Army and the Office of the Secretary of Defense (OSD) will investigate whether additional upgrades to enhance Patriot against evolving threats are needed. In addition, the U.S. Army and OSD will evaluate technologies demonstrated during the MEADS Proof of Concept effort to determine if key elements like the lightweight launcher or the 360-degree radars could be included in the evolving IAMD network to mitigate shortfalls in the Patriot/MEADS requirement. Details on the full scope of the Proof of Concept effort are being worked, but already we can say the Proof of Concept will mature technologies related to the delivery of: two lightweight launchers; two, 360-degree X-band fire control radars; three tactical operations centers; one prototype 360-degree UHF-band surveillance radar; ground testing; and two intercept flight tests. Complete system design and performance documentation will also be delivered to the participating nations. Beyond the demonstrated hardware and design documentation, a number of advanced technologies will be matured for harvesting under the Proof of Concept, including: 360-degree Patriot Missile Segment Enhancement engagement solution logic and algorithms; X-band exciter design and performance data; improved launcher electronics and near-vertical launch design/performance data; power and cooling technologies for rotating phased-array radars; techniques and algorithms for track fusion from multi-spectral (UHF and X-band) sensors; advanced prognostic and diagnostics logistics; and design for reduced personnel requirements.

Because the U.S. Army has chosen to integrate all U.S. Army air and missile defense components via the Integrated Air and Missile Defense Battle Command System (IBCS), the MEADS command and control element, the Battle Management, Command, Control Communications, Computers, and Intelligence (BMC4I), in development for the MEADS program, is now a redundant capability for the United States. Although the United States no longer needs to field a MEADS-unique command and control element, the MEADS partner nations, Germany and Italy, still desire the BMC4I. The U.S. Army and OSD Cost Assessment and Program Evalua-

tion (CAPE) assessed whether the MEADS BMC4I could meet the U.S. Army IAMD requirements in August 2007 and found: "Use of the MEADS Tactical Operating Center (TOC) as an interim solution for IAMD would . . . require significant investment in 'U.S. only' software and hardware that could not be carried over to the final IAMD configuration." Subsequent independent reviews of MEADS in 2008 and 2009 supported the position that the MEADS BMC4I should not be procured and that the United States should continue the move to integration of the range of disparate sensor and shooter elements within the Army IAMD/IBCS architecture.

The total U.S. cost commitment for the Design and Development (D & D) program is $2.3B, of which the United States has funded $1.5B to date; the remaining U.S. Memorandum of Understanding (MOU) commitment, which will enable the Proof of Concept, is $804M. It is important to recognize the costs that the United States will avoid by its decision not to produce MEADS and to agree with its partners to limit the development to the Proof of Concept. The OSD CAPE estimates that an additional $1.16B of U.S. funding would be required to complete the D&D effort as originally contemplated. By restructuring to a Proof of Concept, the United States avoids this additional cost, which is on top of the U.S. MOU funding commitment of $804M already programmed for MEADS. Moreover, an additional $800M would be required to complete U.S.-unique national certification, operational testing requirements, and integration into U.S. air and missile defense architectures. Finally, roughly $1.2B that was programmed in the Future Years Defense Program (FYDP) for MEADS procurement is no longer required.

Given the high costs, the United States cannot afford to purchase MEADS and make required upgrades to Patriot concurrently over the next two decades. The costs of completing MEADS development and procuring MEADS to replace Patriot eventually would also require a significant concurrent investment in Patriot sustainment and modernization over the next two decades. Together, these costs are unaffordable in the current DoD budget environment.

Mr. BROOKS. In a recent Washington Times article, it was reported that the Russian government is interested in acquiring our "hit-to-kill" technology. In your opinion, what would be the impact of Russia acquiring "hit-to-kill" technology?

In the event of such a technology transfer, are you confidant that measures could be taken to ensure the technology is not proliferated to foreign powers who may use it to defeat our current and future missile defense systems?

Dr. ROBERTS. There has been no discussion of sharing hit-to-kill technology with Russia, and there is no intention to do so.

We are keenly aware of the risks of sharing sensitive U.S. technology and information. To safeguard this information, we are working to conclude a Defense Technology Cooperation (DTC) Agreement with Russia. This agreement would provide the legal framework for undertaking cooperative efforts, and would contain annexes that address the sharing of Controlled Unclassified Information (CUI) as well as Classified Information. But this on its own would not constitute authorization to provide Classified Information to Russia. Any exchange of Classified Information with Russia would still be subject to an extensive review process under U.S. National Disclosure Policy, as is the case with other partners.

