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HEARING
ON
NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2009
AND
OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS
BEFORE THE
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED TENTH CONGRESS
SECOND SESSION

STRATEGIC FORCES SUBCOMMITTEE HEARING
ON
**BUDGET REQUEST FOR MISSILE
DEFENSE PROGRAMS**

HEARING HELD
APRIL 17, 2008



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THURSDAY, APRIL 17, 2008

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[There were no Documents submitted.]

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[There were no Questions submitted during the hearing.]

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FISCAL YEAR 2009 NATIONAL DEFENSE AUTHORIZATION ACT—BUDGET REQUEST FOR MISSILE DEFENSE PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
STRATEGIC FORCES SUBCOMMITTEE,
Washington, DC, Thursday, April 17, 2008.

The subcommittee met, pursuant to call, at 1:00 p.m., in room 2212, Rayburn House Office Building, Hon. Ellen O. Tauscher (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ELLEN O. TAUSCHER, A REPRESENTATIVE FROM CALIFORNIA, CHAIRMAN, STRATEGIC FORCES SUBCOMMITTEE

Ms. TAUSCHER. The committee will come to order.

The Strategic Forces Subcommittee meets this afternoon to receive testimony on the fiscal year (FY) 2009 budget request for missile defense programs.

Our witnesses today include the Honorable John Young, the Under Secretary of Defense for Acquisition, Technology, and Logistics (AT&L); the Honorable James McQueary, the Pentagon Director of Operational Test and Evaluation (DOT&E); Lieutenant General Henry Obering, the Director of the Missile Defense Agency (MDA); and Lieutenant General Kevin Campbell, the Commanding General, Joint Functional Component Command (JFCC) for Integrated Missile Defense.

Gentlemen, thank you very much for your service, and I thank you for being here today.

General Obering, I understand that you will be departing as Director of the Missile Defense Agency this fall. Thank you very, very much for your service, and the committee wishes you the best of luck in your future pursuits.

Mr. FRANKS. Hear, hear.

Ms. TAUSCHER. This hearing gives us a chance to touch on a number of key issues and questions.

One of my greatest concerns is how to integrate the Missile Defense Agency into the normal defense planning process. Our Armed Services Committee voiced this concern last summer when the former Vice Chairman of the Joint Chiefs of Staff (JCS) released a memo that proposed moving MDA back under the oversight of the Joint Requirements Oversight Council, JROC, the senior Department of Defense (DOD) body responsible for validating military requirements.

This was a clear signal that real concerns exist among senior military leadership about current departmental practices with re-

gard to missile defense. To date, however, there has been no action on the Vice Chief's recommendations.

Secretary Young, I understand the Department established a new body last year, the Missile Defense Executive Board, or MDEB, to ensure that MDA's plans are better integrated with DOD efforts. As the Chair of MDEB, I am interested in hearing from you about the activities of the board and specifically how MDEB is addressing the concerns raised by JROC last year.

I continue to believe that we should focus greater attention on countering short- and medium-range missile threats. I was disturbed earlier this year when MDA revealed their fiscal year 2009 budget request, that it planned to delay deployment of the Terminal High Altitude Area Defense (THAAD) Fire Units 3 and 4 for supposedly budgetary reasons. I, and other members of the subcommittee, including Mr. Reyes, thought this was a bad idea and raised our concerns with senior DOD officials. The Department has since reversed course and put THAAD Fire Units 3 and 4 back in their original schedule.

I welcome this decision, but I continue to worry that resources within MDA are not properly focused on countering short- and medium-range threats. The 2007 Joint Capabilities Mix Study II (JCM II), sponsored by U.S. Strategic Command (USSTRATCOM), concluded that combatant commanders require, at a minimum, twice as many Standard Missile-3 (SM-3) and THAAD interceptors than are currently planned. Over the next 5 years, DOD plans to spend over \$46 billion on missile defense. Given this large investment, I believe the Department has ample resources to ensure that our combatant commanders have a sufficient interceptor inventory to meet their minimum warfighting requirements.

In the area of missile defense testing, MDA had some significant results last year, including a successful intercept with the Ground-based Midcourse Defense (GMD) system and several successful THAAD and Aegis Ballistic Missile Defense (BMD) intercept tests. As an advocate of rigorous testing, I congratulate the teams who engineered these successes.

I also understand the lack of affordable and reliable targets is slowing down MDA's overall testing program. Secretary Young and General Obering, I believe the Department and MDA must place a higher priority on fixing MDA's targets program, and today I would like to hear your plans for doing that.

We also need to improve testing of the Ground-based Midcourse Defense, or GMD, system. For the second year in a row, the Director of Operational Testing and Evaluation has said, and I quote, "GMD flight testing to date is not sufficient to provide a high level of statistical confidence in its limited capabilities."

Dr. McQueary, it is critical that this subcommittee hear your thoughts on what needs to be done from a testing perspective to improve our confidence in the GMD system.

Finally, let me say a few brief words regarding the proposed missile defense sites in Poland and the Czech Republic. I welcome NATO's acknowledgement of the contribution that the long-range interceptor site could make to align security. Last year, I urged the Administration to work to this end. I was initially told by Administration officials that it was too hard to get NATO onboard. So I am

encouraged to see that the Administration changed course and made cooperation with NATO a cornerstone of its missile defense proposal.

I believe NATO and the United States must do more to address existing short- and medium-range threats to Europe's Southern flank. I would like to hear the Department's plans in this area.

With that, I would like to thank the witnesses once more for your testimony here today, and I look forward to hearing it.

We are about to have votes in the next half-hour. We would have two votes that would take approximately a half-hour. What we would like to do is go to my great friend and Ranking Member, Mr. Everett, for any comments he may have and then try to move to your testimony. And if you can limit it the best you can, and then we can take the votes.

That is a 15-minute bell. That means we go in in 15 minutes, so we have probably at least 25 minutes before we would have to leave.

So, Mr. Everett, as Ranking Member, I am very happy to turn the floor over to you. And thank you so much, sir, for your cooperation and service.

STATEMENT OF HON. TERRY EVERETT, A REPRESENTATIVE FROM ALABAMA, RANKING MEMBER, STRATEGIC FORCES SUBCOMMITTEE

Mr. EVERETT. I thank the chairman.

And I also welcome our witnesses here today. Each of you have served our Nation with great distinction, and I thank you for the service.

Mr. Young, welcome on your first appearance before the subcommittee.

Dr. McQueary and Lieutenant General Campbell, welcome back.

Lastly, Lieutenant General Obering, this may be your last appearance before this subcommittee. Thank you for your strong leadership, and congratulations on your retirement. Maybe you can join me down home in sweet LA, lower Alabama.

As we begin our discussion on our Nation's missile defense posture and budget requests, I want to note the tremendous progress that the Administration has made since 2002. In six short years, a real missile defense shield has been developed, tested, and fielded to protect the American people and our deployed forces.

Back in July 2006, when North Korea test fired seven missiles, we had a limited operational capability to turn to. By the end of 2008, our Nation will have 30 ground-based interceptors (GBIs), 18 Aegis missile defense ships, 13 Patriot platoons, 5 radar tracking systems, and THAAD introduction. When combined, these systems have a nearly 80 percent test successful record.

This year's budget request increases the robustness of these defenses and extends them to our allies.

On that note, I wish to commend our chairman. She is a leader in Congress on missile defense who works diligently in the public and behind the scenes. In the past year, she has led a bipartisan delegation to Europe and Asia to discuss missile defense cooperation with our key allies.

Most notably has been her emphasis in working closely with NATO. The results speak for themselves. Earlier this month, NATO heads of state released a strong statement of support for missile defense and a U.S.-European proposal. In a few weeks, we anticipate the Czech Republic and U.S. to sign a missile defense agreement.

The threat has not diminished. Yesterday, this subcommittee received a classified briefing on ballistic missile threats. The bottom line is that short-, medium-, and long-range threats continue to grow, and missile proliferation is a real concern to the intelligence community (IC). Now is not the time to slow down the development and fielding of missile defense elements critical to our Nation's defense.

I would like to highlight a few areas that I am interested in hearing about today.

Under Secretary Young, what are your thoughts on the missile defense portfolio reflected in the budget request? Are we meeting combatant commanders' requirements? Are we striking the right balance between near-term capabilities and posturing a position out there for the future? Can you also provide your views on how the Department manages the transition and transfer of missile defense assets from MDA to the services?

General Campbell, last year you testified that we needed double the quantities of THAAD and SM-3 interceptors. Is that still the case? Do you plan to look to warfighter needs for other missile defense systems?

Both the chairman and I share a concern about missile defense, force structure, and inventory requirements, and how they are identified, and how they are reflected in the budget request.

Doctor, I am interested in your assessment of the missile defense test program. Your annual report credits MDA for increasing the operational realism of their test. Also, as you examine Air Defense Artillery's (ADA) test plans for the next few years, what specific changes to these plans would you recommend, particularly in GMD?

Like the chairman, I am also concerned about targets. I worry about the amount of risk being carried in the target program. And without sufficient funding, it is not requested in the budget, I do not want targets to be the pacing system for missile defense testing. How can Congress help?

General Obering, I have made several comments here and would welcome your thoughts in these areas, including your assessments of MDA's test plans and target programs. Additionally, please provide us with an update on the Airborne Laser (ABL) and the Kinetic Energy Interceptor (KEI). Both programs have key tests planned for 2009. I am interested in your thoughts on what happens after those tests. Can you also update us on the MDA's various space programs?

On a final note, I want to congratulate our witnesses and their home organizations and industry partners for their efforts in successfully intercepting a disabled National Reconnaissance Office (NRO) satellite in February. This was a challenging mission. You did the job well and safeguarded the public from potential harm.

Gentlemen, thank you again for being with us today.

Chairman, thank you, as always, for calling these important hearings. And thank you for your friendship and your work that you have yielded to this committee.

I yield back my time.

Ms. TAUSCHER. I thank the distinguished ranking member for his partnership and his hard work, and I am flattered by his recognition.

Secretary Young, this is your first appearance before the subcommittee. We are very happy to see you. If you could summarize your testimony.

Each of you has given us, by the way, very comprehensive testimony, well in time for us to review it before the meeting.

So if you could summarize as best you can, Secretary Young. And the floor is yours.

STATEMENT OF HON. JOHN J. YOUNG, JR., UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS, DEPARTMENT OF DEFENSE

Secretary YOUNG. Chairwoman Tauscher, Ranking Member Everett, members of the subcommittee, thank you for the opportunity to appear before you today. I will be very brief in order to move quickly to the panel's questions.

As a member of the Senate staff, I reviewed the programs of the Missile Defense Agency. Then, as now, oversight and funding of missile defense programs was a concern of the Congress. I believe that the Defense Department can improve its oversight of these programs.

Just before I became Under Secretary of Defense for Acquisition, Technology, and Logistics, Secretary England approved the creation of a Missile Defense Executive Board, or MDEB, as you noted. This board has met six times during my tenure. I intend to use this board to provide all stakeholders with visibility into Missile Defense Agency programs and a voice in the Agency's plan.

I also expect to review the execution of missile defense programs, as required, while also continuing to conduct quarterly reviews. I believe these processes will ensure that there is appropriate, independent DOD oversight of missile defense programs.

The board recently reviewed business management rules for the Missile Defense Agency. The rules seek to outline roles and procedures guiding program management, testing, and budgeting for missile defense programs. These business rules, combined with existing congressional direction, will guide the development of the Department's fiscal year 2010 budget for MDA.

These discussions should not obscure our shared goal of delivering missile defense capability for the Nation. I believe that General Obering and the MDA team have made very good progress in this area. Recent successful testing has proven that MDA and our industry partners have met the daunting technical challenge of hitting missiles with missiles. MDA's coordination with the military services is critical to delivering fielded capability.

And I can tell you, I believe these processes are also working well. Indeed, as the Navy Acquisition Executive, I worked with MDA to take the steps that transferred the *USS Lake Erie* to MDA—the ship that made the satellite shot—and to drive procure-

ment of missiles for sea-based missile defense capability. The combatant commanders, services, and MDA must now all work together on delivering and deploying systems to achieve greater operational capability, while enhancing these systems to address evolution of the threat.

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

[The prepared statement of Secretary Young can be found in the Appendix on page 41.]

Ms. TAUSCHER. Thank you, Secretary Young.

Dr. McQueary, welcome back.

**STATEMENT OF DR. CHARLES E. MCQUEARY, DIRECTOR,
OPERATIONAL TEST AND EVALUATION, OFFICE OF THE SEC-
RETARY OF DEFENSE**

Dr. MCQUEARY. Thank you very much, Madam Chairman. I will be very brief.

In my written report that I have already provided the committee, which you have touched upon, I mentioned five things: Provide my current assessment of the capability of the ballistic missile defense system (BMDS); second, I discuss the factor that limited my ability to be able to provide a thorough assessment, as required by the fiscal year 2006 National Defense Authorization Act (NDAA); third, I discuss the sufficiency and adequacy of the BMDS test evaluation program during the last year; and, fourth, I provide a review of the implementation of the DOT&E recommendations made to the Missile Defense Agency; and, finally, I describe how the Missile Defense Agency is a pathfinder in the implementation for the section 231 language in the fiscal year 2007 report.

I will just touch upon the one that you specifically mentioned in your letter to me, if I may, and that deals specifically with the recommendations.

In 2005, my organization made some 26 recommendations to MDA. Four of those recommendations are still open; the others have been closed. There were 15 new recommendations made in 2006. And six of these recommendations still remain open, with the others being closed. And finally, there are five new recommendations made in 2007. These were all open at that time.

And from this, I would conclude that we are seeing a reduction in recommendations, and I think that is one measure of the progress that is being made.

So, with your permission, I will simply terminate my comments at that point. Thank you.

[The prepared statement of Dr. McQueary can be found in the Appendix on page 49.]

Ms. TAUSCHER. Thank you, Dr. McQueary.

General Obering, once again, thank you very much for your service and to your family for their significant support of your hard work and sacrifice.

And to the men and women that work with you and for you, the committee wants to extend their gracious thanks, too, for their hard work. We know that you are very much at the point of many very significant scientific and research and development (R&D) en-

deavors, and we want to congratulate all of those people for their hard work.

And the floor is yours.

**STATEMENT OF LT. GEN. HENRY A. OBERING III, USAF,
DIRECTOR, MISSILE DEFENSE AGENCY**

General OBERING. Thank you very much, Madam Chairman.

Good afternoon, as well, to the distinguished members of the committee and Congressman Everett, as well. I want to thank the committee for the tremendous support that we have received from you.

As the Director of the Missile Defense Agency, as you pointed out, it is my role to do the development, testing and initial fielding of these capabilities.

For 2009, we are requesting \$9.3 billion. I want to point out that approximately 75 percent of that is for near-term capabilities, with the remainder budgeted for future capabilities that we think are prudent to be able to address an uncertain future.

To lay the foundation for our budget request, I would like to point out, first of all, the criticality. There were over 120 foreign missile launches last year around the world, non-U.S. and non-Western missile launches. Two, in particular, the countries of North Korea and Iran, their activities continue to be very troubling in what we see as their pace of missile development and testing. And, of course, especially with Iran, it re-emphasizes why it is important that we achieve the long-range defenses coupled with shorter-range NATO defenses in our European theater.

But to give you a very, very brief and short background for the request, let me just say that 2007 was the best year we have ever had in missile defense. And it caps a lot of hard effort by thousands of men and women around the country. We have now employed more than about two dozen interceptors between Alaska and California. We have modified 17 ships, Aegis ships, 12 of which are capable of launching the sea-based interceptors, the remainder for the long-range tracking as well. We also have deployed 25 of the sea-based interceptors. And so we have gotten a tremendous leg up on the deployment of this capability.

One other thing I want to point out, as you said, is our increasingly complex and realistic test program. With the 10 of 10 successful intercepts in 2007, we are now up to a record of 34 of 42 successful hit-to-kill intercepts since 2001. We have not had a major system failure in our flight test program now in over three years.

And, of course, two things highlighted: One was the success of our allied partner Japan and their flight test off the coast of Hawaii in December, of which we and the Japanese are extremely proud. And while it was not a test of our missile defense capability by any stretch, we were able to modify our sea-based element to do the satellite shoot-down in February, with just six weeks notice to be able to accomplish that.

Now, all that I have outlined, of course, is the foundation that we need to continue to build for the future. And I will address a lot of that in response to the Q&As, but I just wanted to re-emphasize the fact that I really believe that the authorities that have been given to the Missile Defense Agency over these past several

years are why we were able to move this capability out so very quickly. The nontraditional defense acquisition approach that we have employed is at the foundation, and at the bottom of this capability.

Some of the oversight boards that you mentioned, the Missile Defense Executive Board, for example, that was our idea, basically, to come up with this, to enhance the oversight by the Department, because we did believe that our maturity was getting to the point where we needed to be able to rapidly integrate with the other systems in the Department. And I believe that that was the reason why we proposed that, and the Deputy Secretary accepted that.

But in closing, I just want to say thank you again for the great support. And I am looking forward to your questions.

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

Ms. TAUSCHER. Thank you very much, sir.

I also see that General O'Reilly is behind you. We also want to congratulate him on his nomination to become the Director of MDA, and we are assuming that everything will sail through appropriately. Probably not the right analogy for an Army man, but you get my drift. And we want to acknowledge your leadership too, General O'Reilly.

General Campbell, thank you, and welcome back. We also want to thank you for the great service of the men and women in your command and hope that you will pass that on to them. And your comprehensive testimony was very, very good to read. If you could summarize, the floor is yours.

STATEMENT OF LT. GEN. KEVIN T. CAMPBELL, USA, COMMANDING GENERAL, U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/ARMY FORCES STRATEGIC COMMAND AND JOINT FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE

General CAMPBELL. Thank you, Madam Chairman, Congressman Everett, distinguished panel members. Thank you, and thank you on behalf of the men and women who operate the system. I am here as a user's advocate and representative.

As that advocate, I can report to you that the warfighters' involvement in the development process is growing. I outlined the Warfighter Involvement Program to you last year during testimony. That continues to mature.

Congressman Everett, to answer your question about seeking additional requirements from commanders for the future development of the system, we do that. That is part of our mission, day-in and day-out, to work with all of the commanders across the globe to determine what is needed next, near term and in the far term.

As far as testing, the operators remain fully engaged in testing. We have operators that sit at the consoles. We develop test objectives. We are deeply involved with MDA when it comes to the testing program.

The flight tests attract most of the attention, but there are ground tests behind those flight tests that we are deeply involved with, and we gain many insights into how to use that system. And

I think we save a lot of money on the ground tests before we ever get to flight tests to correct problems that we find.

The operational commanders clearly recognize the threat that we face today when it comes to the short-range and medium-range missiles. We can't meet all of the combatant commanders' needs today, but we remain in close coordination with the Missile Defense Agency to ensure that the investment portfolio addresses the needs for the near term, as well as the mid to far term. I think that we must maintain a balanced investment portfolio to stay ahead of the threat.

Although we understand the inventories of the short- and medium-range missiles are significant, we can't lose sight of the qualitative improvements nations are making in their ballistic missile capability. Our investments for both the near and mid term must be informed by those qualitative investments.

Madam Chairman, fellow panel members, thank you again for the opportunity. I look forward to your questions.

[The prepared statement of General Campbell can be found in the Appendix on page 91.]

Ms. TAUSCHER. Thank you very much, General Campbell.

Secretary Young, I understand that there are a number of factors contributing to the August 2007 memo by Admiral Giambastiani that I mentioned in my opening statement. These factors included a need to provide the JROC with a louder voice in validating missile defense requirements, ensuring that MDA's activities are fully integrated with overall DOD air and missile defense efforts, and provide the military services a proper voice in planning and programming for the transition and transfer of capabilities from MDA to the services.

Do you believe that the concerns raised by the JROC were legitimate? First question.

Second, you talked a little bit in your comments about the MDEB, and you have had six meetings, and that you are moving forward on these business plans, best business practices, I would assume part of it. So you have a plan to address what these concerns were.

What are the metrics you are going to have in place to determine the effectiveness of the MDEB? And what kind of transparency can we have on that?

Secretary YOUNG. I think the metrics will be the degree of support for the MDEB members, who are very senior representatives of the services, and their sense that we go through the programs, agree that the current state of execution of the programs is good, reach agreement with MDA on a proper recommendation for the fiscal year 2010 that will address, I think, some of the issues you raise, in terms of Joint Capability Mix Study, and can recommend that to the Department as a whole, and complete and reasonably prioritized package of recommendations and budget.

So, you know, those are not less measurable—you know, it is not cost and schedule performance, although I would agree that those are metrics I intend to look at in MDEB for an individual program. So I want to look at a detailed level and status of program execution at a higher level. We need to build a quality budget that we can defend very well for you. Those are some top-tier metrics.

Ms. TAUSCHER. General Obering mentioned that, from his side of it, he was pushing to have a body like MDEB created. JROC was pulling from their side to have a body like MDEB created. So, now we have MDEB.

Do you think that MDEB is the final product of what we need to have all of these different pieces put together? Have you nailed it on the first try?

I guess our concern is that we were pushing too, from our own side, saying, "Let's have something." But we don't have transparency to MDEB, technically. Obviously, we have you sitting in front of us right now. I am concerned that we do not have that kind of transparency, that we do not understand how things are going. How do we measure that in the six meetings that you have had?

So you, if you could just give us a little bit more, kind of sense for where you think it is going.

Secretary YOUNG. Well, I hope I can allay your concerns. For me, there will not be transparency issues between the Department and the Congress on the things. You know, as we worked through the MDEB to produce the President's budget for 2010, I won't be able to talk about that budget until it is the President's budget.

Ms. TAUSCHER. That is right.

Secretary YOUNG. But for the other issues like program execution, whatever is briefed to the MDEB in terms of the status of programs and their cost performance, I would be prepared for that to be briefed to the Congress also.

Ms. TAUSCHER. Great.

Secretary YOUNG. And these business rules are being reviewed in the Department and presented to the Deputy Secretary. As soon as those business rules are done, we will provide those to the Congress.

So other than the things that the President has to approve, I believe you will have visibility, just as when I make Defense Acquisition Board (DAB) decisions and issue Acquisition Decision Memorandums, the Congress becomes aware of how we decided to execute programs. So I intend to give you that visibility on an appropriate timeline.

Ms. TAUSCHER. We appreciate that very, very much.

Mr. Everett.

Mr. EVERETT. Thank you, Madam Chairwoman.

General Obering, over the past year, there has been a lot of concerns about deploying the GMD system, and that it may not be the most effective way of defending Europe.

Can you explain why the decision was made to propose placing 10 ground-based interceptors in Poland versus other system solutions, such as why can't we use THAAD and the SM-3 missile to protect Europe in our early warning radar from medium- and intermediate-range missile threats? What are the costs and implications of the Navy or the Army's force structure requirements if an SM-3 or THAAD alternative were proposed?

General OBERING. Yes, sir, I would be happy to.

We saw the developments in Iran as very disturbing. While we have capabilities to address missiles like the Shahab-3 or the Shahab-3 variants that we have seen fly—and those are the SM-3s that we have fielded today; Patriot Advanced Capability 3

(PAC-3) also has capability against some components of the shorter-range missile force—we did not have long-range coverage. And we knew that they were developing longer and longer-range weapons. We have seen that just in the past year.

So we looked at, what were the alternatives? We evaluated the GMD, the GBIs, we evaluated the THAAD; we evaluated the SM-3 Block 1B, which is the missile that would be available in about the 2010 time frame. And of all of those, there is not a capability against the longer-range weapons greater than 4,000 kilometers, 3,000 to 4,000 kilometers, other than the GBI, anywhere near the time frame. The closest thing that comes to that would be the SM-3 Block 2A, which is a 21-inch, sea-based missile that will not be available until 2015 or beyond.

So we looked at all of those, and that is how we decided on the GBI.

The reason we decided upon the 10 is really relating to the earlier analysis. We looked at what we thought the Iranians would be capable of producing in the time frame, 2015, in that time frame, 2016, around there. And 10 was a reasonable number to provide persistent 24-hour, 7-day-a-week coverage for our European partners, our deployed forces, allies, and friends.

And I asked often, what if you are wrong? What if they develop twice that many, or whatever? Our answer is that that would provide the initial protection, and then if we need to surge that for the future, that is when we would bring the sea-based, 21-inch missile, because it would be available by then, in the latter part of the decade.

So that was our concept. We looked at the cost implications. And if I could back up, THAAD does not have a capability against the longer-range weapons to be able to—of any substantive, definite area footprint.

We looked at the cost implications. And, also, the GBIs were the most cost-effective solution to that. If we were to go strictly with the sea-based, 21-inch as the overall solution, we would require at least 4 ship stations to provide the same definite area of coverage, with about 2 to 3 ships per station. That was more costly, and it also was something the Navy is not very interested in doing, tying up that level of ship force structure to be able to do that mission.

So that was the rationale behind what we did.

Ms. TAUSCHER. Mr. Everett, I am happy to go to you as soon as we are finished these votes. Why don't we take a 20-minute break. We will do these two votes.

The witnesses, you have about a 20-minute break. We will be back as quickly as we can. We will go back to Mr. Everett. We are going to suspend for 20 minutes.

[Recess.]

Ms. TAUSCHER. The subcommittee will come back into order. Our colleagues will come back from votes.

I wanted to return the time to Mr. Everett so he could continue his questioning.

Mr. Everett.

Mr. EVERETT. Thank you, Madam Chairman.

Dr. McQueary, the test that we had in September 2007 occurred too late to be incorporated into the 2007 DOT&E report. And my

question would be, if it were included, what difference would that make in the report?

Dr. MCQUEARY. Sir, we have gone back and looked at our report, and we did touch upon that flight as a part of our evaluation. The thing that had not been done is a complete evaluation of all of the data.

So, subsequent to having looked at where we are now, our conclusions would not be any different than what they were in the report at the time in which we had limited, but enough quick-look information, to get an indication as to how well the system test had performed.

Mr. EVERETT. And, finally, the chairman expressed, and I have expressed our—we are concerned about targets.

Dr. MCQUEARY. Yes, sir.

Mr. EVERETT. And, General Obering, I am concerned because I think that the current plan is going to be a little late. And I would not like to see the targeting situation impel or set the pace for our test. Is there anything we can do to speed this up? How could Congress help?

General OBERING. Yes, sir. Well, first of all, if I could just provide a little context. We have had 2 target failures in about 42 flight tests, and 4 target failures, complete failures, where we could not get the objectives of the test, overall, including some of our radar characterization flights. And some of those have occurred more recently as we have gotten to the bottom, so to speak, of the barrel of some of the legacy targets.

Now, that is the context. Now, the activities that have occurred, first of all, we felt that we had a requirements process that was much too variable. In other words, we were trying to get each class, or type of target, to do too much based on the various program inputs. And that requirement variability was driving up the cost and driving some of the delays in the target program.

And, frankly, we had some inexperience in terms of management on the Government side, and we also had some inexperience in terms of management on the contractor's side.

What we have done to address this now is that, first of all, we have instituted a very disciplined requirements process that is controlled by a third party, the Engineering Chief. And, in addition, we changed the management on the Government side, and the contractor has changed the management on the contractor's side.

And we may need help from the committee in the 2009 request with respect to some funding support in the targets program that we can supply you for the record.

But that is what we think will stabilize this process.

I often get asked, though, why don't we have three or four or five targets that we could just pull off the shelf and go fire? Well, what would be useful is to have an extra target as we were processing through preparing for flight. For that matter, it is good to have an extra interceptor, and we are planning to do that, to institute that approach.

It doesn't do us much good, though, to have four or five targets on the shelf and, if we get a failure in flight, just pull another one out and launch. Because we have to understand what failed in that

target before we go launch another one. And usually that is not the driving factor, therefore, in our test program.

Mr. EVERETT. Doctor, I see you are agreeing with that.

Dr. MCQUEARY. Yes, sir, I do. I think it is very important on highly complex situations, such as MDA, to have an understanding of what the information provided by testing does for you. So it takes time to analyze the data. And particularly, if you have of a flight failure, things don't always turn out to be factually what they might appear initially. So it is important to study the information carefully.

Mr. EVERETT. Secretary Young, do you have any comments on that?

Secretary YOUNG. I certainly agree. I think General Obering will tell you, the cost of his testing is fairly expensive. So to have those backups so that you could potentially hold a test date, and all of the test planning and test personnel support that is in place to conduct that test in a window, is critical. And it is probably going to be worth the investment in the additional hardware, the backup hardware.

Mr. EVERETT. General Campbell, does this cause us problems in being able to proceed in buying these other missiles that we need, the additional missiles like THAAD, and GBI, and—

General CAMPBELL. I don't really get the context of your question. The target issue?

Mr. EVERETT. I guess. Does it hurt our warfighter that we may not get the testing done as quickly as we want to do the testing?

General CAMPBELL. That would be problematic. Of course, we like to see the test and ensure that they happen on schedule so that we can do the military utility assessment to alert the combatant commanders as to the capability of the system they are about to receive. So keeping tests on schedule, critical from the user's perspective.

Mr. EVERETT. Madam Chairman, thank you.

Ms. TAUSCHER. I thank the ranking member.

I will go to Mr. Larsen from Washington for five minutes.

Mr. LARSEN. Thank you, Madam Chair.

Dr. McQueary, just a little bit more on the testing and the targeting. I noted in your testimony, page 5, you discussed that during the 18-month period concluding at the end of 2007, MDA suffered 4 target failures during 20 flight tests.

Can you just give the committee some consideration of what the impact of target failures have on your ability to evaluate the test program? And what that might mean, you know, for your testing programs, you know, a year out or two years out?

Dr. MCQUEARY. Well, certainly if you have a failure and there is a need to repeat the test as a result of that failure that occurred, then that obviously slows things down in terms of gathering information.

A more important issue for us, though, is the development of the modeling and simulation; and we may get to that in later discussion. Because we really feel strongly that if we have high-fidelity modeling simulation, which is being worked on in detail by MDA, that that will permit us to make much better progress in evaluating, and providing to the country, effective measures.

Mr. LARSEN. Well, then, let's get to that now. Why don't you discuss for us the modeling simulation, models and—

Dr. MCQUEARY. All right. If I may, just to put this into context, we frequently hear, we get asked the question, "Well, what is the effectiveness and suitability of where we are right now, in which we have limited information?" And if I may just put it into context, if we are dealing with statistics—and this is a lot more complicated issue than just a simple mathematical equation associated with statistics—but if you are looking at it purely from a statistical standpoint, if you want to prove that you have a 90 percent probability of having a mission success with a confidence level of 80 percent—in other words, you never get to 100 percent—you need to run 21 identical tests, and they need to be successful in order to prove that.

So very quickly, you can conclude with a system as complicated as MDA is, which has a huge battle space in which to operate and many very scenarios with targets and so forth, that it would be very difficult to ever afford to do testing to the level that one would need to do in order to gain a statistical level of confidence what is there.

However, if we develop high-quality models and simulation, and use the testing that is done to prove that those models and simulation actually do represent the way the system performs, then we can use the computer, if you will, to do many, many, many runs. So you can explore battle space after battle space and varied parameters, such as missile performance and engagement scenarios and so forth, in a given area.

And so that is why we keep saying it is so important to modeling and simulation as an adjunct to the test program.

Mr. LARSEN. Do we need a certain number of live tests in order to do that—and a certain number and a certain kind of live tests in order to do what you ask?

Dr. MCQUEARY. You certainly do need the live tests. I am not an advocate of saying, "Why don't we just prove all this out by modeling and simulation; when we get to the real situation, we will have confidence it will work." That is not what I am saying at all.

Mr. LARSEN. But certain numbers and certain kinds?

Dr. MCQUEARY. Certain numbers and certain kinds. And we would certainly expect, as the models and simulation are proven to be effective in the way that they operate, we would expect to continue as we have been doing, working with MDA, to help structure a test that would help gather information that would be useful in proving to a high degree of confidence that the models in simulation are representative of the true system.

Mr. LARSEN. General Obering.

General OBERING. If I may, yes, sir. I totally agree with Dr. McQueary. In fact, we have laid out, in part of our pretest reviews, I request—and the DOT&E representatives that do our reviews also request—what are the models and simulations that will be validated, or what are the anchor points that we are going to demonstrate this test, as it relates to the objectives. And so, he is exactly right.

And, also, to your point, we have models and sims that we use today. We use them to predict fly-outs. That is how we did the sat-

elite shoot-down, frankly, was a model that showed what our success rate would be. So, we have confidence in that. But we have to make sure we go through this very exhaustive verification and validation and accreditation process.

So what we have done is we have laid out which tests we are going to run, to anchor the models that we need, at what time frame, and issue a final report. And that should be done in the September–October time frame of 2009. So we should have a final accreditation report to be able to provide to DOT&E for their concurrence.

Mr. LARSEN. And that will lay out the testing protocols and timelines beyond 2009?

General OBERING. What that will do is say, by that time, we should have certified and accredited models and sims that we can then use not only with our blessing, so to speak, but the community's blessing that that is representative of the entire performance of the system.

Mr. LARSEN. The entire performance of the system.

General OBERING. Yeah, that includes all components—Aegis, THAAD, et cetera.

Mr. LARSEN. Thank you, Madam Chair.

Ms. TAUSCHER. Thank you, Mr. Larsen.

Mr. Franks from Arizona for five minutes.

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

General Obering, I know that it has already happened many times that you have been acknowledged here before this committee for your great service to the country; and I can only say to you that we are all very grateful that you decided to come by our way. Future generations will, I believe, have better lives and better security because you did what you did with yours.

General Obering, I guess I wanted to explore two key statements that you and General Campbell made in your opening remarks. You indicated that you are using a 75–25 approach to balance investments in near-term elements versus far-term elements. General Campbell stated that as ballistic missiles obviously are growing in quantity, they are also growing qualitatively, and that that consideration needs to inform any development efforts that we make.

Are we too focused on providing terminal-phase defense at the expense of boost-phase? Are we risking getting behind the eight-ball, here a little bit, on multiple warheads or countermeasures?

General OBERING. Sir, if I may, I believe that the 25 and 75 percent mix is appropriate for now, because this is about what you would expect when you had a long-term research and development program that was much the other way for so many years. As we start producing the capability that the warfighters want, you are going to see this swing toward the near-term capabilities. So that is probably appropriate.

If you look out over the entire Future Years Defense Program (FYDP), those numbers become more like 60 percent near term, 40 percent longer term; as you would also expect, that we want to make sure we maintain these long-term capabilities.

But to reinforce what General Campbell said, we cannot, we cannot sit on our laurels, so to speak, now. Because we can handle—

for example, we could handle what we would anticipate in terms of countermeasures from countries like Iran and North Korea today, but we cannot handle much more complex ones. And in order to do that, we are going to have to have these more advanced capabilities—things like birth-to-death tracking with a space tracking and surveillance system; multiple kill capability for each interceptor, as represented by our Multiple Kill Vehicle (MKV) program.

And, as you say, the ultimate in trying to defeat a countermeasure is to shoot it down in the boost phase before it has the ability to do any of that. And we have the two programs, KEI and ABL, to do that.

I do share the concern that we don't get so overly focused on the near term that we forget the long term. In fact, if we had done that in the mid-1990's, we would not have had a system to turn on in 2006 when the North Koreans were doing their thing, because that was considered a long-range program at that time.

Mr. FRANKS. I aim this at Secretary Young and General Obering.

The President's budget requests \$10 million for a Space Test Bed. And could you describe to us what would be accomplished with the \$10 million request and, if we had the money to build a system, what capability that we would try to aim for?

And, you know, this is in the backdrop, obviously, of concern that China may be making some advancements that we need to be prepared for.

General OBERING. Well, first of all, let me explain what it is not. It is not a return to Brilliant Pebbles. It is not a return to a massive space-based constellation. We don't need that today because of what we have done terrestrially, in terms of our advancements.

But, we do believe it is prudent that, as we look to the future, we have some modicum of a space-based layer to the far future, because we are a space-faring Nation. And being able to have that, we think would be very useful.

Now, the specific instance of the \$10 million I am asking for this year is precisely to basically inform the debate about whether we do that or not. We have big questions about this. For example, going to space is very expensive, with respect to weight, so can we get lightweight components? And where are we in that state-of-the-art to be able to do that? The command and control is a vital management; the communications architecture, what would that look like for something like this?

And what I mean by modest, I am talking about just a layer that would be able to cover potential emerging threats that we cannot cover today. And it would give us the flexibility to be able to do that in the future without continuing to populate the world with silos, or with fixed radars, or land-based, or even sea-faring radars, for that matter. It is the more cost-effective way in the long term.

But we need to inform that debate. So \$10 million is an extremely modest amount to try to explore the experimentation of that. But it is not a space-based interceptor program of itself. We are not advocating for that, at this point.

Mr. FRANKS. I understand.

Well, General, the Multiple Kill Vehicle program is a pretty logical means of creating a volume kill capability against countermeasures and, obviously, increasing the probability of a kill with-

out the enhanced discrimination that is always a challenge technologically. And I think it is a critical element.

Right now, it consists of a—the Multiple Kill Vehicle consists of a dual-path approach with two contractors pursuing really, very different technical designs.

What is the benefit and affordability of the dual-path approach? And what are the technical and operational risks associated with MKV?

And I guess that is my last question here.

General OBERING. Okay, sir. Well, first of all, having the ability to destroy more than one credible object when you go into the future; and in the 2015-and-beyond time frame is going to be very, very important because of the countermeasures, decoys, what I just talked about.

This capability is going to be not only important for our land-based interceptors, but also our sea-based interceptors, because we know that these capabilities are not exclusive to just the long-range missiles. They can be deployed even on short-range missiles. So we need that capability.

I thought it would be prudent to pursue an acquisition strategy in which we had an ongoing type of a competition, to call it that, between two suppliers. And if you look at the population and the force structure that we may be looking at for missile defense in the future, it would support that type of an approach.

When we issued the—and I will be very candid—when we issued the MKV demonstration contract to Lockheed Martin originally, the first one, we saw a change in behavior on the part of Raytheon, that was producing our kill vehicles already on the GBI program, immediately. So there is this benefit in being able to have an alternative as we move through the Government. So we think it is a very prudent thing to do.

We did this before on our missile, on the GBI. We had two versions, if you remember, of our ground-based mid-course interceptor. And thank God we did, because we ended up blowing up one of the plants in California that set us back on the one version, and we were allowed to go to the other one.

So those are the kinds of things, if we have those alternatives, we think are very important.

Mr. FRANKS. Thank you again, sir.

Thank you, Madam Chair.

Secretary YOUNG. May I add a comment to that, if you don't mind?

Ms. TAUSCHER. Please.

Secretary YOUNG. As a matter of policy, I have asked across the Department that we do competitive prototyping at these early stages where we have substantial risk, challenging requirements. Because we have frequently found, it has been noted by other people, including the Government Accountability Office (GAO), that we go into those later stages of development with immature technology, and we find ourselves with problems in terms of cost and schedule.

So, I believe it is critical for all the reasons General Obering cited, and really hope the Congress can work with us to support that. It is going to give us a better chance, ironically, to finish de-

delivering the product with more confidence, in shorter amounts of time, and I think actually for less cost, because we did the right work up front, in a competitive environment, and at a point in time where we were spending at lower rates, but learning the technical lessons we can't afford to learn in the final design stages.

Ms. TAUSCHER. Thank you, Mr. Franks.

Mr. Spratt of South Carolina, five minutes.

Mr. SPRATT. General Obering, you have been a pleasure to work with, and you have every right to feel proud of what you have accomplished during your years there.

It appears that the GBI is the most mature, or the closest to fruition, of the systems that are under your umbrella. What does it have to do to prove its operation—or still have to do to prove its operational capability (OC)?

General OBERING. Well, sir, I would say that probably the SM-3 1A is probably the most mature, but the GBI is certainly right there behind it.

First of all, we have flown the operational configuration of the GBI in two flight tests now, in going back to September 2006, and then we flew in September 2007. We also had nonintercept flights earlier than that, as well. And it has performed very well.

In the latest test that we did in September, we flew a threat-representative target—albeit it did not have countermeasures, but I will address that in a second—across an operational radar in California, and we intercepted it with an operationally configured interceptor that was launched by soldiers from Colorado Springs, using the operational fire control software and hardware, and we used—

Mr. SPRATT. Does this incorporate the X-Band radar too?

General OBERING. It did not incorporate the X-Band radar, but it did incorporate the operational ultra high frequency (UHF) radar at Beale. So it was a valid, what we call, Engagement Sequence Group that is part of our Block 6 approach—the old Block 6 approach.

What we intend to do for the next flight test, later this summer, is to incorporate those countermeasures. Now, we have flown against countermeasures in the past with a prototype of this kill vehicle, and it performed very well. What we want to do is evaluate this kill vehicle in its full operation and configuration against those countermeasures. And we are going to do that this summer, as I said, as well as the next test.

In addition, we are going to incorporate the forward-based X-Band radar in our next flight test in an X-Band radar and a UHF radar combination for that. So we think that goes a long way to giving us more and more confidence that we do have even more capability.

As I say, I am comfortable and I am confident that we have the operational capability today that we need in terms of limited fashion. But to be able to show this end to end, we think we will be able to do in the next two flight tests.

Mr. SPRATT. Looking at your requested buy levels, 10 here, 10 there—Fort Greely, 10; Vandenberg, 10—it is not the kind of massive full structure that you would expect of a system. Basically, it

appears that the system's primary mission is to protect against unauthorized and rogue strikes, fairly limited-sized strikes.

If we had an attack by a major power, without naming names, we would still have a hard time fending off such an attack, would we not?

General OBERING. Yes, sir. We have not fielded a capability against a massive attack. That is true.

Mr. SPRATT. You mention the SM-3. Is the SM-3 a competitor with, or complementary to the GBI? And in the final force structure, will these two be complementary systems?

General OBERING. Yes, sir, very much so. In fact, the SM-3 is addressing the short- to medium-range missile threat, whereas the GBIs address the long-range, the intermediate, and the ICBM threats. So, they complement each other in an integrated fashion.

Mr. SPRATT. How important is the, what I still call Space-Based Infrared System (SBIRS)-Low, but the Space Missile Tracking System (SMTS) to the full success of those systems?

General OBERING. We believe, as I mentioned in my earlier statements, that that is extremely important as we move into the future. Because what that allows us to do, there are things other than countermeasures that an enemy can do in that midcourse region. And typically, that is the region that can be uncovered by ground-based radars for long periods of time.

If we had a space-based Space Tracking and Surveillance System (STSS) that provides the same precision of track that we get from a ground-based sensor, we could close those gaps. So we could provide what we call birth-to-death tracking. And that would help address that type of gap in our system today.

Mr. SPRATT. For boost-phase intercept, do we still have a face-off between ABL and KEI? Are they complementary or competitive systems?

General OBERING. Yes, sir. In the boost phase, they would be competitive. And that is why we wanted to have alternatives. In fact, we created the KEI program as an alternative to the ABL in the boost phase at a Defense Science Board recommendation from 2002. And so—

Mr. SPRATT. But eventually would you choose between the two, do you think?

General OBERING. Yes, sir, we would for the boost phase. Now, that doesn't mean that if KEI, for example, is successful, that it would not have utility in other areas of the architecture, such as a mobile midcourse capability.

But, clearly, for the boost phase, we would have the—for example, the ABL, if it is successful and if it is operationally affordable—which we will go through a period to determine that—that would be the boost-phase defense of choice because it has more flexibility against, not just long-range, but as well as short-range threats.

Mr. SPRATT. Thank you, sir.

Ms. TAUSCHER. Mr. Reyes, do you have any questions before we go to a second round?

Mr. REYES. Sure, just a couple of them.

General Obering and General Campbell, good to see you all.

Secretary YOUNG. Nice to see you.

Mr. REYES. Gentlemen, thanks for being here.

I have a question for both Secretary Young and General Obering.

Have any foreign nations expressed interest in purchasing THAAD fire units through foreign military sales?

Secretary YOUNG. We certainly have some nations that have expressed interest in understanding THAAD and possibly even buying it. We are working our way through those details. General Obering could probably add more to that. We are not at a final stage of any of those discussions.

General OBERING. We have at least one country that I will not name here, but we do have at least one country that is fairly well down that path, in terms of requesting the authority to buy a THAAD capability.

And I personally believe that, for many countries, as we go around the globe, THAAD is a very attractive solution for nations that have most of their population in the littoral region, for example, in terms of their protection, nations that are interested more in a combination of terminal defense between a THAAD and a Patriot type of capability.

So, I do believe it is going to be very attractive internationally.

Mr. REYES. Will the potential international sales of THAAD help reduce the overall cost of the system?

General OBERING. Yes, sir. We would hope that that would be the case, yes, sir.

Mr. REYES. And, well, are there any technology security risks or issues like that associated with the potential sale of THAAD to foreign nations?

General OBERING. We are very serious about that, sir. We go through a very exhaustive process on, number one, what technologies we feel comfortable in being able to make available to our allies and, also, what other steps we can take to make sure that any technology that we do not feel comfortable are not being able to be exploited by other countries. So we have a very exhaustive process that we go through for that.

Secretary YOUNG. In fact, you know, this is true beyond missile defense. And we actually would like to engage in a discussion with the Congress on ways we can have the customers help support engineering and those features where we think they don't need as much capability as we have, or we need to protect our technology, so they don't come at the expense of the U.S. taxpayer or U.S. capability. And there ought to be ways to do that.

And it has become more important to have some of those funds, as it costs more to engineer those features or customize them for an ally who wants to buy equipment.

Mr. REYES. If sales do not occur, what would be the implications for keeping the THAAD production line hot, as it were?

General OBERING. I am not sure I understand your question, sir, but we intend to keep the THAAD production line ongoing. I mean, just because we are going to deliver the first four fire units—and I want to go back again to my opening statement. I am responsible for development and initial fielding. The Joint Staff (JS), in working through the MDEB process that we have talked about, the force structure determinations will be made by the Department, and then we will respond to those force structure determinations.

So, right now, the Joint Capabilities Mix Study that was accomplished by STRATCOM and the Joint Staff that was recently approved, by the way, by the JROC, asks for us to double the production of THAAD and then double the production of the Aegis SM-3. And we intend to do that in our program that we bring forward in the next budget.

So, we envision that there will be many more units than just the first four THAAD fire units.

Mr. REYES. Well, that brings up another question: So when would the decision to proceed with number five be made?

General OBERING. That would be part of the 2010 budget submission through the Department.

Mr. REYES. Okay. Thank you.

Thank you, Madam Chair.

Ms. TAUSCHER. You are welcome, Mr. Reyes.

We are going to start a second round of questions.

While the Department of Defense has done some studies, such as the Joint Capabilities Mix Study II (JCM II), it is not clear that the Department has done a comprehensive analysis, or has a process in place to determine future missile defense force structure requirements. Instead, things are being done in an *ad hoc* manner.

Secretary Young and General Campbell, how does DOD plan to ascertain a desired force structure for each missile defense element that will meet combatant command needs? Who will be involved in making procurement decisions?

And, finally, how will DOD balance near-term and mid-term combatant requirements to get more assets into the field against development plans for longer-term needs? And who is making these decisions—MDA, the services, the Office of the Secretary of Defense (OSD), or perhaps now MDEB?

Secretary YOUNG. Maybe I could start and let General Campbell add to it.

The MDEB has subcommittees, and one of those subcommittees is the Operational Forces Committee. And it is chaired by the Vice Chairman of the Joint Chiefs. So it will be, I think, the primary venue for discussion and trades of what capability we are buying and whether that is the right mix of capability.

Those discussions will have to be informed by MDA. MDA manages—General Obering's team manages their business as a portfolio, and they can help best illuminate trades between buying short-range, medium-range, or intermediate-range, buying naval versus land-based.

So I think we will do a better job because that Operational Forces Committee also will have STRATCOM participation. Aside from that, STRATCOM has established better linkages with MDA, as the primary force advocate for missile defense.

You are right to ask, and I think we will have to tell you, these are going to have to mature as processes. But I believe these are the processes that will help define the warfighting requirement and let the MDEB work to see how MDA addresses those warfighting requirements and makes trades within its budget, because we will always be resource-constrained, but prioritize the use of MDA's budget to get what the operational forces demand.

Ms. TAUSCHER. Now I am really confused. Why is it MDA money to buy for General Campbell? Why would it be MDA's portfolio? MDA is an R&D organization. Why would it be not money that is ported over to General Campbell?

Secretary YOUNG. Two questions. Analytically is what I was suggesting to you is, if you wanted to look at a trade between GBIs or THAADs versus SM-3s, you need some of the analytical capability at MDA. We can independently validate it with, probably, work by program analysis in Bio Assessment and Evaluation, BA&E. But we need those technical views to help inform the requirements in terms of those levels of trade.

Financially, to date, as you probably understand, MDA has used R&D funds to buy and field the initial assets to make the urgent capability. And we are on a path, I believe, to continue that process until we can get agreed transition points for the services to take over. But even at some of those transition points, because MDA needs to maintain configuration control of complex systems, we are considering an option that would budget for the procurement of systems with Defense-wide money by the systems and sustain the systems with Defense-wide money, that money being transferred to the services in any year of execution to maintain those systems.

The alternative model that has the services budget puts missile defense in a competition with lots of other assets. And the leadership of the Department has not been prepared to make that choice until we get much more mature with missile defense systems.

So the initial path—and this is one of those rule sets that has gone through the MDEB—is we are going to, in the near term, buy systems through Defense-wide funds—the Congress has asked us to buy things that we are procuring with procurement funds, so we are going to look at that in the fiscal year 2010 budget—but continue to buy with Defense-wide until we can make a more confident handover to the services.

Ms. TAUSCHER. General Campbell.

General CAMPBELL. Yes, ma'am. We have a number of processes. The first one is the Warfighter Involvement Program, which, again, is maturing. It is a way to shape what MDA does on behalf of the warfighter, and then we adjust our force structure accordingly.

We have had the Joint Capabilities Mix Study. We do the military utility assessment that shapes the activities within the Missile Defense Agency. We are doing a study on the deployment of the forward-based X-Band radars that will shape the force structure and how we employ those assets.

We have a transition and transfer process that is maturing within the Department on how we hand those systems over, so we had better understand what does it take to run that system, in terms of manpower as well as money, resources for operational and support cost. And we play in the global force management process within the Department on figuring out how many assets need to go into which combatant command and if there are, in fact, shortfalls.

Ms. TAUSCHER. Secretary Young, I think that we have, kind of, hit on the head of the problem that I perceived and that I think many members perceived for a long time, as to why we cannot integrate missile defense into the force structure across the platforms of, specifically, the Army and the Navy and others.

It is partly because they do not see the money, and it is very difficult. I think everybody is saying, "Yes, I would like one of them. I would like one of them." If you have to go find the money to acquire one of them, they do not and they have not, and that is an unsustainable situation for us.