Mr. BROOKS. Last month, Director of National Intelligence Clapper testified that Iran's long range ballistic missile program was more advanced than previously estimated—with Iran perhaps having a missile capable of reaching the USA in the 2015 to 2020 timeframe. The Administration's decision in 2009 to adopt a Phased Adaptive Approach (PAA) for missile defense in Europe was based, in part, on an assessment that Iran's short- and medium-range ballistic missiles were developing more rapidly than previously projected, while the longer-range missile threat had been slower to develop than previously estimated.

What trends in Iranian ballistic missile developments have you seen over the last two years that might change this assessment? Has the threat changed and to what degree?

General O'REILLY. [The information referred to is classified and is retained in the subcommittee files].

Mr. BROOKS. As discussed in the Ballistic Missile Defense Review, a hedging strategy would provide a robust defense of the U.S. homeland in case the Iranian long-range threat comes earlier or the later models of the SM–3 interceptor experience technical development problems. When Dr. Miller testified before the subcommittee last month, he discussed ongoing work within the Department to complete its hedging strategy.

At what point do you believe a decision would be necessary if a hedge is to be employed and what criteria would be used to make such a decision? Does the FY12 budget request fund continued development and test of the two-stage ground-based

interceptor (GBI)? Are other hedging options beyond the two-stage GBI being considered? Can you describe those options and the timeframes in which they may be available?

General O'REILLY. Today, 30 operational GBIs protect the United States against a medium ICBM raid size launched from current regional threats. The FY12 budget funds continued development and test of the two-stage GBI as we prepare for an intercept mission in 2014. Completing GMD missile field 2 with 8 spare silos and placing missile field 1 in a mode where its 6 additional silos can be hardened and made operational within two years are two examples of developing greater homeland defense capability if a credible ICBM threat emerges from Iran before 2020.

As Dr. Roberts stated in his testimony, the Defense Department is reviewing what more needs to be done to ensure the hedge posture is sufficient to deal with the possible threat developments in the time frame before 2020 and what are the intelligence data required to employ a hedge. And the Department is committed to bringing that work forward as soon as the Secretary is satisfied that it is complete.

Mr. BROOKS. With MEADS no longer planned as the replacement for Patriot in the 2017 timeframe, what actions and investments are required by the Army, and when, to operate and sustain the legacy Patriot system beyond 2017? Are any of these funded in the FY12 request? Does the Army see a need to improve or upgrade Patriot's capabilities? If so, what is the estimated cost of such improvements or upgrades as compared to the cost to complete MEADS development and production?

General O'REILLY. The Army currently has program support and budgetary responsibility for the MEADS program. I defer to Army's senior leadership on questions pertaining to costs associated with this program.

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General O'REILLY. The US government has not offered to share 'hit-to-kill' technology with the Russian Federation. More broadly, in accordance with U.S. National Disclosure Policy, decisions to disclose U.S. classified military information to a foreign government or international organization are based on a determination that the recipient has both the capability and intent to protect the information equivalent to that of the U.S. Government.

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Mr. BROOKS. As discussed in the Ballistic Missile Defense Review, a hedging strategy would provide a robust defense of the U.S. homeland in case the Iranian long-range threat comes earlier or the later models of the SM–3 interceptor experience technical development problems. When Dr. Miller testified before the subcommittee last month, he discussed ongoing work within the Department to complete its hedging strategy.

At what point do you believe a decision would be necessary if a hedge is to be employed and what criteria would be used to make such a decision? Does the FY12 budget request fund continued development and test of the two-stage ground-based interceptor (GBI)? Are other hedging options beyond the two-stage GBI being considered? Can you describe those options and the timeframes in which they may be available?

Mr. AHERN. The current ballistic missile defense posture for the United States protects against intercontinental ballistic missiles (ICBMs) that might be deployed by States like North Korea or Iran. Improvements to the existing sensors and software, in addition to the procurement of additional ground-based interceptors (GBIs) and radars, will continue this protection against future ICBM threats from States like North Korea and Iran. The timing and criteria for decisions on hedge strategy changes will depend on development of the threat. Should a significant departure from the current hedge strategy be required, the details and timing would be briefed to Congress in a classified setting.