So, I think what we would like is to, kind of, peel the onion on that a little bit further with you over the next couple of weeks, because we do not see that this is getting resolved quickly enough, and not enough is being done to drive these systems down into the services and to create enough demand inside the services for the capability, and for a sense that they can buy them without finding new money.

Secretary YOUNG. I think you are right, and I think I can make a lot of difference.

Ms. TAUSCHER. I hate it when I am right.

Secretary YOUNG. But there are also some other angles to that discussion. Services will ask for significant amounts of equipment when they think Defense-wide funds will pay for it. Even when they take over—and this is not unique to missile defense—in some cases, they will have demands for aircraft or ships or other things, and bring budgets forward to OSD that underfund what might be needed, to see if there is OSD money or additional money or—

Ms. TAUSCHER. That is how the last 25 C-17s have been procured, by the way.

Secretary YOUNG. So you understand the issue very well.

These rules have not been blessed by Secretary England yet, but I do believe they are consistent with his thinking. We need to deliver a base set of missile defense capability, and to make sure it is not constantly part of these budget churn processes and fund them out of Defense-wide. I think that is not—from my view, that may not be the final model. That model will evolve to something that is more like what you said with the services.

In some undetermined interim period, this is going to get the minimum base set of capabilities and is going to give the whole of the Department—I hope we will realize some of your hopes through the MDEB. Every service can see, and the vice chairman is part of it. We will make sure that we are driven to buy the most urgent sets of operational capability and will get them in the field.

Could I add one comment?

Ms. TAUSCHER. Sure.

Secretary YOUNG. I am sure General Obering would want to add this comment and would do better than I would.

In that process, they do have a plan to bring the services into almost transition-like teams. But as they move to the more mature stages of production and fielding, and have service people on those teams and have those service people begin to take the leadership role even though they will be executing some other work, particularly the sustainment with Defense-wide funds, there will be service people to address some of those transition processes you are thinking of.

Ms. TAUSCHER. Thank you.

General.

General OBERING. Yes, ma'am. We think we have hit a very good management model that Secretary Young just reflected on.

If you will, our critical portion of this is that, as we mature and deliver these capabilities and as the services begin the operations and maintenance (O&M) of these, it is critically important to maintain the integrability of these so that we do not have THAAD and Aegis, and the GMD becoming disconnected in a disintegrated layer system just like, if I may point out as an example, the ship that shot the satellite down.

It could not have done that by itself. It could not have done it by itself. We had to open that ship up and integrate off-board sensor data into that weapons system. The same thing is true between land-based radars and ship-based interceptors and land-based— or ship-based radars and land-based interceptors across the board.

So that is why we think this umbrella in the service, in the MDA partnership, is a great model for being able to accomplish that.

Ms. TAUSCHER. Thank you.

Mr. Everett.

Mr. EVERETT. Thank you, Chairwoman.

General Obering, I would like to go a little bit where Mr. Spratt was a few minutes ago in ABL. As I understand it, the down-select will be done in 2009 if both of these tests are taken out. If ABL is successful, the decision will not be made simply on the fact that it was successful, but also on the affordability, basing, and that sort of stuff.

How will that impact if KEI is not successful? Do you still make that decision on affordability and basing?

General OBERING. Yes, sir. Right now, ABL is on a track, and it is meeting all of its defined knowledge points, to be able to shoot a missile down in 2009. KEI is also on track. It had a couple of setbacks this year on the second stage, but it is also on track to fly that very high-acceleration booster in 2009.

If both are successful, then what I would anticipate is that we are going to take ABL in a transition period to determine whether or not—we will take all of the data, the lessons learned from all of our very robust testing, and we will determine what the second aircraft or the second tail number would look like, and would it be made operationally affordable as part of this understanding.

That period will be some number of years. KEI, in the meantime, could afford an emergency boost-phase defense, if you want to call it that, during that time frame.

If they are both successful, I would anticipate we will go through this transition period on ABL. KEI would probably end up becoming our midcourse mobile capability for the future. That is why I think that we would continue that program as well.

Mr. EVERETT. You would go down that road of having GBI where it is, and then also having KEI as a midcourse?

General OBERING. Yes, sir, because I think it will feather nicely. As we will be coming off the GMD program, we will be able to ramp up the KEI program.

Mr. EVERETT. Let me ask you one other question, please. What if they both fail? Do we have a plan B?

General OBERING. The likelihood of both of them failing is not very high, but if that happens—

Mr. EVERETT. Well, let's put it another way. What if they do not fail but, because of basing, which is a problem, and affordability's

being a problem, what do we do? I mean, if we have to say, “No, we cannot use them because of basing, affordability, or failure,” where do we go then?

General OBERING. I understand. There are other options that we could pursue. You know, we like to think of ourselves in terms of crawling, walking, and running. One of the areas that we have where we are crawling, barely, at is an air launch capability of an air-carried interceptor to be able to accomplish a boost-phase mission. It would not be optimum in terms of range or in terms of coverage, but it would give us a capability that could be considered as an alternative.

Then, frankly, other than ABL-directed energy, KEI, or air, the only other place you can go is space.

Mr. EVERETT. The F-16 or F-whatever naval jet, could that be based on a destroyer?

General OBERING. Oh, yes, sir. We, actually, conducted a test in the desert this past year that demonstrated the viability of being able to do that—being able to shoot a boosting missile with an air-launched interceptor. But we have a long, long way to go there.

Mr. EVERETT. Thank you, Chairwoman.

Ms. TAUSCHER. Mr. Larsen for five minutes.

Mr. LARSEN. Thank you, Madam Chair.

I have a couple of questions on this same issue, but I will come back to that. I have just a follow-up to the last set of questions I had about the models and simulations.

As I understand it, General, you said in September 2009 you will have models and simulations ready to be validated, or you expect that they will be?

General OBERING. That would be the validation. They would be validated at that point.

Mr. LARSEN. They would be validated.

Dr. McQueary, is that your understanding as well?

Dr. MCQUEARY. Yes. Yes.

Mr. LARSEN. That is your understanding as well.

Dr. MCQUEARY. This is newly developed information, and so we have not had a chance to go into great detail and make sure we are in full agreement as to how this would be accomplished. Yes, this is a commitment that MDA has made, and it is certainly consistent with what we would like to see be done.

Mr. LARSEN. So let me ask you this then: Do you test and evaluate whether or not you will be able to test and evaluate the models and simulations?

Dr. MCQUEARY. We are a part of the team that looks at that information, an integral part of it.

Mr. LARSEN. Should we look to you, then, to determine whether or not that 2009 date is going to be able to get hit?

Dr. MCQUEARY. Well, I believe it is MDA’s responsibility to execute the program; you should look to them. But certainly, if you ask us how are they doing, we will tell you as part of our responsibility.

Mr. LARSEN. Yes. Good.

Back to this relationship between ABL, KEI, and GBI—Airborne Laser, Kinetic Energy Interceptor, and Ground-Based Interceptor, for those who do not live and breathe it—the down-select is 2009.

It does not necessarily mean immediate operation. You are going to have an X period of years where you are going to look at affordability.

If the down-select goes to ABL, do you envision which service, as well, that goes to?

General OBERING. Yes, sir. That would be the Air Force. When the program was set up originally, the Air Force had the program. They established the infrastructure, so to speak, to be able to support the program, and they would be the obvious lead service for this.

Mr. LARSEN. Right.

Now, Dr. McQueary, in your testimony on page three, you said that, "Although Ground-based Midcourse Defense is still developmental in nature, it demonstrated, to some degree, many of the functions required for system effectiveness."

Dr. MCQUEARY. Right.

Mr. LARSEN. I do not have a question for you on the system effectiveness. I have more of a question for you on the fact that you call it "developmental in nature." We are hearing as well, though, that we are already considering a follow-on to the Ground-based Midcourse Defense, which could be the KEI, a mobile KEI.

How should we—and this is for General Obering, as well. I mean, how should we look at that?

If it is developmental in nature, it has the functions required for system effectiveness. If the down-select is to ABL, we are already looking at a follow-on to something that we really have not used physically, although it has the functions required for system effectiveness.

How should I look at that, as an authorizer who is trying to make decisions on where dollars go?

Dr. MCQUEARY. Maybe I could let General Obering describe how they put the program together, and then I could amplify on it from the standpoint of test evaluation.

Mr. LARSEN. If there is time left, yes, or even if there is not time left.

Madam Chairman, I hope there is time.

Ms. TAUSCHER. There is time.

Mr. LARSEN. Yes.

General OBERING. Are you talking about the Airborne Laser program?

Mr. LARSEN. No. Down-selecting—and we picked ABL, but KEI is still sitting out there to be used as an emergency. But then it considers a follow-on to the Ground-based Midcourse Defense. But we really have not used it; is that right?

General OBERING. I understand what you are saying.

Mr. LARSEN. So why are we looking already to do a follow-on to something that we really have not used?

General OBERING. Okay. First of all, there is a qualitative difference, okay?

Mr. LARSEN. Yes.

General OBERING. That is that Ground-based Midcourses are fixed sites, so they are silo-based. Okay. Once you put them in that silo, you have defined their defended area.

Mr. LARSEN. Right.

General OBERING. Okay. As we move forward in the future, we want to make sure that we have the flexibility to address emerging threats. So being able to move away from a silo-based, long-range midcourse defense is important for large areas, okay? That is why, if KEI is successful, we believe it does have applicability in the midcourse for some applications, for flexibility to the warfighter to be able to do those moves.

We discovered this, by the way—as we were going through our European site discussions with several nations early on; several of those nations indicated to us that, if it were not fixed, if it were mobile, they would be very interested in that, in being able to host that. That is what sparked the discussion about having this option for the warfighters, and for the Nation, and for our allies to be able to use.

So it is something that we believe is viable. It is something that we think is an option that we would like to keep in the program for that, as opposed to just discarding it.

Mr. LARSEN. Well, I guess, from my perspective—and we have had a little bit of discussion about this—from my perspective, it still seems more conceptual than viable. And it may be viable but more conceptual.

And I guess that gets back to Dr. McQueary.

How do we test that migration of KEI from a boost phase to an effective tool as a midcourse interceptor?

General OBERING. If I may—

Mr. LARSEN. Yes.

General OBERING [continuing]. The concept of KEI all along was to be a canisterized, very fast acceleration booster. The kill vehicle on it is what would change. If it were a kill vehicle for a boost phase, that is really a more simple kill vehicle than a kill vehicle for a midcourse phase.

So that is the transition, so to speak. It already is a canisterized, mobile platform. It is just changing the kill vehicle on the front end of that.

Mr. LARSEN. Yes.

Dr. MCQUEARY. I think the approach being used is quite reasonable. I mean, I spent many years doing R&D, myself. If you are not quite sure exactly what is going to work the best, it is prudent to have alternative systems available, if one can afford to do so. You have heard him discuss the issue of affordability and decisions that have to be made on that.

So I think it is a prudent approach to maximizing the likelihood that, when we come through this, that we will have a system that can handle the threats that are identified that it must handle.

Mr. LARSEN. Well, I will look forward to exploring that further. Thank you, Madam Chair.

Ms. TAUSCHER. Thank you, Mr. Larsen.

Mr. Spratt of South Carolina for five minutes.

Mr. SPRATT. Well, I will just pick up on that.

I would have thought that, for the KEI, you would want to optimize it for the mission of boost-phase intercept. For that purpose, you would want to have a very fast-burn engine and lots of thrust coming out of the shoots. You would also need special optics, it would seem to me.

With discrimination, for example, one of the traditional problems or concerns has been that the plume may envelop the missile body and be difficult to discern by a simple infrared (IR) reader.

Wouldn't all of these things make this—I mean, you are adding stuff to the system that costs money, that adds weight and, yet, is essential for this mission but would not necessarily be needed for a midcourse mission.

General OBERING. Well, sir, that is why I said, if the ABL is successful, that would be the preference for the boost-phase defense. We already are going to have the high-acceleration boosters. Now, where that allows you to have a boost-phase defense, oh, by the way, it also allows you to have a midcourse defense.

I will give you an example. We are having to remove the third stage of the GBI to be able to place that in Poland because of the battle space limitations in the European theater, okay? Otherwise, we need to get the kill vehicle out there and quickly deployed, more quickly than we would be allowed to with three stages. So, we have to remove that third stage to be able to do that. If we had a KEI type of capability—that has a very fast acceleration in those first stages—that would fit that midcourse mission very well, and there are other applications for that. So it is not that we are throwing away those boosters, we would use that acceleration capability.

As to your kill vehicle, that is correct, we do have to have the ability to distinguish between the plume and the hard body—the plume and the hard body handovers, we call it. That is why we are conducting the experiments, the NFIRE—the Near-Field Infrared Experiments—that we are conducting that we launched last year. We are conducting experiments as we speak this year, as well, to be able to understand what phenomenologies we would need in the kill vehicle sensor.

Mr. SPRATT. As to the ABL, there have been several setbacks in this program—schedule and technical. What hurdles did it have to clear to prove itself worthy of any kind of deployment?

General OBERING. Well, sir, I will tell you that I am very proud of what ABL has done in the last several years. There were many setbacks and many delays prior to that. Since November 2004, the program has made tremendous progress. That is when they achieved first light in the megawatt class laser. Also, in December of that year is when they achieved first flight of the heavily modified 747.

Now, what they have done to date—last year, they completed their low-power systems integration test. What we did there is, first of all, we took the aircraft—there are three lasers on the aircraft: There is a tracking laser, there is an atmospheric compensation laser, then there is the megawatt class laser that actually destroys the missile.

Last year, we flew the tracking laser and the atmospheric compensation laser on the aircraft against targets to check out the performance, and they met all of their performance points, the knowledge points, with margin. We took the high-energy laser, and we fired that more than 70 times in a 747's fuselage at Edwards on the ground, and we achieved an operational power at full duration of that laser in those tests. So we have now shown all of the major

building blocks that we need to put this together to shoot down a boosting missile.

So, as to where we are today, we took the aircraft—we have it at Edwards—we opened it up. We are now placing the high-energy laser—we have all of the high-energy laser modules on the aircraft. We are going to continue installing the plumbing and the installations and all of the modifications to the optical train that we learned from our testing, and are going to get back in the air next year in order to shoot down this boosting missile.

Mr. SPRATT. Okay.

Thank you, Madam Chair.

Ms. TAUSCHER. Thank you, Mr. Spratt.

Mr. Reyes for five minutes.

Mr. REYES. Thank you, Madam Chair.

I was curious—for both General Obering and for General Campbell—at the NATO summit in Bucharest, Romania, Alliance Heads of State and Government announced that they were directing the Alliance to develop options for bolting the NATO missile defense system to the proposed GMD element in Europe to protect Southern Europe against short- and medium-range threats.

Can you describe any ongoing, planned efforts to integrate the U.S. and NATO missile defense systems?

General OBERING. Sir, first of all, I would like to take this opportunity to thank Chairwoman Tauscher for her travels to NATO; that went a long way toward helping us with that. I want to thank her for that publicly.

Yes, sir, in January of this year—there is a NATO active layer, theater missile defense program in NATO that the NATO nations are participating in, and it is to form the architecture, so to speak, that nations can plug their various missile defense components into. The backbone of that is a system called the NATO Air Command and Control System, or NATO ACCS. There is a prototype of that in The Hague in the Netherlands. We have our Command and Control Battle Management and Communications System in Colorado Springs, Colorado. Out of that, it forms the backbone of our Integrated Missile Defense System in the United States.

What we did in January is we took those two systems—we took data from the NATO system and we ran it on the U.S. system, and we took the U.S. system data and ran it on the NATO system. It was very successful. The data I am talking about are things like radar-tracked data, mission-planning data, in terms of where you would place assets for defensive purposes.

In June of this year, we are going to connect those in real time and be able to show that we have real-time connectivity to be able to share this information. Then, in September, it will be exercised in a warfighting exercise that is hosted by the Netherlands to bring in the warfighters to actually use this.

So those are the concrete steps we are taking to be able to bolt on whatever NATO comes up with, with our U.S. long-range proposal.

General CAMPBELL. Sir, we have also run a series of war games called Nimble Titan. It will be run in May with the allies. It talks of the concepts in the command and control; after you bolt these systems together, how do we actually work it, nation to nation?

Mr. REYES. Are there any other technical challenges associated with getting both the U.S. and NATO systems to work together?

General OBERING. I am sure there will be, sir, but in terms of the protocols, and in terms of the data formats, and in terms of the architecture, I do not think there will be any severe show-stoppers. Because when we designed our system, the C2BMC system, we did that with the NATO architecture in mind. So we did that with knowledge aforethought to be able to do that.

Mr. REYES. What about any financial implications, though, involved with that?

General OBERING. The integration cost would, obviously, be shared between the U.S. and NATO, but we have, in fact, planned for that integration as part of our program.

Mr. REYES. Thank you, Madam Chair.

Ms. TAUSCHER. Thank you, Mr. Reyes.

Mr. Everett.

Mr. EVERETT. I am going to allow Mr. Franks to ask that question so I will not be putting us into a third round.

Ms. TAUSCHER. Okay.

Mr. Franks.

Mr. FRANKS. Thank you, Madam Chair.

And I thank the ranking member.

Dr. McQueary, I have just one technical question up front here. What is your assessment of the technical risk of developing a two-stage variant from the existing three-stage GBI?

Dr. MCQUEARY. Our assessment, having examined that in some detail, is low risk. This approach has been used before, not for this particular rocket, but it has been used before. As we look at the changes being made, we view the changes being low risk. However, we do feel strongly that testing needs to be done in order to verify that that risk is, indeed, low.

Mr. FRANKS. That is great.

General Obering, you indicated sometime back that you and Mr. Young were exploring what was a pretty exciting concept for the Space Tracking and Surveillance System.

Can you talk about the STSS, and the direction in which it is going?

General OBERING. Yes, sir. There are some parts that are classified that I will not, but I will be able to do it, for the most part.

We are going to launch two Space Tracking and Surveillance demonstration satellites this year. We are on track to do that. These are part of the legacy components that used to be known as SBIRS-Low that we have refurbished and that we modified and modernized. We are on track to launch those.

That will show us whether or not we can actually do this function. That is critical. That is a critical knowledge point, because space is a harsh environment. Can we actually do the precision? Can we do the precision tracking in those environments and then relay that information, in a timely enough fashion, to the ground to be able to show that it is useful?

Once we have done that, though, we do not envision building any more of these legacy types of satellites. We have looked at what is going on in the industry at large, what are some of the advances in the industry that we can take advantage of, and then that we

can use in a novel approach to be able to reduce the size of a constellation that we would need. Think about the layers of terrestrially based sensors that we already have, and come up with some innovated acquisition approaches based, again, on our knowledge-point layout.

I was discussing this with Secretary Young, and he recognized this as an approach that he had actually outlined several years ago for this program as a direction to go that I was even unaware of.

Mr. FRANKS. General, you mentioned a knowledge point. I am going to shift gears completely with you.

You know that I have said to you privately, that I believe that the laser is to missile defense, what the microchip was to the computer industry. I think, in terms, that may be decades away, perhaps none of us in this room will ever see the full combination, and that that could have the profoundest kind of defensive capability for future generations.

Just related to the knowledge points of ABL, where are you on that? What is happening? I understand you are going to try to do a lethal shutdown maybe late next year?

General OBERING. Yes, sir, in 2009.

As I said, it has completed all of the knowledge points that we needed to show performance with margin to be able to shoot down the missile.

As for some of the things that we are doing right now, we have installed the laser modules; we are installing the plumbing; we had to do some refurbishment on the optics control chain. When I say "refurbishment," what I really mean is we wanted to improve some of the behavior in the optics control chain that we saw.

We also wanted to improve the efficiency of the laser modules, themselves, in some of the nozzle designs of the injector of the iodine in the laser modules. So we have now done that; we have re-installed those modules. Now we are just going through the myriad of parts that go back on that aircraft to be able to do this.

Then, later this year or at the beginning of next year, we will begin to fire the laser out the nose of the aircraft into a calorimeter to determine are we, in fact, achieving the power and the durations that we want to achieve in the laser. If we are successful, then we go back in the air, and we begin a series of tests leading to the shutdown of a boosting missile.

Mr. FRANKS. Well, I sure wish you the best of luck on that. It must be hard knowing that somebody else might end up getting to oversee that, but I guess it will always be your baby, huh?

The program called Left Hook, related to the Aegis capability intercept missiles in their boost phase, what can you tell us about that in this environment?

General OBERING. There was a proposal that was floated a couple of years ago about looking to see whether or not we had the ability to shoot down a long-range boosting missile in the boost—not in the boost phase, but in the ascent phase, after boost, with a current SM-3 1A or with a 1B variant that is coming down the pike.

There was a lot of analysis done, and there is a little confusion about this. It could be technically feasible with very restrictive parameters, but those restrictive parameters make it nonoperational, not very operational. That is the problem.

We saw an example of this in the satellite shutdown. We had to very precisely position that ship. Then we had to bring off-board information into the ship to be able to even achieve this. That information had to be so precise to even have a chance of doing this.

So, could it happen? Yes. But is it operationally realistic to expect that we can do that? The answer is no.

Mr. FRANKS. I understand.

Again, congratulations to all of your efforts here.

Thank you, Madam Chair.

Ms. TAUSCHER. Thank you, Mr. Franks.

Dr. McQueary, I need to clarify a little bit about the differences between DOT&E and MDA regarding the testing for the European site program.

Dr. MCQUEARY. Yes.

Ms. TAUSCHER. Your testimony—oh, actually, it is a report that we have from you from October. It says that simply testing the new two-stage booster in a flight test, even an intercept flight test, is inadequate to assess the operational effectiveness of the European deployment of GMD assets. You also recommend that MDA conduct three flight tests instead of two currently planned and that one of the intercept tests included an attempt to track and to intercept multiple long-range targets simultaneously, for example, a Salvo test.

Why does DOT&E believe that simply testing the two-stage booster is inadequate to assess the operational effectiveness of the European GMD assets? Why do you believe that two tests are inadequate? Why are you insisting that MDA conduct a Salvo intercept test that engages multiple intermediate-range targets?

Dr. MCQUEARY. I believe those are two separate issues, if I may address them separately.

In the three tests that we have recommended for the two-stage booster, the first test that was going to be conducted was a booster verification test. The second test was going to be—and there was no live target in that. The second test was a live target test. The third test that we are recommending is one in which you simulate the actual scenario of engagement that one would have in the European theater, because we think that is an important issue to be addressed as a part of the verification that this system will work in that kind of environment.

We had discussions early this week with General Obering, and he just informed me a little earlier today that he has put the third test into his test plan. So we have not been reviewed with the plan, but it is one of those things where I think having an open and candid discussion about what the issues are—you know, sound minds—I hope we are sound minds, anyway—come to a conclusion that is the right one.

Ms. TAUSCHER. That is good news.

I think Mr. Larsen has a very quick question.

Mr. LARSEN. Yes, I do, Madam Chair. It is for General Obering.

If you could just cover for the committee—we were in Japan in January, discussing the potential cooperation with Japan on the issue of command and control that had come up with missile defense. Can you provide any update on where those discussions are?

General OBERING. Yes, sir. Obviously, that discussion is being led by the United States, the forces of Japan, and Pacific Command (PACOM). They are the ones that are the lead on that. We helped to inform those technically, in terms of what is possible and what we can do. We certainly have the ability, and we intend to be able to, share information.

There is the radar that we have placed in Japan, what we call the Transportable Radar (TPY)-2 forward-based radar. That data will be made available to the Japanese forces. That includes the Aegis, Patriot, and other systems that they are procuring or co-developing with us for now and for the future.

Also, they have a series of radars that will be feeding data into their command and control system. We would like to be able to share that data, as well. So, in addition, we have laid out a series of exercises to, kind of, think through what that would be. When I say "we," I mean the United States and Japan are doing that.

So we are very optimistic there, in terms of that. It has been a very healthy cooperation; it has been a very robust cooperation. In fact, Japan is spending \$1.5 billion, roughly, a year in missile defense, and it has been a pleasure to work with them as partners.

Mr. LARSEN. That is fair. Thank you.

Ms. TAUSCHER. Thank you, Mr. Larsen.

Secretary Young, in 2006, the Department of Defense Office of Program Analysis and Evaluation conducted a review examining the potential effectiveness of ABL and KEI to perform the boost-phase defense mission.

We would like the Department to provide us a briefing on that study. Is that something that you can do?

Secretary YOUNG. I don't see why not. It would be my inclination to do it. Actually, before the hearing, I had sent an e-mail and had asked Mr. Berkson to make sure that would be available. I don't know if the study needs to be updated, but my view is we will provide that.

Ms. TAUSCHER. That would be great. Thank you.

The subcommittee is joined by Mr. Lamborn from Colorado, who is not a member of the subcommittee, but who is a member of the full committee. We would like to offer him five minutes for questions.

Mr. LAMBORN. Thank you for your indulgence, and thank you to the other members of the committee for indulging me in this also. I appreciate that.

Secretary Young and General Obering, I understand that MDA plans to launch the two Space Tracking and Surveillance and tracking demonstration satellites this November. I also understand that MDA is restructuring its plans as far as follow-on with that.

What are the key lessons that you hope to learn from the two demonstration satellites? How will those lessons be incorporated into the proposed follow-on constellation satellites?

General OBERING. Well, first of all, the mission of those satellites is to be able to use an acquisition sensor, and then a tracking sensor to be able to pick up targets that we will launch and to be able to track those through space, through their midcourse phase, and to be able to generate an accurate enough track that we could actually place that information into a weapons task plan and inject that

into a Ground-based Midcourse interceptor, or put it into an Aegis weapons system to be able to launch one of the future 21-inch, longer-range interceptors from a ship and to understand if we can actually do that in the space environment.

Because there are many hazards that we have to worry about—the radiation belt, that type of thing, how is it going to perform in those environments. That is what we are looking for, the lessons learned from that.

We also are going to have a crosslink, data link, between the two satellites to see. Because, in a constellation, you are going to have to have that crosslink to be able to do this handover between satellite to satellite for the tracking. We will test that. That is why we wanted to have two, by they way, as opposed to just one satellite.

By the way, we are also going to launch them tandemly, so they are both going to be on the same launch vehicle when we do this launch, to be able to place them where we want them in orbit.

We do not envision that this is the configuration of the satellite that we need. It is big. It is bigger than we want. It weighs more than we want. We would like to be able to drive down some of the weight requirements, or to inject some of the more modern technology, because these birds go back a long way. Many of you have known this for many years. So we want to be able to inject some of the more modern technology into a follow-on constellation.

We believe that we can significantly—by changing the orbitology and by injecting the technology I talked about, we believe that we can significantly reduce the number of these satellites, and consequently, the cost and the weight that we have to place on-orbit for those.

Mr. LAMBORN. Do you have anything to add, Secretary Young?

Secretary YOUNG. I guess I would offer a bigger picture, or perspective. That is, we have had a number of space programs that have met varying challenges. I think General Obering is exactly right on the details. It has been true for some time. He was kind enough to note my role. Really, I think MDA's role was the starting point.

That is, if you have lower earth-tracking capability, you can get better sensitivity, and you can get better discrimination. You can do a lot of things, including potentially fire on the space-based cue. That is an incredible capability. It can augment our warning and help us in many other ways throughout the Nation. It is probably bigger than missile defense.

So, the demonstration satellites are important knowledge points for people in an area where we tend to be conservative to get that information and then to march forward to see what we can do in terms of newer satellites, but to be careful that we control the cost of that, and be very careful because I do not want to have another space program that has problems. I want to deliver that capability so that you all, and the warfighter have confidence in it.

Mr. LAMBORN. Thank you.

General Obering, last year, this committee expressed its strong desire that KEI be restored as originally conceived, as a fully mobile weapons system. I also understand that you recently suggested that our successful satellite shutdown shows that missile de-

fense—well, it still needs to be more robust in the sea-based and land-mobile interceptor phases.

Do you think KEI needs to be accelerated to provide this more robust capability? What steps are you taking to ensure that we are moving forward?

General OBERING. Yes, sir. Well, first of all, we had limited the KEI to a booster program only because, in light of the congressional reductions in the years before where it was having trouble getting on its feet, we did not want to give up the knowledge point. So we reduced the program down to demonstrate that very high-acceleration booster flight to maintain that knowledge point, because that is what it brings to the fight in terms of capability.

We heard the message from Congress last year, so I instructed the program office to begin the planning for both boost- and mid-course-phase capabilities—options, so to speak, for the future. Still, in keeping with our discipline, we do not want to immediately go out and hire hundreds of engineers and program office—I mean, contractor folks for the program, when they have not demonstrated that knowledge point. Otherwise, we start going back against what Secretary Young wants to do for the Department.

What we have been trying to do in the portfolio is to make sure that we demonstrate the technical capabilities that we need from these programs before we build these very large-standing armies that begin to drive up the cost of these programs. So we are going to adhere to that in terms of being able to show that knowledge point. If they do, then we can put them on their way with respect to full-blown acquisition.

Mr. LAMBORN. Thank you, General.

Thank you, Madam Chairman.

Ms. TAUSCHER. You are welcome, Mr. Lamborn.

Gentlemen, thank you very much for very good testimony. We appreciate your time for all of the questions.

Members, if you have questions to submit for the record, please feel free to do so.

We also want to thank your staff. I would like to, on behalf of the subcommittee, thank our professional staff, led by Bob DeGrasse, Rudy Barnes, Frank Rose, and Kari Bingen, for their very hard work. They are just excellent.

Thank you for informing the subcommittee and for being willing to be here. We look forward to seeing you again soon. Thank you.

[Whereupon, at 3:10 p.m., the subcommittee was adjourned.]

A P P E N D I X

APRIL 17, 2008

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

APRIL 17, 2008

**FOR OFFICIAL USE ONLY
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HOUSE COMMITTEE
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SUBCOMMITTEE**

STATEMENT OF

**THE HONORABLE JOHN J. YOUNG, JR
UNDER SECRETARY OF DEFENSE
(ACQUISITION, TECHNOLOGY, AND LOGISTICS)**

**BEFORE THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGIC FORCES**

April 17, 2008

**FOR OFFICIAL USE ONLY
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**Ballistic Missile Defense Program Progress
The Honorable John J. Young, Jr.
Under Secretary of Defense
(Acquisition, Technology, and Logistics)**

Good afternoon Madame Chairwoman, Congressman Everett, and Members of the Committee. Thank you for the opportunity to appear before you today to discuss the Fiscal Year (FY) 2009 Department of Defense Ballistic Missile Defense program and budget submission. I am pleased to update you on key issues facing the missile defense program and look forward to answering any questions you may have.

The Defense Department has made great progress on missile defense since the President in 2002 made the deployment of an initial defensive capability a national priority. Indeed, within 18 months of the President's direction, MDA fielded our nation's first long-range hit-to-kill ballistic missile defense capability.

Moving with such urgency has required the Missile Defense Agency to operate with some flexibility in managing the Agency's portfolio of programs. The Agency has already fielded a limited capability to defeat a limited ballistic missile threat from rogue nations. I believe it is vital to the security of our nation that we continue work to close system performance gaps and develop new technology to keep pace with the threat.

To close these gaps, the Missile Defense Agency will need to continue to use spiral-development and capability-based acquisition, allowing it to exploit technological opportunities and place greater capability in the warfighters' hands.

Capability-based acquisition permits early deployment of limited capabilities that can be enhanced over time. This approach also allows requirements and standards to be

added as we understand their impact on cost, schedule, and performance. This approach can help the program remain relevant to the threat and technologically current while at the same time providing maximum industry design trade space to deliver militarily useful, best-value capability. The primary goal is to add capabilities with demonstrated military utility, rather than to meet rigid requirements typically defined several years before any capability can be fielded.

Capability-based acquisition hinges on knowledge-based, decision-making. To reduce risk and ensure program stability, MDA uses knowledge-point decision making to drive investment decisions. Knowledge points are tied to the achievement of specific technical or performance requirements and allow MDA to develop new and advanced capabilities without having to make a long-term financial commitment. Failure to meet knowledge points could result in the slowing or even discontinuation of a program activity.

The Department continues to exercise oversight of the Missile Defense Agency's development and deployment efforts. The Director of the Missile Defense Agency reports directly to me on missile defense matters, and we meet periodically to discuss program issues.

I plan to conduct regularly Program Execution Reviews for all Missile Defense Agency programs. These reviews will provide me and other senior Department officials timely and in-depth program execution updates. Among other things, these reviews will compare actual results against schedule, budget, and performance goals and baselines, and describe any earned value cost variances.

In addition, the Department of Defense has established a Missile Defense Executive Board that makes recommendations to me and the MDA Director and oversees implementation of the Agency's strategic policies and plans, program priorities, and investment options. Senior principals from the OSD staff, the Services, the Department's independent test community, the Joint Staff, and appropriate outside agencies sit on the board, which meets every two months to provide oversight and guidance.

One issue currently on the MDEB agenda is the transition and transfer of BMDS elements once they reach technical maturity. In 2002 the Department of Defense directed MDA to focus on developing, testing and fielding near-term capabilities; the military departments would be responsible for long-term procurement and operation support activities of transferred BMDS elements. With the successful fielding of BMDS elements in 2004, the Department looked for ways to facilitate transition and transfer planning. We developed a master BMDS Transition and Transfer Plan to document agreements between the Missile Defense Agency and the military departments. My office updates the Transition and Transfer Plan annually in conjunction with MDA and the military departments. We have also identified a lead Service for most BMDS elements.

As the missile defense system has gained technical maturity, it became clear to me, the Director of the MDA, and other Department officials that effective transition and transfer planning is the key to successful operation and support of the Ballistic Missile Defense System. The Missile Defense Executive Board is currently evaluating proposals to adjust the process in a manner that will "normalize" the transition and transfer process

and ensure optimal system operations. The MDEB is also considering a revised Ballistic Missile Defense System program planning process which will provide the opportunity for the military departments and OSD to influence BMDS budget formulation and resource allocation using all appropriations in a defense-wide account. To complement this process, we are developing guidelines to specify military department and Missile Defense Agency responsibilities in preparation for, during, and after transition and transfer of BMDS elements. The Department plans to brief this Committee in more detail once we have settled on a new path forward.

I continue to be encouraged by the close interaction among MDA, the Director, Operational Test and Evaluation, the Combatant Commanders, and the Operational Test Agencies (OTAs) within the Services. Together they have developed an approach to ensure increasingly complex end-to-end tests of the system. The fact that the Director of the Missile Defense Agency and the Director, Operational Test and Evaluation jointly approve the Integrated Master Test Plan demonstrates to me the high level of cooperation between these organizations. Indeed, today you will find personnel from the Department's independent test community embedded in the management offices of the missile defense elements.

I believe the close working relationship between MDA and the test community has also contributed to recent test successes. Last year alone MDA executed successfully a long-range ground-based intercept, six SM-3 intercepts of separating and unitary targets, and three THAAD intercepts of unitary targets. Each test included elements of operational realism and demonstrated to the warfighter the capabilities of the BMDS.

While attending to environmental and safety concerns, MDA's future flight tests will continue to be increasingly realistic in operational terms. When appropriate to the test objectives and consistent with MDA's overall test campaign, each test will build on the knowledge gained from previous tests and add increasingly challenging objectives with the goal of devising scenarios that test elements of the system from end to end. This test approach increases knowledge and minimizes artificiality.

The Government Accountability Office (GAO) continues to be actively engaged in reviewing the Ballistic Missile Defense program. GAO conducted eight audits of the missile defense program in FY 2007. To further increase transparency, beginning in Fiscal Year 2008, MDA agreed to provide GAO with quarterly summaries that include integrated baseline review schedules (most recent and projected), percent complete, six month cost performance index, fiscal year cost variance, and cumulative cost variance. This information will be summarized annually in the BMDS Selected Acquisition Report for Congress.

Like many Members of this Committee, I believe we need to field additional ballistic missile defense assets in the near-term. System elements like Aegis Ballistic Missile Defense and the Terminal High Attitude Area Defense could provide our Combatant Commanders as well as our friends and allies a significant defensive capability in just a few years. I am working with General Obering to achieve this goal through the Department's programming and budgeting process.

At the same time, we must keep pace with the threat by equipping the warfighters with advanced BMDS capabilities. In the near future, we will require advanced

discrimination, persistent sensor coverage, maneuverable interceptors, multiple volume capability, and a robust inventory. I believe that keeping pace with the threat while continuing to deliver effective capabilities requires an approach that balances near-term fielding and far-term development.

The President's Budget for Fiscal Year 2009 reflects the priorities set by the President and was developed by the Secretary of Defense and his most senior military and civilian advisors. The budget emphasizes the need to prepare for an uncertain and unpredictable future. We must maximize our capabilities gained from our limited defense dollars.

Toward that goal, the Department is requesting \$10.4 billion in FY 2009 for continued development of a multi-layered system to protect the United States, its forces, and its allies from ballistic missile attack. \$9.3 billion of that request supports the work of the Missile Defense Agency. The budgeted funds will pay the cost of fielding near-term missile assets, operating and sustaining these assets, and conducting a missile defense test program. A robust research and development program is also needed to keep pace with the advancing threat.

I note that the Fiscal Year 2008 National Defense Authorization Act required the Department of Defense to transition from RDT&E-only budget requests for ballistic missile defense activities to requests with appropriate amounts in each appropriations title. For the FY 2009 President's budget submission, the Department identified the operations and sustainment costs for each BMDS element and requested MILCON construction funds for the European Site, the European Midcourse Radar and one

Forward Based Radar. The FY 2009 President's budget did not include procurement funding for specified BMDS elements, but the Department will review this issue in preparation of the FY 2010 President's budget.

We are grateful for the support of Congress, which has helped make fielding missile defense a reality. As we increase the effectiveness and reliability of the system, Congressional approval of the President's request for missile defense funding will be essential. Cooperation between the Department and Congress on missile defense issues is one of the main reasons this program has been so successful over the last several years. I look forward to continuing that cooperation.

Thank you for this opportunity to testify before the Committee. I look forward to answering any questions you might have.

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TESTIMONY OF

DR. CHARLES E. MCQUEARY

DIRECTOR, OPERATIONAL TEST AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE

BEFORE THE UNITED STATES HOUSE

ARMED SERVICES SUBCOMMITTEE ON STRATEGIC FORCES

APRIL 17, 2008

**FOR OFFICIAL USE ONLY
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STRATEGIC FORCES**

Dr. Charles E. McQueary
Director, Operational Test and Evaluation (DOT&E)
Office of the Secretary of Defense

Madame Chairwoman, Congressman Everett, and distinguished Members of the Committee, good afternoon. I am pleased to have this opportunity to speak to you about the testing of the Ballistic Missile Defense System, or BMDS. I will cover five areas.

First, I will give you my current assessment of the capability of the BMDS.

Second, I will discuss the factor that limited my ability to provide a thorough assessment as required by the Fiscal Year 2006 National Defense Authorization Act.

Third, I will discuss the sufficiency and adequacy of the BMDS test and evaluation program during the past year.

Fourth, I will provide a review of the implementation of DOT&E recommendations made to the Missile Defense Agency.

Finally, I will describe how the Missile Defense Agency, or the MDA, is a pathfinder for the implementation of Section 231 language from the Fiscal Year 2007 National Defense Authorization Act.

First: My Assessment.

As General Obering has already pointed out, the MDA had a good year of testing in 2007.

Patriot demonstrated that it generally meets its operational requirements with some limitations for specific threat missiles. Aegis Ballistic Missile Defense demonstrated the capability to detect, track, and engage short- and medium-range ballistic missile targets in the midcourse phase with Standard Missile-3 missiles. Although Ground-based Midcourse Defense is still developmental in nature, it demonstrated to some degree many of the functions required for system effectiveness.

As a result, I can state that the BMDS has a limited capability to defend against simple, ballistic missile threats launched from North Korea toward the United States.

Second: The Limitation.

Mr. Chairman, as I told this committee last year, I was particularly concerned that verified, validated, and accredited models and simulations would not be available to help me complete my assessment of BMDS capability. My concern was well-founded.

Because of the same concern, General Obering diverted MDA resources to meet our mutual modeling and simulation requirements. He had his team create an ensemble of models and simulations, called Performance Assessment 07, to replicate system-level BMDS performance. Unfortunately, the effort and changes required were too great for the time available to accomplish them. Although many MDA element models are well along toward verification and validation,

integrating them into a system-level BMDS performance model that can be verified, validated, and accredited did not happen and will not happen quickly.

Between the Performance Assessment 07 and the FY 2007 ground test program, the BMDS Operational Test Agency Team attempted to accredit 33 models and simulations to support my assessment. The Team was able to partially accredit, with caveats, only 5 of these models. From this attempt, however, the MDA learned many valuable lessons about adequate and effective verification and validation that it can apply to this continuing effort. It will be some time before these models are ready and sufficient flight test data exists to anchor them so they can be properly verified, validated, and accredited for use.

Third: The Test Program.

The pace and content of the MDA test program are proper for the developmental nature and maturity level of the various elements that constitute the BMDS. Although some would like to test more frequently, General Obering's deliberate approach to test-analyze-fix-test is warranted for this highly complex system. Analysis of large volumes of test data, frequently measured in terabytes, is an important step in this process that cannot be short-changed. It is very important to understand the results of one complex test before proceeding to the next test. I strongly support his approach.

Unfortunately, the slower test pace results in limited test data for use in verifying, validating, and accrediting models and simulations. As I discussed previously, this has impacted my ability to characterize BMDS performance.

Target availability, reliability, and performance have also been factors frustrating the flight test program and impacting test adequacy. During the 18 month period concluding December 31st, 2007, MDA suffered 4 target failures during 20 flight tests conducted by various elements of the BMDS. These failures not only impacted critical data collection, but also forced changes to flight test schedules.

To be fair, the MDA is not alone in this experience with a target program. Targets are a Department-wide problem impacting, ground, sea and air programs, both for acquisition and training. The targets we need to adequately test the systems we are acquiring are nearly as sophisticated and costly as the threats they are trying to replicate and the weapons we are developing to counter them.

On a positive note, my office and the BMDS Operational Test Agency Team are active participants in the MDA's test planning and execution processes. The MDA implements many of our recommendations into the combined developmental and operational test program. Every ground and flight test includes both developmental and operational test objectives. As a group, we attempt to maximize operational realism in each test without impacting developmental objectives. In lieu of independent operational testing, this has been a valuable and effective approach to give warfighters time to operate the system and test their tactics, techniques, and procedures.

Fourth: The Recommendations.

Mr. Chairman, in your invitation to address the committee, you asked me to provide an assessment of the MDA's implementation of DOT&E recommendations made to the Agency. I will do that now.

There were 26 recommendations in the Fiscal Year 2005 annual report. Four recommendations are still open, and the MDA is acting on each of them. Two involve on-going data collection, one involves the future test schedule, and one deals with the test planning process.

There were 15 new recommendations in the Fiscal Year 2006 annual report. Six of these recommendations remain open; all are being worked by the MDA. Four involve demonstrations of specific capabilities during actual intercept tests, one involves Information Assurance, and one involves targets.

There are 5 new recommendations in the Fiscal Year 2007 annual report. All are still open and being actively worked by the MDA. One involves targets, one involves on-going data collection, one is scheduled for completion during the next Ground-based Midcourse Defense flight test this summer, one involves modeling and simulation, and one requires a review of previously completed testing.

The year by year reduction in the number of recommendations made by DOT&E is indicative of the progress the MDA is making in the BMDS developmental test program.

As you know, I only advise the MDA on its developmental test program. General Obering and his staff recognize the value of our suggestions and

recommendations. A more capable BMDS is our mutual goal. I am satisfied with the MDA's response to the recommendations in our annual reports.

Finally: The Pathfinder.

On December 22, 2007, Under Secretary John Young and I signed a revision to Department of Defense Test and Evaluation Policy. The new policy was a response to the requirement in the Fiscal Year 2007 National Defense Authorization Act, to review and reaffirm or modify test and evaluation policy as appropriate.

This new made developmental testing, or DT, and operational testing, or OT, integrated and seamless throughout the system life cycle.

Although we didn't have the MDA in mind when we developed this policy, the MDA is a model for this approach today as it develops, tests, and fields the BMDS. Several years ago, General Obering created a combined test force that embeds the operational test organization with his developmental test organization while maintaining the operational test organization's independence. This has worked well. As a result, the MDA has been able to transition to combined DT/OT as early as possible during the development and acquisition of the BMDS. As BMDS weapons elements mature, combined DT/OT test objectives are moving from a developmental emphasis to an operational emphasis.

The MDA is a pathfinder for demonstrating integrated and seamless DT and OT in the department. The warfighters are, and will continue to be, the clear beneficiaries of this new policy.

In conclusion,

The MDA experienced another good year with its ground and flight test programs. Hit-to-kill is no longer a technological uncertainty; it is a reality, being successfully demonstrated many times over the past few years. The challenge now is to demonstrate hit-to-kill in more complex target scenes that include not only target deployment artifacts but countermeasures as well. General Obering has this in his future test plans.

Individual element successes indicate their growing capabilities. Integrated ground testing of the BMDS continues to demonstrate that the warfighters understand and can operate the system confidently and effectively. There is still a long way to go, but the MDA's disciplined and principled approach to flight and ground tests is continuing to pay real dividends.

This concludes my remarks and I welcome your questions.

Unclassified Statement of

Lieutenant General Henry A. Obering III, USAF

Director, Missile Defense Agency

Before the

House Armed Services Committee

Strategic Forces Subcommittee

Regarding the

**Fiscal Year 2009 Defense Authorization
Ballistic Missile Defense**

Thursday, April 17, 2008

*Embargoed Until Released by the
Armed Services Committee
United States House of Representatives*

**Lieutenant General Henry A. Obering III, USAF
Director, Missile Defense Agency
Missile Defense Program and Fiscal Year 2009 Budget
Before the
House Armed Services Committee
Subcommittee on Strategic Forces
April 17, 2008**

Good morning, Madame Chairman, Mr. Everett, distinguished Members of the Committee. Thank you for this opportunity to discuss the Department of Defense's Fiscal Year (FY) 2009 Missile Defense program and budget. As Director of the Missile Defense Agency (MDA), I have the privilege of leading an outstanding group of thousands of men and women who are working hard every day to develop, test and field an integrated, layered ballistic missile defense system to defend the United States, our deployed forces, and our allies and friends against ballistic missiles of all ranges in all phases of their flight. I want to thank this Committee for the support we have received for this critical defense program.

We are requesting \$9.3 billion in FY 2009 for missile defense. Roughly 75 percent of this request, or \$7 billion, will be allocated to the near-term development and fielding of missile defense capabilities. Of this amount, \$715 million is for sustaining the capabilities we already have in the field today. I also want to highlight that, as has been the pattern for several years now, we will be spending about \$2 billion of the funding in FY 2009 (more than 20 percent of the missile defense budget) on test activities.

The Ballistic Missile Defense System (BMDS) is daily becoming more integrated, robust, and global. The BMDS already includes fielded assets operated by Air Force, Army, and Navy units under the integrated control of Combatant Commanders. Our

current, limited homeland defense against long-range ballistic missiles will soon be bolstered by additional interceptors in Alaska and the upgrade of an existing radar in Greenland to protect against enemy launches from the Middle East.

The defense of deployed forces, allies, and friends against short- to medium-range ballistic missiles in one region/theater will be buttressed by additional Standard Missile (SM)-3 interceptors, more Aegis BMD engagement-capable warships, the initial Terminal High Altitude Area Defense (THAAD) fire units, and additional sea-based terminal interceptors. Tying these assets together will be a global command, control, battle management and communications capability.

In the near future, MDA's capability development program is expected to yield enhanced capabilities to discriminate between enemy warheads and countermeasures and options for "multiple kill" capabilities to meet future challenges. In the longer term, we will complete the development of a boost phase defense capability.

Recent flight tests are confirming technological progress and operational effectiveness for short-, medium-, and long-range defensive capabilities. In 2007, MDA and the military services executed 10 of 10 successful intercept flight tests across all ranges of our missile defense elements.

As missile defense capabilities expand worldwide, international cooperation with allies and friends is dramatically increasing. Earlier this month the United States and the Czech Republic completed negotiations on a missile defense agreement to station a midcourse X-band radar in the Czech Republic to track ballistic missiles. Assuming we conclude an agreement with Poland and obtain congressional approval to proceed with

the European Site Initiative, MDA intends to begin site construction for additional long range interceptors and the fixed-site radar to defend allies and deployed forces in Europe and expand the U.S. homeland defense against limited Iranian long-range threats. On April 3, 2008, in recognition of the increasing threat posed by ballistic missiles, all 26 nations of the North Atlantic Treaty Organization (NATO) formally endorsed the deployment of the European-based U.S. missile defense assets. NATO also committed to working with the United States to link this capability to any future NATO-wide missile defense architecture.

Also, we have undertaken substantive cooperative efforts with European, Middle Eastern, and Asian nations. With the purchase of Aegis BMD and Patriot Advanced Capability-3 assets, and with our fielding of a transportable X-band radar at Shariki, Japan is in the process of fielding a multilayered system interoperable with the U.S. system. Further, with MDA's support, the Department of Defense participated with Israel to develop an Israeli missile defense architecture that can meet threats expected in the next decade. We also held meetings with senior Russian officials and technical experts to discuss both threat perceptions and missile defense cooperation, including the potential for partnering with Russia in a joint regional architecture.

Madame Chairman, one last point before I continue. In February the Department of Defense called on our country's missile defenses to destroy a large tank of toxic fuel onboard an out-of-control U.S. satellite about to reenter the Earth's atmosphere. The uncertainty of when and where the satellite would reenter, and the near certainty that the fuel tank would survive reentry and possibly break up on Earth, drove the urgency of this

mission. Using an extensively modified SM-3 interceptor and a modified Aegis Weapon System onboard the USS Lake Erie, the Navy successfully destroyed the tank. The Department undertook this operation, carefully choosing an intercept altitude that would not add to the debris currently in orbit, to protect against the possible risk to life that a natural reentry of the satellite could have posed. After engagement, the toxic hydrazine dissipated in space, and, by now, most of the debris from the satellite body has burned up in the Earth's atmosphere.

This was a very successful joint mission involving the Navy, U.S. Strategic Command, the Missile Defense Agency, the National Aeronautics and Space Administration, the National Reconnaissance Office, and other national security offices. Missile Defense Agency engineers worked closely with the Navy to modify the interceptor and the Aegis weapon system for this one-time engagement. This was a case where the missile defense system was unexpectedly pushed into service and performed exceptionally well. While this stands as an example of what the nation received for its investment in missile defense, I want to be clear that it does not represent an operational anti-satellite capability. The time and level of technical expertise it took to plan and orchestrate this mission, the split-second fragility of the once-per-day shot opportunities, and the relatively low altitude of the satellite's decaying orbit did not approach the responsive and robust capability that would be needed to attack enemy space assets in wartime.