Today, 30 operational GBIs protect the United States against a medium ICBM raid size launched from current regional threats. The FY12 budget funds will continue development and test of the two-stage GBI as we prepare for an intercept mission in 2014. Completing GMD missile field 2 with 8 spare silos and placing missile field 1 in a mode where its 6 additional silos can be hardened and made operational within two years are two examples of developing greater homeland defense capability should a credible ICBM threat emerges from Iran before 2020.

The Administration is considering additional steps to strengthen the U.S. hedge posture. We are studying threat developments, future capabilities, and deployment options for a range of scenarios. In addition, we are evaluating the deployment timelines associated with fielding additional capabilities, in order to enable rapid responses to triggering events. Our objective is to enable aggregate improvements that increase probability of kill, raid capacity, and battle space. This work involves a significant amount of classified information from both the Intelligence Community and the system developers. We have committed to brief the Committee on the results of this work in a classified setting once it is complete.

Mr. BROOKS. With MEADS no longer planned as the replacement for Patriot in the 2017 timeframe, what actions and investments are required by the Army, and when, to operate and sustain the legacy Patriot system beyond 2017? Are any of these funded in the FY12 request? Does the Army see a need to improve or upgrade Patriot's capabilities? If so, what is the estimated cost of such improvements or upgrades as compared to the cost to complete MEADS development and production?

Mr. AHERN. The U.S. Army can achieve some of the capabilities that MEADS would provide using existing assets. Because air and missile defense (AMD) systems are relatively few in number and high in demand, the U.S. AMD portfolio is based on the concept of integrating and fielding a diverse set of elements to provide expanded coverage against a wide range of threats.

The Army FY12 budget includes funding for fact-of-life upgrades to Patriot units necessary to keep these systems viable and up-to-date. The Army is preparing for their 2011 Capability Portfolio Review (CPR) on Air and Missile Defense which will be conducted over the summer. The Army CPR and subsequent Office of the Secretary of Defense-level Program Issue team reviews will update and validate 2010 assessments on Ballistic Missile Defense, Counter-Rockets, Artillery, and Mortars, and Air Defense that led to program budget decisions, including the decision to restructure development and not procure MEADS. The summer reviews will also evaluate the impacts of the FY12 budget decisions and investigate ways to mitigate any risks or long-term capability gaps created by the MEADS decision, to include evaluation of MEADS sensor and launcher elements. In addition, the Missile Defense Agency (MDA) in conjunction with the Army is performing a military utility assessment of MEADS elements (as well as other combinations of Army missile defense capabilities) to evaluate the contribution of MEADS elements to the nation's missile defense capabilities. Finally, the reviews will assess other (non-Army or MDA) sensor development efforts within the Department where potential for leveraging the MEADS radars exists. One outcome will be a DoD-level business case evaluation to determine if harvested elements from MEADS provide cost-effective capability enhancements in air surveillance and/or air and missile defense when integrated into existing architectures. This business case evaluation will include an assessment of the benefits of a competitive environment for mobile, ground-based air and missile capability.

Mr. BROOKS. This committee has heard testimony that MEADS technology will be "harvested" and "put on the shelf" for integration into a future system or systems. What technologies can be "harvested" from MEADS for a future system(s)?

How much will it cost to integrate these harvested technologies into a future system? Has a cost-benefit analysis been performed to show that it save money and increase capability to harvest technology for integration into Patriot or other systems versus completing and fielding MEADS? If so, can you provide that analysis to the Committee? If not, why not? And what did you base your decision to not procure MEADS upon?

Mr. AHERN. By pursuing the MEADS Proof of Concept, the U.S. gets the opportunity to harvest technologies for future, and potentially near-term integration into air and missile defense systems. Our Partners have told us that they intend to continue with the program. By honoring our MEADS commitment, we will be supporting our Partners in building their air and missile defense capacity, which will allow NATO to contribute more air and missile defense capabilities when needed, easing the strain on our forces and freeing resources for other priorities. Conversely, limiting the remaining funding for MEADS would have serious negative effects on U.S. and Partner air and missile defense capability.