THREAT UPDATE

To lay the foundation for our budget request, let me review why missile defense is so critically needed. There remains intense interest in several foreign countries to develop ballistic missile capabilities. In fact, there were over 120 foreign ballistic missile launches in 2007, significantly exceeding what we observed in previous years. This comes on the heels of a very active 2006, during which time both North Korea and Iran demonstrated an ability to orchestrate campaigns involving multiple and simultaneous launches using missiles of different ranges. Currently, North Korea has hundreds of deployable short- and medium-range ballistic missiles and is developing a new intermediate-range ballistic missile and a new short-range, solid-propellant ballistic missile, which it test-launched in June 2007. Iran has the largest force of ballistic missiles in the Middle East (several hundred short- and medium-range ballistic missiles), and its highly publicized missile exercise training has enabled Iranian ballistic missile forces to hone wartime skills and new tactics.

North Korea's ballistic missile development and export activities remain especially troubling. Pyongyang continues to press forward with the development of a nuclear-capable ICBM. While the firing of the Taepo Dong 2 in July 2006, launched together with six shorter-range ballistic missiles, failed shortly after launch, North Korean engineers probably learned enough to make modifications, not only to its long-range ballistic missiles, but also to its shorter-range systems. North Korea's advances in missile system development, particularly its development of new, solid fuel intermediate-range and short-range ballistic missiles, could allow it to deploy a more accurate, mobile,

and responsive force. North Korea's nuclear weapons program makes these advances even more troubling to our allies and the commanders of our forces in that region.¹

In addition to its uranium enrichment activity, Iran continues to pursue newer and longer-range missile systems and advanced warhead designs. Iran is developing an extended-range version of the Shahab-3 that could strike our allies and friends in the Middle East and Europe as well as our deployed forces. It is developing a new Ashura medium-range ballistic missile capable of reaching Israel and U.S. bases in Eastern Europe.² Iranian public statements also indicate that its solid-propellant technology is maturing; with its significantly faster launch sequence, this new missile is an improvement over the liquid-fuel Shahab-3.³ Iran has reportedly bought a new intermediate-range ballistic missile (IRBM) under development by North Korea;⁴ this underscores the urgent need to work with our allies in the North Atlantic Treaty Organization (NATO) to field and integrate long-range missile defenses in Europe. Moreover, Iran's development of a space launch vehicle using technologies and designs from its ballistic missiles means Iran could have an ICBM capable of reaching the United States by 2015.⁵

¹ Oral Statement by the Director of the Defense Intelligence Agency, Lieutenant General Michael D. Maples to the Senate Select Committee on Intelligence Annual Threat Assessment Hearing, 5 Feb 2008 <http://www.dia.mil/publicaffairs/Testimonies/Statement29.pdf>; Current and Projected National Security Threats to the United States, Lieutenant General Michael D. Maples, U.S. Army Director, Defense Intelligence Agency, Statement for the Record, Senate Armed Services Committee, 27 February 2007 <http://www.dia.mil/publicaffairs/Testimonies/statement28.html>.

² Statement of Lieutenant General Michael D. Maples, 5 February 2008.

³ Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January to 31 December 2005, Central Intelligence Agency, <http://dni.gov/reports/CDA%2011-14-2006.pdf>.

⁴ Statement of Lieutenant General Michael D. Maples, 5 February 2008.

⁵ Current and Projected National Security Threats to the United States Vice Admiral Lowell E. Jacoby, U.S. Navy Director, Defense Intelligence Agency Statement For the Record Senate Armed Services Committee, 17 March 2005 <http://www.dia.mil/publicaffairs/Testimonies/statement17.html>

Syria is working to improve its ballistic missile capabilities and production infrastructure. Today Syria is capable of striking targets in Israel and Turkey, our southern NATO partner, using rockets and ballistic missiles. Syria can produce longer-range Scud variant missiles using considerable foreign assistance from countries such as North Korea and Iran.⁶ So our vigilance must extend well out into the future, when the threats we face today have grown and new threats may have emerged.

NEW MISSILE DEFENSE PROGRAM STRUCTURE

We have established a new block structure to organize our program of work and present our budget. The Agency has made this change to address concerns about transparency, accountability, and oversight and to better communicate to Congress and other key stakeholders. The new approach has several key tenets:

- Blocks will be based on fielded missile defense capabilities that address particular threats and represent a discrete program of work—not on biennial time periods.
- When MDA believes a firm commitment can be made to the Congress, the Agency will establish schedule, budget, and performance baselines for a block. Block schedule, budget, and performance variances will be reported.
- Once baselines are defined, work cannot be moved from one block to another.

⁶ Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January to 31 December 2005, Central Intelligence Agency.

Based on the above tenets, MDA has currently defined five blocks (see figure 1). Blocks 1.0, 3.0, and 4.0 deliver capabilities for long-range defenses, while Blocks 2.0 and 5.0 deliver capabilities to address the short- and medium/intermediate-range threats.

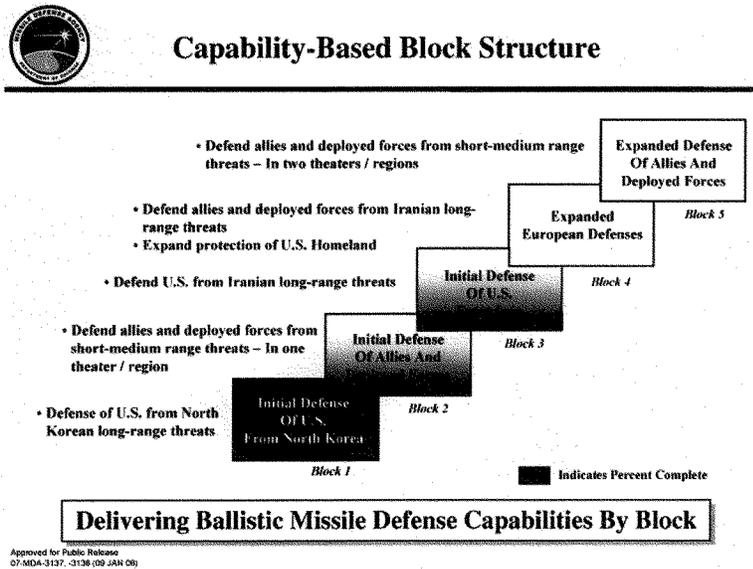


Figure 1: Capability-Based Block Structure

Future blocks (Block 6.0, etc.) will be added when significant new capabilities are expected to be fielded based on technological maturity, affordability, and need. For example, a new Block 6.0 might include enhanced defense of the United States against complex countermeasures, drawing on volume kill capabilities from the multiple kill vehicle (MKV) program, improved discrimination capabilities on our integrated sensor,

command and fire control network as well as upgraded hardware and software on our weapon systems.

MDA's budget is organized through the period of the Future Years Defense Program based on the new block structure. Also, program funding that does not fit into Blocks 1.0 through 5.0 is assigned to four general categories:

- *Capability Development* – technologies such as the Airborne Laser, Multiple Kill Vehicle, Kinetic Energy Interceptor, Far-Term Sea Based Terminal, Project Hercules and the Space Tracking and Surveillance System, which address future challenges and uncertainties
- *Sustainment* - operations and support of weapon systems, sensors, and command and fire control components
- *Mission Area Investment* – activities that support multiple efforts and cannot be reasonably assigned to a specific block or capability development program (e.g., intelligence and security; modeling and simulation; systems engineering and testing cores; safety, and mission assurance)
- *MDA Operations* – activities that support the Agency, such as Management Headquarters and Base Realignment and Closure (BRAC)

HIGHLIGHTS OF BUDGET SUBMISSION FOR FY 2009

Our priorities in the FY 2009 budget submission include near-term development, fielding, integration and sustainment of Blocks 1.0 through 5.0; increasingly robust testing; and a knowledge-based Capability Development program.

Block 1.0

We are nearing completion of the work in Block 1.0. We are requesting \$59 million for fiscal year 2009, mostly to conduct additional system ground and flight tests to support a final Block 1.0 capability declaration.

This past year we saw an unprecedented pace of fielding of an integrated missile defense capability, much of it related to Block 1.0. In 2007 we emplaced 10 additional GBIs, for a total of 24 interceptors in missile fields at Fort Greely, Alaska and Vandenberg Air Force Base, California. In 2008 we plan to increase interceptor inventories up to a total of 30 at the two sites. By the end of 2008, we will complete work installing the Long-Range Surveillance and Track (LRS&T) capability on 18 Aegis BMD ships. These ships will contribute to long-range defense by passing early detection, cueing, and tracking data across communications lines into BMD system communication and battle manager nodes located at Fort Greely and in Colorado Springs.

This past year we transitioned the transportable forward-based X-band radar at Shariki Air Base, Japan from the interim site to a permanent location. This radar provides precise early detection and tracking to increase the probability we will destroy any lethal target launched by North Korea. The Sea-Based X-band radar (SBX) completed crew training and testing off the coast of Hawaii and transited to the North Pacific to conduct a cold weather shakedown off Adak, Alaska, where it will be home-ported in 2009. The SBX participated in system flight tests this past year, including the September 28 long-range intercept test and the December 17 engagement of a medium-range separating target

at sea by our ally, Japan. This summer the radar will again participate in a long-range intercept test.

In 2007 we completed the fielding of C2BMC infrastructure to improve our ability to operate with Japan and receive direct feed from the Space-based Infrared System. We moved communications equipment and shelters to support the forward based X-band radar at Shariki and installed a second server suite at U.S. Pacific Command. We also began fielding enhanced C2BMC displays and improvements to our communications capabilities. The Parallel Staging Network we installed at U.S. Strategic, Northern, and Pacific Commands as part of the Concurrent Test, Training and Operations (CTTO) capability, will be completed this year. Without impeding the operational readiness of the system, CTTO allows the warfighter to conduct training and the Missile Defense Agency to continue with spiral upgrades, testing and development.

By 2009 we plan to install additional planning and situational awareness capabilities to facilitate executive decision-making in the European Command. C2BMC capabilities also provide our senior government leadership situational awareness of hostile ballistic missile activities and updates on the performance of the ballistic missile defense system.

Block 2.0

Since 2002 we have expanded and improved terminal and midcourse defenses to defeat short- and medium-range threats from land and sea. We are requesting about \$1.3 billion for FY 2009 for Block 2.0 fielding, development, and integration. This block represents the foundation of the capabilities required to protect forces we deploy abroad and our allies and friends, initially in a single region or theater of combat.

We began fielding SM-3 interceptors in 2004. Block 2.0 comprises 71 SM-3 Block I and IA interceptors (we will have 38 in inventory by the end of 2008). To date, we have converted 12 Aegis BMD LRS&T ships to engagement-capable ships. By year's end, we will have 18 Aegis BMD ships--15 destroyers and 3 cruisers--all of which will have surveillance and track as well as engagement capabilities. For the past three years, the Navy and MDA have collaborated on plans for a Sea-Based Terminal defensive layer. We are upgrading the Aegis BMD weapon system, and the Navy is upgrading the SM-2 Block IV missile, the goal being to deploy up to 100 interceptors to provide a near-term terminal engagement capability on 18 Aegis BMD ships beginning in 2009.

We are working closely with the Army to begin developing and fielding by 2009 two Terminal High Altitude Area Defense fire units, with the plan to deliver them by 2010 and 2011. THAAD is uniquely designed to intercept targets both inside and outside the Earth's atmosphere. Consisting of 48 interceptors and the associated radars and C2BMC, THAAD will provide transportable terminal protection from short- to medium-range ballistic missiles for our troops and our allies.

Block 3.0

We are requesting about \$1.7 billion for FY 2009 to expand the defense of the United States to include limited Iranian long-range threats. Block 3.0 builds on the foundation established by Block 1.0. Block 3.0 provides 14 additional GBIs above what we plan to deploy by 2008, along with two key radars needed for protection of the United States -- the upgraded early warning radars at Fylingdales in the United Kingdom and at Thule in Greenland.

This past year we completed operational testing of the Royal Air Force Fylingdales radar and made the radar available to the warfighter for emergency situations. In 2007 we began upgrades to the Thule radar and will continue to integrate it into the system by 2009. Together with the early warning radars in California, Alaska and the United Kingdom, the Thule radar will ensure coverage of the United States against threats from the Middle East. In the Pacific theater, we will continue to enhance additional forward-based X-band radar capabilities in Japan and at other operating locations to meet warfighter needs.

Block 3.0 also provides capabilities to defeat more sophisticated midcourse countermeasures. We are pursuing two parallel and complimentary approaches to counter complex countermeasures: first, more sophisticated sensors and algorithms to discriminate the threat reentry vehicle in the presence of countermeasures; and second, a multiple kill capability to intercept the objects identified by the discrimination systems as potential threat reentry vehicles. Block 3.0 will focus on the first of these approaches. It includes upgrades to the Ground-Based Interceptors, sensors, and the C2BMC system. The full implementation of this approach will be conducted in phases, with the first phase referred to as "Near Term Discrimination" and the second phase as "Improved Discrimination and System Track."

Block 4.0

We are requesting about \$720 million for fiscal year 2009 for Block 4.0 fielding, development, and integration. Block 4.0 fields sensors, interceptors, and the C2BMC infrastructure needed to improve protection of the United States and, for the first time,

extend coverage to all European NATO allies vulnerable to long-range ballistic missile attack from Iran. This block focuses on deployment of the midcourse X-band radar, currently located at the Kwajalein test site, to the Czech Republic and the establishment of an interceptor field in Poland. By devaluing Iran's longer-range missile force, European missile defenses could help dissuade the Iranian government from further investing in ballistic missiles and deter it from using those weapons in a conflict. We believe that the long-range defense assets we are planning to deploy to Central Europe offer the most effective capability for defeating this threat.

The European Midcourse Radar would complement sensor assets deployed in the United Kingdom and Greenland and provide critical midcourse tracking data on threats launched out of the Middle East. The radar also would operate synergistically with the planned forward-based transportable X-band radar, jointly providing early threat detection and discrimination of the reentry vehicles.

A European Interceptor Site will consist of up to 10 interceptors, the two-stage configuration of our flight-proven 3-stage GBI. A 2-stage interceptor has less burn time than the 3-stage version, which allows it to operate within the shorter engagement timelines expected. Nearly all of the components used in the 2-stage interceptor are identical to those already tested and fielded in the 3-stage interceptor, which means modifications required to design, develop and produce a 2-stage variant are minimal. Nor are such modifications unprecedented. In fact, the first 10 Ground-based Midcourse Defense integrated flight tests, conducted between January 1997 and December 2002, successfully utilized a 2-stage variant of the 3-stage Minuteman missile. As we do with

all system elements and components, we have planned a rigorous qualification, integration, ground and flight testing program for the 2-stage interceptor.

Several countries in southern Europe do not face threats from Iranian long-range missiles. Yet these same countries are vulnerable to the shorter-range ballistic missiles currently fielded by Iran and Syria. Mobile system sensors for Aegis BMD, THAAD, and Patriot are designed to be augmented by other sensors, like the European Midcourse Radar, and their interceptors are designed to engage slower short- to medium-range ballistic missiles systems. Together with other NATO missile defense assets, these missile defense forces will protect European countries vulnerable to short- and medium-range ballistic missiles when integrated into the NATO command and control structure.

Block 5.0

We are requesting \$835 million for Block 5.0 for FY 2009. This block builds on Block 2.0 to expand the defense of allies and deployed U.S. forces from short- to intermediate-range ballistic missile threats in two theaters. Block 5.0 will increase the number of SM-3 and THAAD interceptors and improve the performance of the Aegis BMD Weapons System and the SM-3 interceptor.

The SM-3 Block IB interceptor, a critical Block 5.0 development effort, will have major modifications to include a much improved seeker and a Throttleable Divert and Attitude Control System (TDACS). When combined with processing upgrades to the Aegis BMD Weapons System, the more capable Block IB interceptor will more readily distinguish between threat reentry vehicles and countermeasures. The Block IB expands the battle space and enables more effective and reliable engagements of more diverse and

longer-range ballistic missiles. This year we look forward to completing design and testing for the two-color seeker and TDACS and commencing the element integration of the SM-3 Block IB missile in 2009.

Block 5.0 includes delivery of 23 SM-3 Block IA interceptors, 53 SM-3 Block IB interceptors, 2 additional THAAD fire units with an additional 48 interceptors, one X-band transportable radar for forward deployment, and the associated C2BMC support.

Development/Operational Testing

Testing under operationally realistic conditions is an important part of maturing the BMDS in all five blocks. We have been fielding test assets in operational configurations in order to conduct increasingly complex and end-to-end tests of the system. Our testing to date has given us confidence in the BMD system's basic design, hit-to-kill effectiveness, and operational capability. While the system is developmental, it is available today to our leadership to meet real world threats.

Our flight tests are increasing in operational realism, limited only by environmental and safety concerns. Each system test builds on knowledge gained from previous tests and adds increasingly challenging objectives. The Director, Operational Test and Evaluation, the Operational Test Agencies, and the warfighting community are very active in all phases of test planning, execution, and post-test analysis. Using criteria established by the war fighter and the Agency's system engineers, all ground and flight tests provide data that we and the operational test community use to anchor our models and simulations and verify system functionality and operational effectiveness.

In 2007 we conducted many system ground and flight tests. As stated earlier, last year we executed successfully a long-range ground-based intercept, six SM-3 intercepts of separating and unitary targets, and three THAAD intercepts of unitary targets. As of today, we have demonstrated hit-to-kill in 34 of 42 attempts since 2001.

After a legacy target failure in May 2007, we successfully completed Ground-based Midcourse Defense Flight Test-03a on September 28, 2007. In this test, an operationally configured GBI launched from Vandenberg Air Force Base engaged a threat representative intermediate-range target fired from Kodiak Island, Alaska using sensor information from the operational upgraded early warning radar at Beale AFB in California. Trained crews manning fire control consoles reacted within a specified window under limited-notice launch conditions. This test leveraged fielded hardware and fire control software as well as operational communications, tracking, and reporting paths. The Exo-atmospheric Kill Vehicle successfully collided with the target near the predicted point of impact, destroying it. This was our most operationally realistic, end-to-end test of the long-range defenses to date. Though they were not official participants of the test, the Sea-Based X-band radar and an Aegis BMD ship using its onboard SPY-1 radar also tracked the target and gathered data for post-test analysis.

We also had enormous success with our integrated ground tests, which involve the operational long-range defense elements and employ the actual operational hardware. We test the system end-to-end by simulating engagements. These ground tests, conducted in a lab environment and in the field, involve the wider missile defense system community, to include the National Military Command Center, the Operational Test

Agencies, and U.S. Northern Command. They teach us a great deal and give us confidence to move forward with our intercept tests. The most comprehensive to date, these tests demonstrated the ability of the system to execute multiple, simultaneous engagements using operational networks and communications and fielded system elements in different combinations. The war fighter also was able to evaluate tactics, techniques and procedures. In 2008 and 2009 we will continue our integrated ground test campaigns.

We completed four U.S. sea-based tests and one allied sea-based intercept test in 2007. In all Aegis BMD tests, we do not notify the ship's crew of the target launch time, forcing crew members to react to a dynamic situation. This past year we successfully used Aegis BMD cruisers and destroyers to engage threat-representative short-range ballistic missiles and medium-range separating targets. We conducted a test with the U.S. Navy involving simultaneous engagements of a short-range ballistic missile and a hostile air target, demonstrating an ability to engage a ballistic missile threat as the ship conducts self-defense operations. In November we simulated a raid attack on an Aegis BMD cruiser using two short-range ballistic missiles. The cruiser destroyed both targets.

The December 2007 test off the coast of Kauai in Hawaii marked the first time an allied Navy ship successfully intercepted a ballistic missile target with the Aegis BMD midcourse engagement capability. The SM-3 successfully intercepted the medium-range separating target in space, verifying the engagement capability of the upgraded Japanese destroyer. It also marked a major milestone in the growing missile defense cooperative relationship between Japan and the United States.

Terminal High Altitude Area Defense completed three intercept flight tests against threat-representative short-range unitary targets in the atmosphere and in space. In addition, the THAAD radar and fire control participated in two Aegis BMD flight tests to demonstrate THAAD-Aegis interoperability. These initial THAAD intercept tests at the Pacific Missile Range Facility in Hawaii demonstrated integrated operation of the system, including radar, launcher, fire control equipment and procedures, and the ability of the interceptor to detect, track and destroy the target. Soldiers of the 6th Air Defense Artillery Brigade stationed at Fort Bliss, Texas operated all THAAD equipment during the tests, which contributed to operational realism.

In 2007 the Missile Defense Agency conducted 25 major tests and successfully met our primary test objectives in 18 of 20 flight tests. In doing so, we used the test ranges available to us today to maximum capacity. These totals include three Patriot tests, two Arrow tests, and the U.S.-Japan cooperative test. Our test plans for 2008 and 2009 will continue to use more complex and realistic scenarios for system-level flight tests and demonstrate interceptor capabilities against more stressing targets.

In 2008 we are planning two system-level long-range intercept tests, and two more in 2009, all of which will push the edge of the envelope in testing complexity. The tests in 2008 will involve targets launched from Kodiak, Alaska and missile defense assets separated by thousands of miles. We are expanding the number of sensors available to cue the system and engage targets. In our next long-range test, we will involve the early warning radar at Beale and the forward-based X-band radar, temporarily sited at Juneau, Alaska. This test also will demonstrate integration of the Sea-Based X-band radar into the

sensor support system. The intermediate-range target will have countermeasures. Later in 2008 Ground-based Midcourse Defense will attempt to defeat a longer-range threat-representative target and demonstrate the ability of the SBX to send tracking and discrimination data through Ground-based Midcourse Defense Fire Control and Communications to the Exo-atmospheric Kill Vehicle prior to engagement.

We plan three Aegis BMD intercept tests in 2008 and 2009. In 2008 we will demonstrate an intercept of a unitary, short-range ballistic missile target in the terminal phase of flight using a SM-2 Block IV interceptor. Later this year we will conduct the second Japanese intercept test against a medium-range target warhead. And in 2009 we will conduct an intercept flight test against a medium-range target to demonstrate an expanded battle space.

The first test of THAAD this year will involve engagement of a separating target low in the atmosphere. In the fall we plan to demonstrate THAAD's salvo-launch capability against a separating target. In late spring 2009 THAAD will engage a complex separating target in space. And in 2009 we will increase test complexity by demonstrating THAAD's ability to destroy two separating targets in the atmosphere.

In addition to our system flight- and ground-test campaigns, the Missile Defense Agency will continue to participate in Patriot combined developmental/operational tests as well as Air Force Glory Trip flight tests.

Knowledge-Based Capability Development

The proliferation of ballistic missile technologies and systems means we will face unexpected and more challenging threats in the future. We are requesting about \$2.5 billion in FY 2009 for capability development work to deliver advanced capabilities that will help ensure America's ballistic missile defense system remains effective and reliable and a major element in our national defense strategy well into this century.

Destroying ballistic missiles in boost phase will deprive the adversary of opportunities to deploy in midcourse multiple reentry vehicles, sub-munitions, and countermeasures, thereby reducing the number of missiles and reentry vehicles having to be countered by our midcourse and terminal defenses. Success in the boost phase will increase the probability we will be successful in defeating an attack in the other defensive phases. As part of this layered defense strategy, we are developing the Airborne Laser (ABL) and Kinetic Energy Interceptors (KEI).

ABL is being developed to destroy ballistic missiles of all ranges. In 2007 the ABL program met all of our knowledge point expectations and cleared the way for the installation of the high-power laser on the aircraft by the end of 2008. We completed in-flight atmospheric compensation demonstrations and conducted low power systems integration testing, successfully demonstrating ABL's ability to detect, track, target, and engage non-cooperative airborne targets. Next we will integrate the high power systems and gear up for a series of flight tests leading to a full demonstration and lethal shoot-down in 2009 of a threat-representative boosting target.

The KEI program will provide mobile capabilities to intercept ballistic missiles in the boost, ascent or midcourse phases of flight. This multi-platform, multi-payload, rapidly deployable capability could not only extend the reach of the missile defense system, but it also will add another defense layer. In 2007 we completed hypersonic wind tunnel testing of the booster and successfully conducted static firings of the first- and second-stage motors. This year we are focusing on preparations for the 2009 flight test of the KEI booster, which, if successful, will demonstrate we are ready to proceed to intercept testing and integration into the system.

We are pursuing parallel and complementary efforts to counter complex countermeasures. Project Hercules is developing a series of algorithms to exploit physical phenomenology associated with threat reentry vehicles to counter on-the-horizon advanced threats and counter-countermeasures for employment in system sensors, kill vehicles, and C2BMC. The algorithms will improve sensor and weapon element tracking and discrimination via data integration and multi-sensor fusion data integration.

In the years ahead we expect our adversaries to have midcourse countermeasures. The Multiple Kill Vehicle (MKV) program is developing a payload for integration on midcourse interceptors to address complex countermeasures by identifying and destroying all lethal objects in a cluster using a single interceptor. This past year we delivered the initial models and simulation framework for testing sophisticated battle management algorithms and developed the liquid fuel divert and attitude control system.

Our strategy is to manage all future kill vehicle development under a single program office and acquire MKV payloads using a parallel path approach with two payload providers pursuing different technologies and designs. This strategy will allow us to better leverage industry experience and talent. The MKV approach leverages commonality and modularity of kill vehicle components on various land- and sea-based interceptors, to include KEIs, GBIs, and a Block IIB version of the SM-3. The goal is to demonstrate a multiple kill capability in 2011 through a series of component development and test events.

We are undertaking significant upgrades to the BMD Signal Processor in the Aegis BMD weapons system. Through our cooperative program with Japan, we are upgrading the SM-3 Block I interceptor with the SM-3 Block II to engage longer-range ballistic missiles. This faster interceptor will feature an advanced kinetic warhead with increased seeker sensitivity and divert capability. We also will implement upgrades to the Aegis BMD Weapons System. The first flight test is scheduled for 2012. The Far-Term Sea-Based Terminal program will expand upon the near-term capability provided by the SM-2 Block IV blast-fragmentation interceptor by engaging longer-range threats. This year and next we will define weapons system requirements as we work toward initial fielding as early as 2015.

We are developing the Space Tracking and Surveillance System (STSS) to enable worldwide acquisition and tracking of threat missiles. Sensors on STSS satellites will provide fire control data for engagements of threat reentry vehicles and, when combined with radar data, will provide improved threat object discrimination. In 2008 we will

deliver two demonstration satellites scheduled for launch later in the year and a common ground station. We plan to use both targets of opportunity and dedicated targets to demonstrate STSS capabilities from lift-off through midcourse to reentry. The knowledge gained from these demonstrations will guide our decisions on the development of a follow-on space sensor constellation.

I believe the performance of the BMD system could be greatly enhanced someday by an integrated, space-based interceptor layer. Space systems could provide on-demand, near global access to ballistic missile threats, minimizing limitations imposed by geography, absence of strategic warning, and the politics of international basing rights. I would like to begin concept analysis and preparation for small-scale experiments. These experiments would provide real data to answer a number of technical questions and help the leadership make a more informed decision about adding this capability.

We have had to restructure some development activities and cancel others as a result of reductions in our FY 2008 budget. Reductions in funding for the European Site Initiative, STSS, ABL, and MKV programs will result in some schedule delays. Cuts in the system engineering work, including modeling and simulations, undermine our ability to develop and field an integrated system, which requires a collaborative effort by MDA and our industry partners that cuts across many disciplines and specialties. The ability to do this cross-cutting engineering work will become increasingly important as we move, for example, towards developing common kill vehicles and common interceptors.

I remain deeply concerned about the future threat environment, and consequently believe each one of these efforts is critical to maintaining our defenses in the uncertain years ahead.

SETBACKS IN 2007

With our unprecedented success in 2007 came several setbacks. We experienced a target failure in our first attempt for FTG-03 as mentioned earlier. While this was only the second complete target failure in 42 intercept flight tests, it was a signal that we needed to revamp our target program, which is underway. We are at a critical juncture in the target program transitioning from the legacy booster motors to the more modern Flexible Target Family, and I intend to make this a high priority in 2008.

In addition, we are investigating a nozzle failure that occurred in the second static firing of the KEI second stage. While investigation is underway, we plan to execute the first booster flight in 2009.

We also experienced some cost growth in the THAAD, Aegis and GMD programs which is being addressed within the overall missile defense portfolio. The THAAD cost growth was due to test delays, additional insensitive munitions testing and its deployment to the Juniper Cobra 09 exercise in Israel. Aegis cost growth was generated from extended work on the SM-3 Third Stage Rocket Motor and the Divert and Attitude Control System. This work also delays the delivery of the Block 1B interceptors by one year. GMD cost growth was due to the modifications required for the 2-stage version, the additional missile field in Alaska, and repair of the water damage silos.

RETAINING INTEGRATED DECISION AUTHORITY

I would now like to turn to a topic very near and dear to me. I urge the Committee to continue its support of the integrated decision authority that the MDA Director has been given for the missile defense portfolio. As you know, working with the U.S. STRATCOM Commander, I have the ability to propose the evolution of the missile defense system based on all relevant requirements, acquisition, and budget information. This authority was necessary in light of the President's 2002 directive to begin deployment in 2004 of a set of missile defense capabilities that would serve as a starting point for improved and expanded missile defense capabilities later.

I present to you two telling quotes from the 2006 Defense Acquisition Performance Assessment (DAPA) report chartered by the Department.

"[T]he budget, acquisition, and requirements processes are not connected organizationally at any level below the Deputy Secretary of Defense. This induces instability and erodes accountability. Segregation of requirements, budget and acquisition processes create barriers to efficient program execution."

"Acquisition programs need to deliver timely products. Our assessment is that the culture of the Department is to strive initially for the 100 percent solution in the first article delivered to the field. Further, the "Conspiracy of Hope" causes the Department to consistently underestimate what it would cost to get the 100 percent

solution. Therefore, products take tens of years to deliver and cost far more than originally estimated.”

Well, the DAPA report could have cited the one place in the Defense Department below the Deputy Secretary where requirements, acquisition, and budget authority comes together—the Missile Defense Agency. This authority has given me the trade space to make a balanced recommendation to the Deputy Secretary that has paid dividends for defense of our homeland, deployed forces, allies, and friends.

MDA has fielded an initial capability consisting of 24 Ground-Based Interceptors; 17 Aegis BMD warships capable of long-range surveillance and tracking, of which 12 are also capable of missile intercepts; 23 Standard Missile-3 interceptors for Aegis BMD warships; 18 SM-2 Block IV interceptors; an upgraded Cobra Dane radar; two upgraded early warning radars; a transportable X-band radar; a command and control, battle management, and communications capability, and a sea-based X-band radar. None of this capability existed as recently as June 2004. This rapid fielding would never have been possible unless I had the integrated decision authority over requirements, acquisition, and budget. I think it is fair to say that this capability would have taken 2 to 3 times longer to field under standard Department practices—if not the “tens of years” cited by DAPA.

Should this integrated decision authority be continued now that we have successfully met the President’s injunction to quickly field an initial capability where no

capability had previously existed? I would make four key points in favor of retaining this authority.

First, the Director of MDA is in the best position to know the program's progress and challenges. This does not mean that I make decisions in a vacuum. We work closely with the intelligence community, the war fighter, and the Services on the threat, capability needs, and available resources. In addition to the external oversight from your committee and others in Congress and, of course, the Government Accountability Office, I also receive significant Department-level oversight from Under Secretary AT&L, the Office of the Secretary of Defense Comptroller, and the Missile Defense Executive Board. However, it does mean that I have a degree of control and trade space that is not available to the managers of other major defense acquisition programs.

Second, because the ballistic missile threat is always evolving, we need to be as agile as possible in getting the latest capabilities to the war fighter. The integrated requirements, acquisition, and budget authority granted MDA's Director inevitably enables us to deliver a capability more quickly to meet the evolving missile threat.

Third, while some see MDA's flexibilities as undeserved special treatment, others view MDA's integrated decision authority as, in effect, a "test lab" for the Under Secretary of Defense AT&L to examine alternative, creative approaches to acquiring joint capabilities.

Fourth, ballistic missile defense is and always will be the quintessential joint program. No one Service could easily or naturally take responsibility for developing, testing, integrating, and fielding the BMDS. The trade space offered me as portfolio

manager of the entire BMD program is considerably wider than it would be if MDA were wedded to one Service or merely an advocate within the Office of the Secretary or joint staff who is trying to negotiate with a myriad of individual program managers protecting their own turf.

On a personal level, I take my stewardship responsibilities very seriously. I will not be in this position forever, and I know how vitally important it is to put my successor in the best position to give the war fighter the capabilities needed to negate the threats to our homeland, deployed forces, allies and friends. The integrated decision authority granted me as MDA Director does just that, and I urge your continued support.

ORGANIZATIONAL REENGINEERING

MDA's reengineering goal is to transform the organization into a single, integrated high-performance team capable of sustaining its development and test successes and maximizing its efficiency and effectiveness in acquiring, fielding, and supporting an integrated, operational BMDS. To accomplish this goal, I have established policies and defined responsibilities for providing qualified matrix support to the program directors/managers (PD/PM) responsible for delivering BMDS capabilities to the COCOMs. Matrixing is an organizational concept that consolidates skills and resources under a functional manager who, in turn, allocates persons and resources among executing organizations needing these skills. Matrixed support includes such functions as engineering, contracts, business/financial management, cost estimating, acquisition management, logistics, test, safety quality and mission assurance, security, administrative

services, information assurance, and international affairs. The matrix management process aims to strengthen PD/PM capabilities by assuring their accessibility to all expertise available to MDA; increasing accountability for quality of functional staff work; and allocating personnel resources according to the Agency's needs.

MDA has established the following objectives to focus the reengineering efforts:

- Implement a full matrix management construct to strengthen functional responsibilities at both the BMDS and element level of program execution
- Establish key new or restructured organizations and centers to strengthen the implementation of an integrated system
- Establish key knowledge centers to focus MDA resources on and within critical mission technical areas⁷
- Complete an organizational alignment assessment to improve agency efficiency and effectiveness through elimination of redundancy of functions and infrastructure, multiple layers of management and non-critical functions, and a verification that resources are aligned with MDA priorities
- Relocate MDA offices from the National Capital Region (NCR) to Huntsville and selected other locations to realize the benefits of a centralized control/decentralized execution strategy, facilitate leveraging all resources available in MDA and propagate better cross-flow of expertise and information.

⁷ Knowledge centers for Interceptors, C2BMC, and Sensors were established in January 2008. Centers for Space and Directed Energy will be established later in 2008.

BASE REALIGNMENT AND CLOSURE (BRAC)

The 2005 Defense Base Realignment and Closure Commission approved recommendations directing the realignment of several MDA directorates from the NCR to government facilities at Fort Belvoir, Virginia, and the Redstone Arsenal in Huntsville, Alabama. Specifically, a Headquarters Command Center for MDA will be located at Fort Belvoir, while most other MDA functions will be realigned to Redstone Arsenal. The transfer of government and contractor personnel from the NCR is already in progress; by the end of 2008, we will have transitioned some 1,100 personnel positions to the Arsenal. Also, construction will start in FY 08 on additional facilities to be opened in two phases in FY 2010 and FY 2011. Construction of the MDA Headquarters Command Center (HQCC) is also scheduled to begin in late FY 2008, with occupancy in FY 2010.

MISSILE DEFENSE AGENCY ENGINEERING AND SUPPORT SERVICES

Consistent with the Agency's reengineering, MDA has undertaken the task of improving how it procures contractor support services (CSS). The objectives of the change are to improve oversight, enable matrix management so the Agency can benefit more from cross-flow of information among different offices, enhance efficiency and transparency, and more accurately account for our cost of doing business. I have determined that the best path forward is to develop a new Agency-wide procurement; the designation for this procurement is Missile Defense Agency Engineering and Support Services (MiDAESS).

We currently receive contractor support through a variety of different avenues, such as contracts, other government agencies, and General Services Administration orders. Over the next few years, the MiDAESS procurement will allow us to consolidate the CSS into a more efficient procurement, focused on the primary areas of technical, administrative, financial, and other support that our agency requires.

Beginning in March 2007, we began discussions with our industry partners regarding MiDAESS. Throughout 2007, MDA has received industry feedback and continues to refine the details of how competition and contracting within MiDAESS will function. We plan to begin initial contract awards under MiDAESS in 2008.

CLOSING

Madame Chairman and members of the Committee, in closing, I again want to thank you for your strong support of our program. Since 2002 we have achieved dramatic program efficiencies and effectiveness because we have been able to consolidate missile defense expertise and integrate all missile defense elements into a single, synergistic system. We have made tremendous progress deploying missile defenses to protect our homeland, our troops deployed and our allies and friends. I also believe we have the right program in place to address more advanced threats we may face in the future.

Our investment in missile defense is significant, but our expenditures would pale in comparison to the overwhelming price this nation could pay from a single missile impacting America or one of our allies. We need your continued support to carry on the

tough engineering and integration task of developing and enhancing worldwide ballistic missile defenses.

This concludes my statement. I look forward to your questions.

RECORD VERSION

STATEMENT BY

LIEUTENANT GENERAL KEVIN T. CAMPBELL, USA

**COMMANDING GENERAL,
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/
U.S. ARMY FORCES STRATEGIC COMMAND
AND
JOINT FUNCTIONAL COMPONENT COMMAND FOR
INTEGRATED MISSILE DEFENSE**

BEFORE THE

**HOUSE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES**

SECOND SESSION, 110TH CONGRESS

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**Lieutenant General Kevin T. Campbell, USA
Commanding General
U.S. Army Space and Missile Defense Command/
U.S. Army Forces Strategic Command
and
Joint Functional Component Command for
Integrated Missile Defense**

Introduction

Madam Chairman Tauscher, Ranking Member Everett, and Members of the Committee, thank you for your ongoing support of our military and for the opportunity to appear again before this panel. As I shared last year, I do believe that this Committee is a strong supporter of the Army and the missile defense community. This is especially important as we continue to field missile defense capabilities and to continue development of future capabilities for the Nation and our allies. Along with those testifying today, I am an advocate for a strong global missile defense capability.

The Committee is no doubt familiar with my duties and responsibilities as the Army's senior commander for space and missile defense as well as my position as the Commander of the Joint Functional Component Command for Integrated Missile Defense, a part of the US Strategic Command (USSTRATCOM). In this role, I serve as the Joint user representative working closely with the Missile Defense Agency (MDA), other Services, and Combatant Commanders to ensure that our national goals of developing, testing, and deploying an integrated missile defense system are met in an operationally sound configuration.

Madam Chairman, please rest assured that America's Army stands on point to defend our Nation against an intercontinental ballistic missile attack. Our Soldiers continue to be trained and ready to operate the

Ground-based Midcourse Defense (GMD) Element of the Ballistic Missile Defense System (BMDS) at Fort Greely, Alaska, Vandenberg Air Force Base, California, and the 100th GMD Brigade's Missile Defense Element at Schriever Air Force Base, Colorado. These Soldiers, as part of the Joint team, continue to serve as our Nation's first line of defense against any launch of an intercontinental ballistic missile toward our shores. I am proud to represent them along with the other members of the Army and Joint integrated missile defense community.

United States Strategic Command JFCC-IMD: Planning, Integrating and Coordinating Missile Defense

The Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD), US Strategic Command's global missile defense integrating element, has been operational for three years. The JFCC-IMD continues to be manned by very capable Army, Navy, Air Force, Marine Corps, and civilian personnel.

USSTRATCOM, through the JFCC-IMD, continues to aggressively execute its mission to globally plan, integrate, and coordinate missile defense operations. Through a deliberate training and exercise program, the JFCC-IMD has improved our collective ability to defend this Nation. While the organization is still maturing, JFCC-IMD continues to lead the Department's transformation toward more robust integrated missile defense capabilities. The Soldiers, Sailors, Airmen, Marines, and Civilians of this Joint warfighting organization execute our mission to plan, integrate, and coordinate global missile defense operations and support by operationalizing new capabilities from MDA, developing global missile defense plans in collaboration with the Geographical Combatant Commanders, and conducting cross-geographical combatant commander

exercises to eliminate seams and gaps in order to maintain a strong defense against advancing threats. In summary, JFCC-IMD continues to build operational competence and warfighter confidence in the execution of our mission.

Continued Ballistic Missile Defense System Progress

This past year has been another year of operational achievement for integrated missile defense. Since the last time I addressed this Committee, the Global Ballistic Missile Defense System has gone from test-bed operations to a system configured to support continuous defensive operations. Whether a test bed with a residual operational capability, or an operational system that supports research and development activities, it is understood that our efforts and decisions must be entirely focused along two lines—operational capability and spiral development of the BMDS system. We balance both fielding of near term and development of long term capabilities to meet the evolving threat to the Homeland. This balance cannot be achieved without comprehensive dialogue between MDA, the Services, and the warfighters—dialogue that is ongoing today and dialogue that must continue in the future.

We are continuing to expand the current ballistic missile defense operational configuration. This past year, the early warning radar at Fylingdales Royal Air Force Base was upgraded to perform the missile defense mission. This radar is a key element of the BMDS for providing the initial limited defense capabilities to counter the emerging ballistic missile threat from Southwest Asia. The radar will also continue to perform its traditional role as an early warning radar. The addition of this radar marks the beginning of the integration of BMDS capabilities across five Combatant Commands to counter simultaneous ballistic missile

threats from two ends of the globe. We expect the warfighting capability provided by such integration of platforms, doctrine, and personnel to continue to grow in the coming years to address emerging threats.

Continued Warfighter Contributions to BMDS System Development

As warfighters, we continue to participate in key BMDS tests to build confidence in the system's capabilities and provide input to future capabilities. For example, the 100th Missile Defense Brigade provided a trained and certified crew in support of a successful GMD flight test on September 28, 2007. Their support started with participation in pre-mission training conducted in both Huntsville, Alabama, and at their GMD Fire Control (GFC) consoles at the Missile Defense Element (MDE) at Schriever Air Force Base, Colorado. The crew provided critical expertise that enhanced system performance, assisting the engineers with validation of pre-mission parameters. These pre-mission events culminated with the conduct of the flight test, where the crew provided the Human-In-Control actions necessary for a successful launch and intercept. The Brigade will also support the upcoming GMD flight test. For this flight test, the AN/TPY-2 Forward Based X-Band and Sea Based X-band (SBX) radars will be integrated into the GMD system to validate their operational utility and to provide data for anchoring our modeling and simulation efforts.

Since last year's testimony to this Committee, we successfully intercepted ballistic missiles at low and high altitudes; in midcourse and terminal phases; and in endo- and exo-atmospheric environments with our long-range ground-based interceptor, the Terminal High Altitude Area Defense (THAAD), and several AEGIS Standard Missile-3s (SM-3s). We supported an International BMD Partner with a successful exo-

atmospheric intercept from a Japanese Maritime Self Defense Force Destroyer. Conducting these system level flight and ground tests required the use of operational assets, the same assets that would be used to defend this Nation and our allies against a possible rogue state missile attack. JFCC-IMD worked closely with the Combatant Commanders and MDA to coordinate the availability of these assets to ensure sustained operational readiness during the conduct of the system level tests.

The JFCC-IMD was able to balance the requirements of both operations and tests. This period of robust achievements underscored the warfighter's requirement to expedite development and deployment of a concurrent testing, training, and operations (CTTO) capability. We have made strides but we still have a ways to go. CTTO will permit developers and operators to maintain an operational capability of the BMDS while simultaneously developing, testing, or training on the system. Absent a mature CTTO capability, JFCC-IMD aggressively conducts an asset management process to ensure the highest level of operational readiness during the conduct of materiel development and tests.

Continued Advancements in System Capability

JFCC-IMD, in partnership with MDA and the Services, has integrated additional missile defense sensors and shooters to enhance theater and strategic mission capabilities. We have institutionalized the Operational Readiness and Acceptance (OR&A) process to deliberately activate capabilities by baselining the known capabilities and limitations. Through this process, activation criteria, which are critical to establishing and maintaining capabilities, are clearly defined to ensure sustainable systems are provided to the warfighter.

We continue to refine our processes to ensure the warfighters' desired operational capabilities are considered by the materiel developer. Since I last appeared, the Warfighter Involvement Process, known as the WIP, has matured significantly. Warfighter inputs and subsequent changes to the overall BMD system of systems started slowly but are steadily increasing in effectiveness. After two years of operator generated input, we are now seeing changes incorporated in the BMDS. More significantly, capability requests are being reflected in USSTRATCOM's Prioritized Capability List submissions and in MDA's corresponding Achievable Capabilities List.

A success story in the WIP process is our partnership with MDA, the Services, and the Combatant Commanders in the expansion of the BMD capability into the European theater. In my role as the JFCC-IMD Commander, I have held discussions with the European Command to build stronger partnerships with our Allies should our government conclude agreements for hosting a midcourse radar and interceptor site in Europe. If approved, the expansion of the BMDS into Europe will greatly increase the security of the United States as well as provide a measure of protection to our forward deployed forces and European allies that currently does not exist.

Looking forward, we are engaged with the Department to balance the missile defense portfolio to ensure we are addressing both the threats of today and tomorrow. With more than 20 countries, several of which have an adversarial relationship with the United States, now possessing ballistic missile capability and technology, the threat to the United States and our allies is growing. The missile defense investment portfolio must address the warfighter needs for the near-term threats from these

countries while developing new technologies to deter potential adversaries from their continued investment in ballistic missile technologies.

To guide the planning of a near-term and long-term investment portfolio, the Department is conducting a number of studies, including the latest iteration of the Joint Capability Mix (JCM) Study. The intent of the JCM II Study was to explore and assess aggregate BMDS capabilities and provide analysis in support of determining the appropriate BMDS weapon and sensor mix to address the ballistic missile threat for two near simultaneous major combat operations in the 2015 timeframe. The results of the recently completed study indicate a future need for additional THAAD and SM-3 inventory. With the warfighter analysis, MDA is seeking to identify and allocate sufficient resources to address the requirement during the upcoming Program Objective Memorandum cycle. In addition to the JCM effort, JFCC-IMD is also coordinating an employment strategy of the AN/TPY-2 (aka Forward Based X-Band Radar) to enhance global and regional missile defense capabilities. This employment strategy considers various aspects of military utility and geopolitical concerns to inform leadership toward a decision. Other efforts that impact force structure and inventory requirements include various wargames and exercises to define the future operational concepts, including wargames with our Allies.

Taking Care of our Warfighters

If we receive approval to proceed with a European capability, we need to ensure we provide quality facilities and services to our Soldiers. If built, the European capability will most certainly be an enduring mission. The mission support infrastructure (barracks and morale and welfare facilities) is just as important to mission success as the hardware the

Soldiers will operate. We believe that the mission support facilities “outside the wire” are an integral part of the overall system. The investment in mission support infrastructure contributes immensely to the overall reliability of the system and the cost represents a very low percentage of the overall system construction and fielding cost.

We should continue to work to improve the quality of life at our missile defense garrison at Fort Greely, Alaska. Soldiers in the 49th Missile Defense Battalion of the Alaska Army National Guard continue to defend the United States from ballistic missile attack from the remoteness of Fort Greely, Alaska. They continue to do so in an outstanding manner, without complaint, in an environment with infrastructure that does not meet current standards. While the Army is taking proactive steps to improve the quality of life at Fort Greely, the isolation of this remote location cannot be overstated. On the positive front, the Army recently awarded a contract to privatize the family housing at Fort Greely—Soldiers and their Families should start to realize significant housing improvements in the near future. Also, the Army is currently planning to replace an existing substandard fire station with one that will provide adequate coverage for Fort Greely’s population and infrastructure. Challenges still remain as there is very limited support in the local community with respect to medical and dental care, special education needs, higher education opportunities, restaurant establishments, and other services that the vast majority of us take for granted. For example, the nearest medical specialist is over two hours away. This is very problematic, especially when one considers the extreme weather during the winter months. Our Soldiers and their Families deserve more—we need to provide the adequate facilities and the services they need. The Army will continue to address these

challenges to ensure better living conditions are realized for our Soldiers and their Families.

Army Infrastructure Contributions

The Army also provides key test range assets for BMDS research and development. In addition to providing other vital Department capabilities, these unique facilities continue to serve as key BMDS system enhancers for MDA. The United States Army Kwajalein Atoll/Reagan Test Site (USAKA/RTS) in the Republic of the Marshall Islands has been instrumental in the development and testing of the GMD system. USAKA/RTS will continue to serve as a significant test bed for future BMDS technology development. Also, within the BMDS arena, the High Energy Laser Systems Test Facility on White Sands Missile Range, New Mexico, is serving as a key lethality test bed for MDA's Airborne Laser Program. We ask for your continued support to ensure these vital testing ranges are postured to perform necessary BMDS testing.

Air and Missile Defense—an Overview of the Fiscal Year 2009 Army Budget Submission

In addition to deploying the BMDS, MDA, the Services, and the Combatant Commanders continue to focus on improving theater air and missile defense capabilities. GMD and Theater Air and Missile Defense Systems are vital for the protection of our homeland, deployed forces, friends, and allies. Air and missile defense is a key component in support of the Army's core competency of providing relevant and ready land power to Combatant Commanders.

As the Secretary and Chief of Staff of the Army have previously testified, the Army is stretched after years of operating at war. To relieve the stress on the force, the Army is embarking on a path to restore balance. The Army's plan centers on four imperatives—sustain, prepare, reset and transform. As we have seen with other Army combat capabilities, the requirement for air and missile defense units continues to grow, stretching the force. Operation Iraqi Freedom consumes significant quantities of our key missile defense capabilities, leaving other worldwide commitments under-resourced.

Already well underway, the Army has created composite air and missile defense battalions to transform the Air Defense Artillery into a more responsive and agile organization. These battalions address capability gaps, permitting us to defeat cruise missiles and unmanned aerial vehicles while maintaining our ability to defend critical assets from the ballistic missile threat. Composite air and missile defense battalions will capitalize on the synergies of two previously separate disciplines—short-range air and missile defense and high-to-medium altitude air and missile defense. Additionally, the Army has pooled air defense artillery battalions at the theater-level to provide air and missile defense protection based on the situation and mission requirements. This pooling concept supports the Army's effort to move to modular designs that allow force tailoring of units better sized to meet the Combatant Commander's needs.

With that as a brief background, let me now focus on the Army's Fiscal Year 2009 budget submission for air and missile defense systems. The recently submitted President's Budget includes approximately \$2.23 billion with which the Army proposes to execute current Army air and missile defense responsibilities and focus on future development and enhancements of both terminal phase and short-range air and missile

defense systems. In short, the Army is continuing major efforts to improve the ability to provide warning, acquire, track, intercept, and destroy theater air and missile threats.