Details on the full scope of the Proof of Concept effort are being worked, but already we can say the Proof of Concept will mature advanced air and missile defense technologies related to the delivery of: 2 lightweight, near-vertical launchers, 2 rotating, 360-degree X-band fire control radars, 3 mobile tactical operations centers, 1 prototype 360-degree UHF-band surveillance radar, verification ground testing, and 2 intercept flight tests with the next-generation PAC–3 Missile Segment Enhancement missile. Complete system design and performance documentation will also be delivered to the Nations. Beyond the demonstrated hardware and design documentation, a number of advanced technologies will be matured for harvesting under the Proof of Concept. These include: 360-degree PATRIOT Missile Segment Enhancement engagement solution logic and algorithms; X-band exciter design and performance data; improved launcher electronics and near-vertical launch design/performance data; power and cooling technologies for rotating phased-array radars; techniques and algorithms for track fusion from multi-spectral (UHF and X-band) sensors; advanced prognostic and diagnostics logistics; and design for reduced personnel requirements.

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The successful August 2010 MEADS Critical Design Review that the MEADS rotating sensor elements are highly capable and that the mature designs represent a significant advance in current capabilities. Based on the maturity of MEADS system development efforts and completion of the envisioned Proof of Concept efforts, the Department is confident MEADS components will provide attractive options with respect to fielding future DoD air and missile defense capabilities if demonstration and testing is completed in the Proof of Concept. Those MEADS elements of most interest to the U.S., the Fire Control and Surveillance Radars, and the lightweight launcher, are very near the end of the non-recurring engineering and development phase and ready for demonstration (Proof of Concept) that would easily lead to low rate initial production, additional testing, and fielding if a requirement is generated from assessments described above.

MEADS is designed to provide continuous, medium-range 360-degree air and missile defense coverage. This capability, a Joint Staff validated requirement, is nonexistent in the U.S.'s land-based air defense portfolio. The Department will seek innovative ways to leverage the components developed under the MEADS program to meet this requirement, without having to pay to replace the proven Patriot system

battalion-for-battalion. Such replacement would be cost prohibitive and given advances in the Army's Integrated Battle Command System, with its ability to integrate disparate components like radars, launchers, and interceptors from a variety of vendors, it is no longer necessary. We can now plan to modernize and augment our capabilities with next-generation elements as needed. The MEADS high-performance X-band fire control and UHF-band long-range surveillance and lightweight launcher with Patriot Advanced Capability–3 Missile Segment Enhancement (PAC–3 MSE) missiles could provide that added capability at a significantly reduced cost, adding continuous 360-degree coverage and longer-range intercepts, while requiring reduced strategic lift, less personnel, and more robust logistics.

In summary, there are four reasons why the U.S. believes refocusing the MEADS program to a proof of concept and forgoing full production was the right choice for all the MEADS partners: 1) As described above, funding MEADS up to the agreed Memorandum of Understanding (MoU) cost ceiling enables partners to harvest technology from large investment to date; 2) the U.S cannot afford to purchase MEADS and make required upgrades to Patriot concurrently over the next two decades. The costs of completing MEADS development and procuring MEADS to eventually replace Patriot would also require a significant concurrent investment in Patriot sustainment and modernization over the next two decades. Together, these costs are unaffordable; 3) as described above, the U.S. can achieve some of the capabilities that MEADS provides using existing assets; 4) the U.S. remains concerned with the overall track record of the program and the risks of moving to full scale production of a MEADS system.

Mr. BROOKS. In a recent Washington Times article, it was reported that the Russian government is interested in acquiring our "hit-to-kill" technology. In your opinion, what would be the impact of Russia acquiring "hit-to-kill" technology?

In the event of such a technology transfer, are you confident that measures could be taken to ensure the technology is not proliferated to foreign powers who may use it to defeat our current and future missile defense systems?

Mr. AHERN. The US government has not offered to share 'hit-to-kill' technology with the Russian Federation. More broadly, in accordance with U.S. National Disclosure Policy, decisions to disclose U.S. classified military information to a foreign government or international organization are based on a determination that the recipient has both the capability and intent to protect the information equivalent to that of the U.S. Government.

Mr. BROOKS. Last month, Director of National Intelligence Clapper testified that Iran's long range ballistic missile program was more advanced than previously estimated—with Iran perhaps having a missile capable of reaching the USA in the 2015 to 2020 timeframe. The Administration's decision in 2009 to adopt a Phased Adaptive Approach (PAA) for missile defense in Europe was based, in part, on an assessment that Iran's short- and medium-range ballistic missiles were developing more rapidly than previously projected, while the longer-range missile threat had been slower to develop than previously estimated.