Army Integrated Air and Missile Defense (IAMD) System of Systems (SoS)

In order to enhance its ability to destroy theater air and missile threats, the Army is continuing to transform its air and missile defense force from its traditional system-centric architecture to an integrated, component-based, IAMD SoS. The Army IAMD SoS Program provides full, network-centric, plug-and-flight integration of existing and future air and missile defense systems and enables their full technical, functional, and procedural integration into the Joint IAMD arena. This modularization of air and missile defense capabilities will allow Joint Force Commanders to scale and tailor air and missile defense components functioning interdependently to deliver operational capabilities not achievable by the individual elements of the system. Given the diversified air and missile threat set and the limited resources to address the threat, development of IAMD SoS is the Army's top air and missile defense priority.

In addition to the IAMD SoS interdependent capabilities, the Army's air defense community has initiated plans to meet the future challenges and demands, taking steps to sustain, prepare, reset, and transform our forces and equipment. These plans entail three main component areas of the Army's air and missile defense construct—terminal phase ballistic missile defense, cruise missile defense, and force protection.

Terminal Phase Ballistic Missile Defenses

The PATRIOT/Medium Extended Air Defense System (MEADS) capability is designed to counter theater ballistic missile threats in their terminal phase in addition to cruise missiles and other air-breathing threats. Combining these systems with the soon to be deployed Terminal High Attitude Area Defense (THAAD) system brings an unprecedented level of protection against missile attacks to deployed U.S. forces, friends, and allies well into the future.

PATRIOT/PATRIOT Advanced Capability-3 (PAC 3) Overview

PATRIOT is the world's only battle proven theater AMD system and will be a key AMD element for the next two decades, providing Combatant Commanders with modular, scalable, mission-tailored capabilities to greatly enhance operational force protection in support of the Joint team. The PATRIOT is the Nation's only deployed, land-based, short-to-medium range BMDS capability.

The Army recognized that the PATRIOT force was heavily stressed and therefore developed a strategy to Grow-the-Force through a combination of pure-fleeting the existing PATRIOT force to PAC-3 capability and standing up two additional PAC-3 battalions. This strategy will increase our capacity to handle today's threat and alleviate logistical and training challenges of maintaining two separate PATRIOT configurations. Pure-fleeting of the PATRIOT force with PAC-3 will allow for improved capability and higher lethality against the Theater Ballistic Missile (TBM) and non-TBM threat as well as enable commonality across all Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (known as DOTMLPF) domains in the PATRIOT force. Also, the additional two battalions of PATRIOT PAC-3 capability will meet the growing demands of the Combatant Commanders to provide

global AMD against the entire threat set. Fiscal Year 2007 reprogramming actions and Fiscal Year 2008 funding initiated this strategy—funding in the amount of \$492.8 million in the Fiscal Year 2009 budget request will complete these initiatives and continue PATRIOT modifications.

Last year, my statement addressed the ongoing PATRIOT fixes to operational deficiencies that were deemed necessary as a result of friendly fire incidents. The Army has taken steps to address lessons learned and correct the deficiencies. Based on the current fielding schedule, all Operation Iraqi Freedom fixes will be completed during Fiscal Year 2009.

Medium Extended Air Defense System (MEADS) Overview

A top Army priority system for defense against short- and medium-range tactical ballistic missiles and air breathing threats, the MEADS system will be an integral part of the Army Integrated AMD System of Systems and capable of operating within a Joint and coalition operational environment. The system will provide wide-area protection at strategic, operational, and tactical levels.

MEADS, a cooperative development program with Germany and Italy, will provide a lighter, more deployable, maneuverable, lethal, network-centric AMD capability. The program also includes development of the PAC-3 Missile Segment Enhancement (MSE) as the objective tri-national MEADS missile. The PAC-3 MSE is currently under development and will be integrated into the MEADS program. The MSE missile will provide a more agile and lethal interceptor that expands the engagement envelope of this system. The Fiscal Year 2009 budget request includes funding for MSE initial production facilities—production of the MSE is

scheduled to begin in 2010. Fielding of MEADS is scheduled to begin in 2015 and be completed by 2028. We are confident that this path will provide our forces, allies, friends, and our Nation with the most capable air and missile defense system possible.

***Terminal High Attitude Area Defense System Overview (THAAD)
Overview***

The Department of Defense is committed to fielding an advanced capability to defend against tactical ballistic missiles as soon as possible. THAAD is designed to provide a layered theater ballistic missile defense in support of the short and medium range ballistic missile threat. MDA is funding and manufacturing four THAAD batteries for the Army in an accelerated fielding that will commence in 2009. THAAD capabilities will begin to transfer to the Army in 2009. Synchronization between the Army and MDA is crucial in both the development and funding areas in order to ensure that the transition delivers a supportable warfighting system.

To fully optimize the performance of the PATRIOT, MEADS, and THAAD defense systems, effective personnel training and development is essential. The United States Army Fires Center of Excellence at Fort Sill, Oklahoma, will provide our Nation with the best trained, organized, and equipped Air Defense Artillery leaders and units in response to current operational needs and future force warfighting concepts.

Joint Tactical Ground Station (JTAGS)

JTAGS is a transportable information processing system that receives and processes in-theater, direct down-linked data from Defense Support Program satellites. JTAGS provides our commanders with early warning of ballistic missile attack and essential information to defeat

TBMs. The system disseminates warning, alerting, and cueing information on TBMs, and other tactical events of interest throughout the theater using existing communications networks. JTAGS determines the TBM source by identifying missile launch point and time and provides an estimation of impact point and time. Since the system is located in-theater, it reduces the possibility of single-point-failure in long-haul communication systems and is responsive to the theater commander. JTAGS also fulfills the in-theater role of USSTRATCOM's Theater Event System (TES). It is imperative that JTAGS be funded to integrate and evolve to use the next generation of Space Based Infrared System sensors. This will significantly enhance warning accuracy and timeliness while improving all aspects of theater missile defense. We request your continued support of this essential capability.

Cruise Missile Defense

Our adversaries understand the value of cruise missiles. They are inherently very difficult targets to detect, engage, and destroy, and when armed with a weapon of mass destruction warhead, the effects from a cruise missile are catastrophic. The Army's Cruise Missile Defense Program is an integral element of the Joint cruise missile defense architecture. We are also working closely with the Joint community to assure development of doctrine that synchronizes our military's full capabilities against the cruise missile threat. Critical Army components of the Joint cruise missile defense architecture are provided by the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), the Surface-Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), and the PATRIOT MSE missile. These systems are on schedule to provide an initial operational capability by 2012.

Additionally, these systems will be networked within the IAMD SoS architecture, have an integrated fire control capability and operate within a common command and control system. Initial operational capability is planned for 2014.

Force Protection

In the conduct of Operation Iraqi Freedom, insurgents continue to pose serious dangers by employing indirect-fire tactics of quick-attack, low-trajectory, urban-terrain-masked rocket, artillery, and mortar (RAM) strikes against U.S. forward operating bases in Iraq. To combat this threat, the Army developed a Counter-Rocket, Artillery, Mortar (C-RAM) capability—an integrated set of capabilities to provide warning and intercept of RAM threats. The primary mission of the C-RAM project is to develop, procure, field, and maintain a capability that can detect RAM launches; warn the defended area with sufficient time for personnel to take cover; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. C-RAM utilizes a system of systems approach and is comprised of a combination of multi-service fielded and non-developmental item sensors, command and control elements, and a modified U.S. Navy intercept system. The system utilizes a low cost commercial off-the-shelf warning system and a wireless local area network. Advances in the C-RAM capability will continue with funding that is requested in the Fiscal Year 2009 budget submit.

Efforts are also underway to use the benefits of directed energy to potentially counter the RAM threat. Developmental work by joint entities within the Department is producing results that are promising. Within the

next few years, through the Army's High Energy Laser Technology Demonstration Program, we are very hopeful we will produce a mobile solid state laser weapon system that will serve as a complementary resource to the present and future kinetic energy capability in countering RAM projectiles. Your continued support in this area will ensure we advance indirect fire protection capabilities.

Conclusion

Madam Chairman, the Army is a member of the Joint team fighting an adaptive enemy in a persistent conflict while transforming to meet future threats. We have responsibility for GMD, THAAD, PATRIOT, and MEADS and will continue developing and fielding an integrated missile defense for our Nation, deployed forces, friends, and allies.

USSTRATCOM, through the JFCC-IMD, will continue to develop a Joint BMDS capability to protect our Nation, deployed forces, friends, and allies. The Fiscal Year 2009 budget proposal supports the transformation of the Army's air, space, and missile defense force to support the Army's future force, the Joint Integrated AMD System, and our global BMDS. We will continue to work with MDA, the Services, and Component Commanders to define the characteristics of the emerging air, space, and missile defense force and determine how it can best support the warfighter and our Nation.

I appreciate having the opportunity to speak on these important matters and look forward to addressing any questions you or the other Committee members may have.

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

APRIL 17, 2008

QUESTIONS SUBMITTED BY MS. TAUSCHER

Ms. TAUSCHER. Secretary Young and General Obering, I understand that the United Arab Emirates (UAE) is interested in potentially purchasing several THAAD fire units. Could you provide us an update on the status of that potential sale? How many THAAD fire units and interceptors would be involved with the sale? Who would be the executive agent for this sale? MDA, the Army? Will the potential sale of THAAD help reduce the overall cost of the system? What are the key technology security issues associated with the potential sale to UAE?

Secretary YOUNG. Currently, the Congressional notification has been signed by the State Department and is awaiting completion of the pre-consultations with the House Foreign Affairs Committee and Senate Foreign Relations Committee staffs. Once the pre-consultations are complete, the State Department will forward the Section 36(b) notification to Congress for a 20-day informal and then a 30-day formal notification. The Missile Defense Agency (MDA) is working on information for the Letter of Offer and Acceptance (LOA). After the Congressional notification process is complete, MDA will work with Army, the Implementing Agency, to complete the LOA process. This sale will involve a total of three (3) THAAD Fire Units (FU) plus an additional float radar, and will include one hundred and forty-four (144) interceptors in total.

The Army will be the Implementing Agency for the UAE THAAD Foreign Military Sales case. The United States will expect cost savings as the number of THAAD fire units and spare interceptors increases. These increased production order quantities will mitigate production gaps and enable a reduction in average unit interceptor costs. With the appropriate anti-tamper measures in place on U.S. military systems provided or sold to a foreign partner, the United States can ensure that technologies are protected against compromise and reverse engineering.

Ms. TAUSCHER. Secretary Young, in its March 2008 report on the missile defense program, the Government Accountability Office (GAO) stated that while the Missile Defense Executive Board (MDEB) "has some oversight responsibilities, the MDEB was not established to provide full oversight of the BMDS program & it will not receive some information that Defense Acquisition Board (DAB) relies on to make program recommendations, and in other cases, MDA does not plan to seek the MDEB's approval before deciding upon a course of action." Was the MDEB established to provide full oversight of MDA like the DAB provides to other defense acquisition programs? Will the MDEB receive all of the same information that the DAB receives? If not, why? Will MDA seek the MDEB's approval prior to initiating a new block?

Secretary YOUNG. The Missile Defense Executive Board (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 Missile Defense Agency'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). Committees supporting the MDEB regularly examine detailed topics in these areas of interest. Within the MDEB forum, I am able to pursue an agenda that examines these topic areas and any other that enhances Ballistic Missile Defense System development and fielding. The MDEB meets more frequently than the DAB would meet for a typical program. Under my leadership, the MDEB will meet six times a year, or more often when necessary, to address appropriate Missile Defense Agency oversight topics. The MDEB, similar to the DAB, has and will receive appropriate information to facilitate decision-making. The Missile Defense Agency will present new block information to the MDEB prior to initiation. I have and plan to continue to use the MDEB in a decision-making manner which will be very comparable to the DAB role. Already, I have issued decision memorandums providing direction to MDA based on the detailed briefings and discussions completed in the MDEB.

Ms. TAUSCHER. Secretary Young, I'm interested in the role that the Missile Defense Executive Board is playing with regard to the development of the Missile De-

fense Agency's (MDA) annual budget requests. What role did the MDEB play in the development of MDA's FY09 budget request? Was MDA's FY09 budget merely briefed to the MDEB, or did the MDEB play a major role developing the budget? What role do you envision the MDEB playing in the development of MDA's FY10 budget?

Secretary YOUNG. The Missile Defense Executive Board (MDEB) was informed of the Missile Defense Agency's Fiscal Year 2009 budget, but did not play a role in budget development. For Fiscal Year 2010, the process is different. The MDEB has and will continue to review the planning factors and resulting funding allocations for MDA's budget. As a result of the last two MDEBs, I signed Acquisition Decision Memorandums to endorse and redirect specific planning decisions for continued budget development. The MDEB will remain involved in budget development as part of the Program Review.

Ms. TAUSCHER. Secretary Young, the January 2, 2002, Missile Defense Program Guidance signed by then Secretary of Defense Rumsfeld states that "BMD elements will enter the formal DOD acquisition cycle at Milestone C, concurrent with Service procurement and responsibility transfers." A number of missile defense systems such as Aegis BMD and THAAD seem to have reached a maturity consistent with Milestone C. What's the Department's specific criteria for determining when a specific missile defense element has reached Milestone C? Who makes that decision? OSD, MDA, the Services? Is it still the Department's plan to transition missile defense elements back into the normal DOD acquisition process when they reach Milestone C? If the MDEB is to play a role in the development of the FY10 budget request, what processes do you plan to put in place to facilitate that involvement?

Secretary YOUNG. The Defense Department's current criteria for missile defense elements reaching Milestone C 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. The recommendation for a Milestone C decision would be made by the Missile Defense Agency, in conjunction with the designated Lead Service or potentially by USD(AT&L) based on a review of the state of program progress and maturity. The Milestone C review and decision is the responsibility of the USD(AT&L). When Ballistic Missile Defense System elements reach Milestone C, the Defense Department intends to transition them into the normal Department of Defense acquisition processes that make sense. The focus of that decision will be to exercise oversight and control in an efficient and appropriate manner. The MDEB has and will continue to review the Missile Defense Agency budget preparation factors and resulting funding allocations. MDEB direction for Missile Defense Agency budget preparation and revision has been documented in two recent MDEB Acquisition Decision Memorandums.

Ms. TAUSCHER. Secretary Young, section 223 of the Fiscal Year 2008 National Defense Authorization Act directed MDA to begin using the procurement and military construction budget categories with the submission of the FY09 budget. In the budget request, MDA did request military construction funds, but did not request procurement funds.

- Please explain why the Department did not specifically request procurement funds as was specifically directed by section 223 of last year's defense authorization bill?
- What steps does the Department plan to take to ensure that its FY10 budget submission is in compliance with the law?

Secretary YOUNG. Section 223 was enacted into law on January 28, 2008. The President's budget request was transmitted to Congress one week later. The Missile Defense Agency (MDA) feels the Agency had insufficient time to incorporate changes to the Fiscal Year (FY) 2009 President's Budget submission to be consistent with all of the requirements of section 223. An existing Program Element was available for use in submitting MDA's Military Construction request and the request did include Military Construction funds as directed in section 223. There was, however, no existing Program Element for the MDA Procurement request, and MDA was unable to have one established prior to transmittal of the budget to Congress.

Concerning compliance of the Missile Defense Agency's FY2010 budget, MDA will comply with the requirements of section 223. In addition, the Department, through the MDEB will continue to review the planning factors and resulting funding allocations for all aspects of MDA's FY2010 budget, to include requests for, and execution of, funding in each of the appropriations. MDEB guidance has been and will continue to be issued in Acquisition Decision Memorandums to endorse and redirect specific planning decisions for continued budget development.

Ms. TAUSCHER. Secretary Young, what specific role does the Missile Defense Executive Board play in determining what types and quantities of missile defense systems the Missile Defense Agency will procure?

Secretary YOUNG. The Missile Defense Executive Board's (MDEB) Operational Forces Committee is chaired by the Vice Chairman of the Joint Chiefs of Staff and is composed of other principal members of the JROC. The MDEB relies on the Operational Forces Committee to review and prioritize Ballistic Missile Defense System (BMDS) requirements, integrate those current Department priorities, and provide recommendations. The Policy Committee has reviewed possible threat expansion, and will continue to influence Ballistic Missile Defense priorities and MDEB deliberations regarding deployment capabilities. The MDEB integrates the committee inputs and the Missile Defense Agency (MDA) implementation plans to endorse specific element quantities. For example, the Joint Staff presented an analysis and recommendation for additional acquisition of THAAD and SM-3 missiles. The MDEB reviewed the study, the recommendations, and MDA execution plans. The result was a decision to acquire the additional missiles that is documented in an Acquisition Decision Memorandum.

Ms. TAUSCHER. Dr. McQueary, the Cobra Dane radar would play a key role in any potential engagement of a North Korean long-range ballistic missile threat heading toward the United States. In the FY07 DOT&E annual report you stated: "Performance estimates for Cobra Dane are limited to ground tests results. These estimates rely on models and simulations that are not yet validated and accredited for use in operational evaluations. This will require MDA to fly another target through the Cobra Dane field of view." What level of importance do you attach to having MDA fly another target through the Cobra Dane radar field of view to verify the software fixes made to the radar as a result of the test in FY06? Can you adequately assess the operational capability of the Cobra Dane radar without another flight test? MDA doesn't currently plan to conduct another test before FY10. Do you agree with MDA's decision?

Dr. MCQUEARY. We observed some performance issues from the first flight test across the face of the Cobra Dane radar that the model did not predict. I believe it is important for MDA to again fly a target across Cobra Dane's field of view. Another fly-by test is necessary for verifying that all the fixes have been made correctly and allow for verifying and validating the updated model, which can then be used confidently in predicting Cobra Dane performance. This approach tracks well with General Obering's "test-analyze-fix-test" approach. It will also allow the MDA to verify and validate the updated model which is used in ground testing and wargaming.

In the interim, we can assess Cobra Dane performance based on the original flyby, targets of opportunity observed by the radar, and ground testing conducted by the MDA. Our confidence will remain low until the fixes to the Cobra Dane model can be verified and validated with a dedicated flyby.

Although I would like to see the test sooner, as long as the fixes are installed, this test is not as high a priority as most of the other flight tests already scheduled during the next few years. Since MDA plans to utilize data from ballistic missile flights across Beale, Fylingdales, and Thule radars to augment the assessment of the expected behavior of Cobra Dane, it may actually be prudent to wait to conduct another fly-by test after the MDA has made planned improvements in radar discrimination capability.

Ms. TAUSCHER. Dr. McQueary, MDA recently agreed to DOT&E's recommendation for a third flight test of the two-stage GMD interceptor. According to DOT&E's European Test Concept, the third test should track "and intercept multiple threat representative intermediate-range targets from air launched platforms along with a long-range threat representative target launched from Kodiak Island. Interception of both the intermediate range targets by the new interceptors and the long-range threat simulated by two and three-stage interceptors (sim-over-live)." Does MDA plan to follow DOT&E's specific recommendations for the third test of the two-stage interceptor (i.e., multiple intercepts)? From DOT&E's perspective, what are the risks if MDA does not follow those recommendations?

Dr. MCQUEARY. The European GMD mission will be very challenging. MDA has agreed to add a third test, but the details are still to be determined. The third flight test I proposed is a very difficult test and may need innovative approaches due to range safety and support constraints. We have been meeting regularly with the MDA to refine the European Test Concept to ensure the tests provide sufficient data to assess mission capability. I am confident that we will reach agreement with the MDA on a mutually acceptable flight test approach to evaluate the European mission.

Our assessment of risk needs to be based on an actual plan, which is still being developed. A flight test campaign that progressively examines more of the mission battlespace and adds additional modeling and simulation validation data is a sound method to gain confidence in increasingly complex and challenging mission scenarios. This will be a primary objective in our on-going discussions with MDA.

Ms. TAUSCHER. Dr. McQueary, DOT&E's FY2007 Assessment of the Ballistic Missile Defense System raised a number of concerns about the GMD program. Page 32 of the report states: "Limited flight test data (two intercepts in four years), limited operational realism (target scene presentations), and lack of independent accreditation of models and simulations impaired test adequacy. As a result, confidence in the system performance predictions based on models and simulations is low." Dr. McQueary, do you have a high degree of confidence that the GMD system will work in an operationally effective manner? What specific steps need to occur in order to increase your confidence in the effectiveness of the GMD program?

Dr. MCQUEARY. FTG-02 and FTG-03a demonstrated that the GMD has a capability to intercept a ballistic missile threat without countermeasures in limited operationally realistic conditions. Unfortunately, we cannot explore a significant portion of the battlespace with only two flight tests. While my confidence in the system performance predictions is, at this time, low, MDA is working diligently with the BMDS Operational Test Agency Team to provide verified, validated, and accredited models and simulations that are needed.

To increase my confidence in the effectiveness of the GMD program, I need MDA to complete development of the models and simulations that accurately replicate BMDS performance and to complete a minimum number of flight tests to verify, validate, and accredit them. These models will also allow analyzing areas of the performance envelope that may be impossible due to safety or environmental reasons. This past year, the MDA began an earnest effort to provide models and simulations that could be verified, validated, and accredited to meet our needs to evaluate BMDS capability. The BMDS Operational Test Team provided the MDA with recommendations and guidance to improve their verification, validation, and accreditation process and MDA is incorporating these recommendations. The MDA recognizes the importance of this effort and is providing the resources to be successful. It will not be easy or quick; but it is necessary for all of us to have confidence in the effectiveness of GMD.

Ms. TAUSCHER. Dr. McQueary, page 42 of DOT&E's FY2007 Assessment of the Ballistic Missile Defense System states: "MDA had insufficient funding for conducting all the flight tests that THAAD had included in its schedule; consequently, the MDA re-baselined the THAAD flight test program to minimize the cost impact. The end result of the re-baseline is a flight test program with more risk, increased production risk, and a total cost impact of \$180.0 million." Does it remain your view that MDA's re-baseline of the THAAD test program has increased risk to the THAAD program? What specific steps would you recommend for reducing risk for the THAAD test program?

Dr. MCQUEARY. The re-baseline of the THAAD test program has increased risk to the THAAD program. The removal of three of the seventeen flight tests, combined with the loss of data from FTT-04 as the result of the target failure, means fewer opportunities to demonstrate repeatability of performance, which raises risk and lowers confidence in any future assessments. However, it should be noted that the thirteen remaining flight tests are designed to challenge the system and have the potential to provide the data necessary to anchor MDA systems performance models and simulations. As it stands today, any loss of flight test data will likely require additional flight tests to achieve the prescribed knowledge points for THAAD.

To avoid any additional risk to the THAAD program, I recommend that the MDA not eliminate any additional tests from the flight test program. I also recommend that the MDA repeat any unsuccessful flight tests and conduct the remaining flight tests in a manner that achieves all test objectives to adequately verify, validate, and accredit the models and simulations.

Ms. TAUSCHER. Dr. McQueary, DOT&E's FY2007 Assessment of the Ballistic Missile Defense System states that "overall, FY07 THAAD testing was adequate and sufficient." However, the report raised concerns about MDA's ability to deliver targets for the THAAD program in a timely manner, stating that "further reduction of the THAAD flight test program or simplification of targets would severely impair the assessment of THAAD capabilities." Is this still your view? Are you satisfied with MDA's ability to provide targets to the THAAD program?

Dr. MCQUEARY. It is still my view that further reductions in the THAAD flight test program or simplification of targets would severely impair the assessment of THAAD capabilities. Any more reductions or failures would mean fewer opportuni-

ties to demonstrate repeatability of performance which raises risk and lowers confidence in any assessments we will make in the future.

I am satisfied the MDA is working hard within the funding and safety limitations of the current test program to meet target requirements for the THAAD program. I recommend MDA continue to involve warfighter representatives and operational testers when considering programmatic adjustments that implicitly or explicitly change requirements.

Ms. TAUSCHER. Dr. McQueary, the Airborne Laser is scheduled to conduct a lethal shoot-down demonstration in September 2009. From DOT&E's perspective, will that test provide your office enough information to certify that the ABL program is operationally effective, suitable, or survivable? If not, what specific capabilities would you have to see ABL demonstrate before you were in a position to determine this?

Dr. MCQUEARY. The shoot down demonstration is important to demonstrate theory, but as a technology demonstrator it was not intended to demonstrate that the ABL program is operationally effective, suitable, or survivable. A comprehensive ground and flight test program that includes verified, validated, and accredited models and simulations is required. Along with this information, any decisions must include a thorough analysis of the suitability and survivability while considering affordability.

To demonstrate ABL operational effectiveness following the September 2009 demonstration, the MDA will need to design and execute a comprehensive ground and flight test campaign that includes verified, validated, and accredited models and simulations that test and evaluate shoot down capability of a representative cross section of threat missiles in the full mission battlespace of the laser system. Such a campaign should demonstrate repeatability to strengthen confidence in demonstrated performance. To demonstrate suitability, the test program must collect sufficient data to use in the models and simulations to accurately predict performance and focus on Reliability, Availability, and Maintainability. To demonstrate survivability, the MDA, in conjunction with the warfighters, must accomplish a system-level vulnerability assessment and implement hardware changes and operating procedures, if needed, to achieve a mutually acceptable level of survivability.

Ms. TAUSCHER. Dr. McQueary, the Missile Defense Agency recently decided to cancel FTG-04 and merge the requirements of that test into FTG-05 and FTX-03. What role did DOT&E play in MDA's decision to cancel FTG-04? Does DOT&E support MDA's decision to remove a GMD flight test? What impact will the cancellation of FTG-04 have on MDA's ability to validate and anchor its models?