What trends in Iranian ballistic missile developments have you seen over the last two years that might change this assessment? Has the threat changed and to what degree?

Dr. GILMORE. My knowledge of recent trends in Iranian ballistic missile developments is consistent with Director Clapper's assessment. However, threat estimates and trends are best addressed by the intelligence communities.

Mr. BROOKS. As discussed in the Ballistic Missile Defense Review, a hedging strategy would provide a robust defense of the U.S. homeland in case the Iranian long-range threat comes earlier or the later models of the SM–3 interceptor experience technical development problems. When Dr. Miller testified before the subcommittee last month, he discussed ongoing work within the Department to complete its hedging strategy.

At what point do you believe a decision would be necessary if a hedge is to be employed and what criteria would be used to make such a decision? Does the FY12 budget request fund continued development and test of the two-stage ground-based interceptor (GBI)? Are other hedging options beyond the two-stage GBI being considered? Can you describe those options and the timeframes in which they may be available?

Dr. GILMORE. The Integrated Master Test Plan (IMTP) that General O'Reilly and I recently approved includes two intercept flight tests using the two-stage Ground-Based Interceptor (GBI), the first against an Intermediate Range Ballistic Missile (IRBM) target and the second against an Intercontinental Ballistic Missile (ICBM) target.

Each flight test will demonstrate the ability of the two-stage GBI to boost the Exo-atmospheric Kill Vehicle (EKV) to a position from which it can successfully complete an intercept of the IRBM or ICBM. Once the EKV is separated from the two-stage GBI, final intercept and kill performance is independent of the GBI used (two-stage or three-stage) and is demonstrated on every Ground-based Midcourse Defense flight test. Each time a three-stage GBI is tested, essentially all of the hardware used in the two-stage GBI is also tested; only the software to support the two-stage fly out performance is different. Including operational testing, the IMTP contains 9 more tests of three-stage GBIs through Fiscal Year 2021.

Hedging options to be pursued and associated decision criteria are determined by the Secretary of Defense and by offices other than DOT&E.

Mr. BROOKS. With MEADS no longer planned as the replacement for Patriot in the 2017 timeframe, what actions and investments are required by the Army, and when, to operate and sustain the legacy Patriot system beyond 2017? Are any of these funded in the FY12 request? Does the Army see a need to improve or upgrade Patriot's capabilities? If so, what is the estimated cost of such improvements or upgrades as compared to the cost to complete MEADS development and production?

Dr. GILMORE. The Joint Chiefs of Staff are conducting a Joint Capabilities Mix Study to determine future requirements for air and missile defense systems, including the Patriot system. Based upon the study's recommendations and other considerations, the Department's senior leadership will determine how best to proceed. Questions regarding program costs are best directed to the USD(AT&L) and the Director, CAPE.

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How much will it cost to integrate these harvested technologies into a future system? Has a cost-benefit analysis been performed to show that it save money and increase capability to harvest technology for integration into Patriot or other systems versus completing and fielding MEADS? If so, can you provide that analysis to the Committee? If not, why not? And what did you base your decision to not procure MEADS upon?

Dr. GILMORE. Please refer to my answer above. Once the required capabilities are determined, it should be possible to develop a cost estimate for developing and/or integrating them. Questions regarding program costs and whether or not a cost-benefit analysis has been conducted are best directed to the USD(AT&L). DOT&E has played no role in decisions made regarding MEADS.

Mr. BROOKS. In a recent Washington Times article, it was reported that the Russian government is interested in acquiring our "hit-to-kill" technology. In your opinion, what would be the impact of Russia acquiring "hit-to-kill" technology?

In the event of such a technology transfer, are you confidant that measures could be taken to ensure the technology is not proliferated to foreign powers who may use it to defeat our current and future missile defense systems?

Dr. GILMORE. Our "hit-to-kill" technologies are being developed by the United States only as a defensive capability to counter offensive ballistic missiles. Russian interest in this technology would be of concern if that interest was rooted in acquiring a counter-countermeasure capability to defeat our kill vehicles in flight.

Issues of non-proliferation are best addressed by the OUSD(Policy).