Dr. MCQUEARY. DOT&E was not consulted before the MDA canceled FTG-04. The MDA initially informed us that FTG-04 would slip to November and asked us to provide comments on a possible sensor-only (FTX) flight test using the FTG-04 target. We recommended that the FTX be accomplished as risk reduction for the planned FTG-04 and FTG-05 flight tests, and as an important opportunity to collect Models and Simulations (M&S) verification and validation data on sensor correlation and fusion, a first for the BMDS. We qualified our recommendation by stating that the FTX would only be valuable if all four key sensors—the Aegis Ballistic Missile Defense (BMD) Long Range Search & Track (LRS&T) radar, the AN/TPY-2 Forward-Based (FB) radar, the Sea-Based X-band (SBX) radar, and the Beale Upgraded Early Warning Radar (UEWR)—would be in place and on line, and if target correlation could be attempted through the GMD Fire Control (GFC) and/or the Command, Control, Battle Management, and Communications (C2BMC) systems. One week later, after we delivered our recommendation on the FTX, the MDA informed DOT&E that a decision had been made to cancel FTG-04 and conduct a modified FTG-05 in its place in November 2008.

At this stage in the GMD program, DOT&E cannot support the elimination of any GMD flight test. With the limited number of GMD intercept tests completed to date, there is insufficient data to verify and validate the required models and simulations. Cancellation of an intercept test eliminates an opportunity to gather these important data. Given the instrumentation issues that precluded a GMD intercept flight test this summer, the FTX will afford an opportunity to examine the multi-sensor data fusion capability to generate a weapons task plan without expending an interceptor.

The FTX-03/FTG-05 sequence makes good use of available assets; however, this flight test sequence cannot fully replace FTG-04 and the important intercept data it would have produced. In the future, additional operationally realistic, multi-sensor intercept tests will be needed to gather end-game intercept data where confidence is most lacking. These intercept data will build confidence in system performance and demonstrate reliability. In subsequent discussions, MDA committed to adjusting the FY09 and beyond test program to ensure we collect the intercept data needed to do just that.

Ms. TAUSCHER. Dr. McQueary, the lack of reliable targets seems to have become the pacing item of MDA's testing program. Are you satisfied with the actions MDA has taken to date to rectify the shortfalls with its targets programs? Do you have any specific recommendations for improving the targets program?

Dr. MCQUEARY. I am not sure there is much the MDA can do in the short term to fix the problems it is experiencing with its BMDS targets. The older targets are less reliable and have impacted both GMD and the Terminal High Altitude Area Defense (THAAD) system. The targets experienced complete failures for FTG-03 (GMD) and FTT-04 (THAAD). To achieve the required performance, targets have necessarily become more complex. Problems with these more complex targets have impacted testing for sensors, particularly THAAD. The targets experienced partial failures during radar data collection (RDC) event RDC-1c and RDC-1d resulting in missed developmental data for the THAAD radar. These four failures occurred during 20 flight tests over a recent 18-month period beginning in September 2006. Developing these complex targets has resulted in scheduling delays affecting both GMD and THAAD. We have observed that increasing costs have impacted schedules and scope of testing as well, particularly with THAAD. The answer may be the Flexible Target Family (FTF) that the MDA is developing. Unfortunately, the FTF is a longer-term solution. I don't see any good short term solution other than what MDA is doing.

Target issues are not just an MDA problem. Targets are a Department-wide problem affecting ground, sea, and air programs, both for acquisition and training. The targets we need to adequately test the systems we are acquiring are nearly as sophisticated and costly as the threats they are trying to replicate and the weapons we are developing to counter them. A number of studies are underway by MDA, the Government Accountability Office, and my office to look at this problem and possible solutions for MDA. The goal is to develop actionable recommendations from these studies.

Ms. TAUSCHER. Dr. McQueary, page 5 of DOT&E's October 1, 2007, European GMD Mission Test Concept, a copy of which your office supplied to the committee, states: "The proposed GMD expansion to the European theater has not accomplished system engineering adequate to support the development of a test program sufficiently detailed to certify a high probability of working in an operationally effective manner." Is this still your view? The report further states that "testing of the new two-stage booster in a flight test (even an intercept flight test) is inadequate to assess the operational effectiveness of the European deployment of GMD assets." Is this still your view? DOT&E recommends that one of the intercept tests include an attempt to track and intercept multiple longer-range targets simultaneously, i.e., a salvo test. Is this still your view?

Dr. MCQUEARY. When DOT&E prepared the European Ground-based Midcourse Defense (GMD) Mission Test Concept for the MDA, a working level concept paper to help the MDA with initial planning considerations, the Agency was in the early stages of system engineering and it was not possible to develop a definitive mission test concept. The DOT&E concept was based on our understanding of the European mission and used generic data and calculations to prepare the concept paper. However, it is still my view that additional testing of the European mission is required.

There are really two issues with the proposed two-stage booster (interceptor): the interceptor itself and the European missile defense mission. There are numerous similarities between the two-stage booster, its associated launch hardware and software, and the existing three-stage booster. The MDA has successful experience making this kind of modification. These changes can be adequately tested in the two flight tests currently proposed by the MDA. The successful completion of the European campaign's first two flight tests should enable me to recommend that the Secretary certify the successful modification of the three-stage interceptor into a two-stage interceptor.

On the other hand, testing the European mission cannot be accomplished with only one intercept flight test. The intercept geometries, the timelines associated with them for both decisionmaking and intercept, and the complex command & control issues must be developed, refined, and tested during both intercept flight tests and extensive hardware-in-the-loop ground testing. This ground testing must use the actual command, control, battle management, and communications architecture in the European theater, and the models and simulations must be developed and verified, validated, and accredited before we can be confident in our ability to perform the European missile defense mission.

I also think there is a need to demonstrate the capability to track and intercept multiple longer-range targets simultaneously. The DOT&E concept does include a multiple target engagement using multiple interceptors which I believe should still be demonstrated at least once during the European Mission GMD flight test pro-

gram. Rather than a salvo test, which is defined as two interceptors on one target, this is a multiple simultaneous engagement of two interceptors on two targets. We are currently discussing with the MDA the nature of what the third test should be.

Ms. TAUSCHER. General Obering, the threat from short- and medium-range ballistic missiles represent a major threat to U.S. interests, deployment forces, and friends and allies around the world. The recent Joint Capabilities Mix Study II (JCM II) concluded that combatant commanders require, at minimum, nearly twice as many THAAD and SM-3 interceptors than are currently planned to meet this threat. Does the Department of Defense plan to implement the recommendations outlined in the JCM II? If so, which DOD organization (MDA, Army, Navy etc) will be responsible for procuring the additional THAAD and SM-3 inventory?

General OBERING. Yes. MDA has briefed the Missile Defense Executive Board (MDEB) and the Joint Requirements Oversight Council (JROC) and the Deputy Secretary of Defense's Action Working Group (DAWG) on our plan to meet the JCM study findings. Adjustments will be reflected in the FY2010 budget request.

MDA is planning to procure the Aegis and THAAD assets as recommended by the Joint Capabilities Mix Study (JCM II).

Ms. TAUSCHER. General Obering, the Kinetic Energy Interceptor (KEI) was designed to be a boost phase interceptor. However, MDA is now describing KEI as a midcourse, follow-on to the existing GMD system. What is the expected life span of the existing GMD interceptors being deployed today? 20 years? 25 years? If this is the case, why are we moving forward with a follow-on to the existing GMD system at this time? The Joint Capabilities Mix Study II concluded that we have major deficiencies in our ability to counter short- and medium-range threats. Wouldn't it make more sense to focus our limited resources on countering that shortfall instead of investing in another long-range interceptor?

General OBERING. The exact lifespan of the GBI is classified but I would be happy to provide it to you in a classified forum. However, the service life could be extended through stockpile reliability testing, refurbishment, and routine maintenance.

The Agency is not planning on any near term replacements of the GBI boosters with KEI boosters. The Agency plan is to pursue GBI booster spiral upgrades in close coordination with the KEI booster development team. The GBI and KEI boosters provide different and complementary capabilities to the BMDS. The MDA Engineering, GM and KI Program Offices are developing plans for the coordinated acquisition of common, core standards compliant booster avionics for the KEI and future GBI capability spirals. This enables us to save significant dollars through the integrated development of high cost components needed by both KEI and GBI.

The MDA plan is to efficiently sustain and spiral upgrade the GBI while adding new KEI capabilities to the BMDS such as boost phase intercept or mobile midcourse.

The Joint Capabilities Mix study II (JCM II) was conducted by the Joint Theater Air and Missile Defense Office (JTAMDO) and was initiated as a follow-on to the Joint Capabilities Mix I (JCM I) study. The JCM I study identified key decision points required to inform POM 08 and explored Upper Tier (SM-3 and THAAD) interceptor sufficiency. JCM II study began in May 2006 after the Joint Requirements Oversight Council identified gaps in weapons and sensors that JCM II could address. Weapons systems considered to fill the gaps included Standard Missile-3 (SM-3) interceptors and Terminal High Altitude Area Defense fire units.

The JCM II study was completed in March 2007 and recommended a significant increase in the planned number of SM-3 interceptors and THAAD fire units to be acquired over the next five years. The Missile Defense Agency (MDA) is working with the Missile Defense Executive Board (MDEB) and the Department's senior leadership to allocate sufficient resources for the acquisition of additional interceptors and BMD assets during the POM 10 budgetary process.

JCM II did not examine potential short-falls in long-range interceptors. U.S. intelligence assessments continue to indicate that potential adversaries are seeking to develop or acquire longer-range systems. This threat trend justifies continued investment in more capable and flexible midcourse intercept capabilities.

Ms. TAUSCHER. General Obering, over the past year, there has been some discussion about the possibility of the Missile Defense Agency playing a role in the cruise missile defense mission. What's the status of those discussions? What are the specific contributions MDA could potentially make to the cruise missile defense mission?

General OBERING. The Joint Requirements Oversight Council (JROC) has approved the U.S. Strategic Command (STRATCOM) as the Integrating Authority (IA) for Integrated Air and Missile Defense (IAMD). In this role, STRATCOM is the advocate for joint warfighter air and missile defense needs. Next year, STRATCOM intends to expand their current BMDS Prioritized Capability List (PCL) to include

IAMD. The HAC-D has expressed continued concern over the need for a single organization to take responsibility for engineering, architecture and integration of IAMD for the homeland. In their FY08 language, they directed the Secretary of Defense to provide a report including a plan for developing necessary cruise missile defense capabilities and deploying and integrating those capabilities into the ballistic missile defense systems when feasible. They also directed that “the plan shall specify an organization within the Department of Defense responsible for budgeting for and developing an overall architecture definition, acquisition planning, integration and testing of recommended deployment options, and execution of an acquisition plan.” In the spring of FY08, the Office of the Secretary of Defense (OSD) assigned an action team consisting of members from OSD, U.S. Northern Command (NORTHCOM), U.S. Strategic Command (STRATCOM), Joint Integrated Air and Missile Defense Organization (JIAMDO), MDA, and the Services to address the congressional language. The team has held several meetings and is developing a series of options and a recommended response to the HAC-D request. OSD anticipates that this report will be delivered to the HAC-D in September 2008.

MDA’s integrated architecture experience with the Ballistic Missile Defense System includes direct warfighter interface and communication links, interoperability standards, an established systems engineering process with an emphasis on system performance, and a process to integrate capability through test, building upon knowledge points to increase confidence over time. Since many of the integration and testing challenges of air and cruise missile defense are mirrored in ballistic missile defense, MDA could possibly apply that experience in developing a common, integrated cruise missile defense system.

Ms. TAUSCHER. General Obering, it was recently announced that the United States and the Czech Republic have completed negotiations that will allow for the deployment of an X-band radar on Czech territory. That said, negotiations with Poland regarding the potential deployment of long-range interceptors are on-going. When are we likely to see an agreement with Poland regarding the deployment of interceptors? Would we consider moving forward with deployment on the X-band radar in the Czech Republic without the long-range interceptors in Poland? Would an X-band radar in the Czech Republic provide any benefit to missile defense systems like Aegis BMD and THAAD, which are designed to counter short- and medium-range missile threats?

General OBERING. We are optimistic that an agreement with Poland will be completed and ratified by the end of the year. While we remain confident that negotiations will succeed with Poland, locating an X-band radar in the Czech Republic could contribute to the defense of NATO and the U.S., so we would plan to move forward. The X-Band Radar would benefit the Aegis BMD and THAAD elements by providing a cue- or launch-on-remote capability that would increase the defended area and probability of engagement success for many scenarios.

Ms. TAUSCHER. General Obering, in order to effectively protect Southern European territory and population centers against the short- and medium-range threat, NATO will require, in addition to point defense systems like Patriot PAC-3, wide-area defense capabilities such as THAAD and Aegis BMD. Do any NATO countries besides the United States currently have any plans to deploy missile defense systems like Aegis BMD and THAAD? What actions are you taking to encourage NATO allies to pursue these options? Are there any impediments to selling Aegis BMD and THAAD to our allies?

General OBERING. A number of European allies have, or are acquiring, short-range missile defense systems. The Netherlands, Germany, and Greece have Patriot systems. Italy and Germany are engaged in a cooperative development program with the United States to develop the Medium Extended Air Defense System Program. France is developing its own system, and Turkey has requested information for a potential purchase of a Patriot system. The Netherlands is very interested in acquiring SM-3 missiles to use with its non-AEGIS air defense frigates. Additionally, several nations have expressed interest in sea-based ballistic missile defense including the United Kingdom, Germany, Spain, and Denmark.

MDA and the Navy are working closely with The Netherlands to determine how to integrate the SM-3 missile on its air defense ships. We also work in concert with the Office of the Secretary of Defense to pursue any security cooperation opportunities that may arise.

We have a range of missile defense cooperative activities with a number of our NATO allies that expose the allies to both BMDS capabilities and shorter range missile defense systems. These activities include such things as inviting observers to THAAD and AEGIS tests, conducting bilateral missile defense table top exercises that include the two systems, participation of AEGIS and THAAD assets in com-

bined missile defense exercises, and program and capability briefs on the two systems.

There are unique challenges with every country when selling them any weapon system. Working via the interagency process, the National Disclosure Policy prescribes a process for addressing technology transfer and protection concerns. We do not think there would be any impediments that we could not overcome should any of our NATO allies want to acquire AEGIS or THAAD.

Ms. TAUSCHER. General Obering, one of the arguments the Department of Defense has used in favor of the European Interceptor Site has been that it will provide a “permanent” presence, which mobile capabilities would not provide. However, the proposed long-range interceptors in Poland would not protect Southern Europe from the existing short- and medium-range threat from nations like Iran and Syria. Does the United States have plans to permanently station short- and medium-range defenses in Southern Europe?

General OBERING. Our proposed European Site architecture is complementary to the broader NATO Active Layered Theater Ballistic Missile Defense (ALTBMD) architecture that will ultimately link the BMD assets of partner nations for the benefit of all members. While our current plans do not include permanent stationing of short- and medium-range defenses in Southern Europe, the evolution of the ALTBMD architecture over time will assist member countries in addressing this need.

Ms. TAUSCHER. General Obering, on page 13 of your written testimony you state: “By devaluing Iran’s longer-range missile force, European missile defenses could help dissuade the Iranian government from further investing in ballistic missiles and deter it from using those weapons in conflict.” What is your basis for this statement? Is there any evidence that the deployment of U.S. theater missile defenses in the Middle East and deployment of longer-range defenses in Alaska have dissuaded Iran from developing ballistic missiles?

General OBERING.

- Iran has the largest force of ballistic missiles in the Middle East, including several hundred SRBMs and Shahab-3 MRBMs. It continues its efforts to develop and/or acquire ballistic missiles capable of striking Israel and central Europe.
- Iran has publicly announced its pursuit of an indigenous space program, which would provide them the capability to develop longer-range missiles. The intelligence community assessment is that Iran could have an ICBM capable of reaching the U.S. before 2015.
- The Iranian president has issued multiple public statements threatening the existence of Israel and indicating a willingness to use all military means available, including ballistic missiles.
- Deployment of theater BMDS assets to the Middle East is in its early stages. Patriot batteries are in theater and Aegis BMD-capable ships have recently begun operations in the area. The first THAAD fire unit will not become operational until late FY09. No decision has been made by the Department on deployment of THAAD fire units.
- It is still too early to determine the deterrent impact of U.S. missile defense deployments upon Iranian ballistic missile deployment. Iran may prove to not be deterrable. In this case, active missile defense provides the President and European leaders with an alternative strategic option to pre-emptive strike.
- Concern over Iranian ballistic missile activities was a principal factor in the recent communiqué out of the NATO Bucharest Summit Conference; supporting the deployment of 10 GBIs to Poland, the European Mid-Course Radar to the Czech Republic and the AN/TPY-2 radar to a site yet to be determined. European leaders are hopeful that Iran may be dissuaded from continued ballistic missile development, but believe it prudent to field a capability to defend Europe against this threat should deterrence fail.

Ms. TAUSCHER. General Obering, Israel has expressed interest in developing a new missile defense interceptor—the Arrow-3—to complement its existing missile defense capabilities. It is my understanding that the capabilities of the Arrow-3 would be very similar to that of the existing Standard Missile-3 or the THAAD system. In your view, could the SM-3 or THAAD meet Israel’s future defense requirements? Have you done any analysis comparing and contrasting the capabilities of the various systems? What about preliminary cost estimates? If so, have you shared that information with Israel?

General OBERING. MDA's analysis shows that existing U.S. BMD systems like a land-based version of the SM-3 Block 1, provide roughly equivalent capability to the Arrow-3 concept when cued by a forward based radar such as the AN/TPY-2. A land-based version of the future SM-3 Block II now being co-developed with Japan would far exceed the capability of an Arrow-3. These BMDS systems are further along in development and include more mature sensors built into the interceptor for better target identification. Additionally, MDA sees limited value in creating a duplicate capability to one that already exists in the U.S. BMDS.

Joint U.S.-Israeli analysis has shown that THAAD does not have sufficient coverage to provide the additional battlespace Israel requires to address evolving regional threats.

MDA has conducted, and continues to conduct, architecture and engineering analysis on how best to provide effective layered ballistic missile defense for Israel and surrounding countries. The conceptual system using SM-3 Block IB and AN/TPY-2 is believed to be roughly equivalent in terms of general capability to the Israeli system using Arrow-3 and Super Green Pine, but far superior in terms of discrimination capability. MDA can provide classified presentations that illustrate their comparative performance. MDA is continuing these studies with a more comprehensive Analysis of Alternatives (AoA) to compare performance, cost, schedule and risk of the alternatives. The study is scheduled to be completed by the end of July.

The issue of cost effectiveness is not settled conclusively, primarily because of the immaturity of the design requirements for the defense of Israel, accepted concepts for basing, joint planning and operations, logistic support, the requirement to incorporate "anti-tamper" in both hardware and software, and complete disclosure of classified information by both sides. Whereas the SM-3 Block IB interceptor is a proven system, Arrow-3 has not completed a system requirements review, much less entered full scale development. The lack of design decisions regarding Arrow-3, its proposed complexity, and means for integration into a defensive architecture, indicates significantly greater risk for an Arrow-3 based system than for SM-3.

Because the AoA will not be completed until late July, the initial cost estimates are likely to change, however MDA's preliminary cost estimates for Arrow-3 interceptor are:

- Development Program: \$1,097M
- Average Unit Cost (AUC) (40); \$3.5M

While Israel maintains that their costs will be significantly lower than MDA's cost estimates, MDA's cost experience from THAAD as a Program Definition and Risk Reduction (PDRR) program to an Engineering and Manufacturing Development (EMD) program indicates other development costs are likely. Based on this experience, possible costs for Arrow-3 Weapons Systems could be:

- Radar: \$929M
- Fire Control: \$272M
- Launcher: \$91M

National disclosure restrictions have limited the amount of detailed SM-3 performance and cost information that MDA could share with Israel. National Disclosure Policy, Anti Tamper requirements, and other foreign sales issues are challenges that MDA is addressing in order to promote a U.S. BMDS solution to Israel's upper tier requirement.

- MDA provided THAAD information to Israel last June
- In March, MDA received an Exception to National Disclosure Policy (ENDP) for release of SM-3 IA/IB Data which has been provided to Israel. Review is in progress.
- Israel has several other disclosure requests (AN/TPY-2 (FB), MKV, Army JLENS) currently in various stages of the disclosure process

Ms. TAUSCHER. General Obering, the Missile Defense Agency has consistently told Congress that it plans to make incremental, "spiral upgrades" to its various missile defense systems. What is the MDA plan for implementing "spiral upgrades" to the THAAD system? When does MDA plan to begin budgeting for these upgrades?

General OBERING. Largely in response to demands from both the Congress and the warfighter, the Missile Defense Agency budget reflects an overall strategy that focuses on near term delivery of ballistic missile defense capabilities, including THAAD as an element of BMDS. However, the Agency continues to evaluate alternative strategies for spiral development for potential inclusion in the FY2010 budget submission across the Elements of the BMDS. Candidate spiral upgrades to the THAAD element include: the development work that will enable the Engagement

Sequence Group for THAAD to Launch on Remote Sensors; and to extend the distance from the Fire Control to the THAAD launcher. Based on fiscal constraints and the priority for near term delivery of BMDS capabilities, funding for spiral development of the BMDS capability represented by the THAAD element will likely be in the FY13–15 timeframe.

Ms. TAUSCHER. General Obering, the committee recently learned that the Missile Defense Agency has decided to move the management of the THAAD radars from the THAAD Program Office to the MDA Sensors Program Office. What were the specific reasons for this decision? How will MDA ensure that this transfer will not negatively impact the THAAD program?

General OBERING. The decision to consolidate the THAAD radar organization with the Sensors Directorate was part of a deliberate strategy to combine development, testing, and O&S activities for the Agency's family of X-band radars (TPY-2 forward based mode (FBM); TPY-2 terminal mode (TM); Sea Based X-Band radar, and the European Mid-Course Radar). The AN/TPY-2 FBM and AN/TPY-2 TM X-Band radars share a common hardware and software design; these synergies allow for one organization to be responsible for the development, test, delivery and support of these radars. It also allows for our industry partner to combine separate efforts (which they have done) under one team; not two separate teams. This consolidation also allows for common X-band radar contracts which will lead to efficiencies for the taxpayer.

Ms. TAUSCHER. How will MDA ensure that this transfer will not negatively impact the THAAD program?

General OBERING. The transition has caused no disruption of ongoing Forward Based or THAAD Mission efforts. While now part of the Sensors Directorate, the former THAAD Radar Product Office staff continues to remain the single face with MDA on THAAD radar development and production. Support to the THAAD Office has been excellent as demonstrated in recent test successes.

Ms. TAUSCHER. General Obering, in a real world combat situation, the THAAD and Patriot systems must be able to work seamlessly with one another. Are there any plans to conduct a joint THAAD/Patriot intercept test? What are the challenges with conducting such as test?

General OBERING. During FY08 and FY09, THAAD and PATRIOT will both participate in a series of live intercept tests, as described below. Additionally, THAAD/PATRIOT integration and interoperability are extensively evaluated during ground test campaigns. MDA is planning opportunities for joint test events with BMDS objectives included on PATRIOT firing tests. Advanced planning is in progress for simultaneous intercept flight tests in the FY11 timeframe. Significant challenges to simultaneous intercept tests include range instrumentation for multiple targets and interceptors and range safety and intercept debris considerations.

Caravan-2 is an Israeli Arrow Weapon System flight test scheduled 4QFY09 at Pt. Mugu, CA. Patriot and THAAD will both be online exchanging track data and evaluating the impact of Arrow intercept debris on PATRIOT/THAAD operations. Aegis BMD and C2BMC will also participate in this test.

FTT-10 is a THAAD live intercept flight test scheduled at the Pacific Missile Range Facility in September 2008. PATRIOT will participate to evaluate THAAD/PATRIOT data exchange and the effects of THAAD intercept debris on PATRIOT operations. Aegis BMD and C2BMC will also participate in this test.

Patriot 7-2 is a PATRIOT live intercept flight test at White Sands Missile Range, scheduled to occur mid calendar year 2009. THAAD will participate to provide a cue to PATRIOT and to evaluate THAAD/PATRIOT data exchange. C2BMC will also participate in this test.

Ms. TAUSCHER. General Obering, the Army recently announced that it has established an Integrated Air and Missile Defense program to fully integrate Army air and missile defense assets. To what extent is MDA working with the Army to ensure that THAAD is fully integrated into the Army IAMD system? Will MDA's C2BMC be fully interoperable with the Army IAMD system?

General OBERING. MDA participated in discussions with the Army's Integrated Air and Missile Defense (IAMD) Project Office to plan the integration of the THAAD Fire Control & Communication component into Increment 2.0 of the IAMD Battle Command system (IBCS). The planning continued into early 2007, when funding to the IAMD program was reduced. Due to the funding cut, THAAD integration was delayed from IBCS Increment 2.0 to Increment 3.0, which will be completed some time after 2012.

Both MDA and the Army recognize the importance of ensuring that C2BMC capabilities are interoperable with the Army's IAMD efforts. To that end, the Director of MDA and the Army Acquisition Executive co-signed a Memorandum of Understanding (MOU) in March 2007, which established a framework for cooperation be-

tween C2BMC Program Director (MDA/BC) and Program Executive Officer Missiles and Space (PEO MS) in developing, integrating, testing, fielding, and supporting current and future IAMD and BMDS Battle Management Command and Control products. Formalizing the relationship between PEO MS and MDA/BC should help maximize available resources, providing an economy of effort and facilitating the development of interoperable capabilities. The MOU establishes a framework for collaboration on a host of inter-related areas overseen by flag officer reviews. Additionally, the Army's IAMD's Integrated Air and Missile Defense Battle Command System (IBCS) Request for Proposal (RFP) directs that proposed solutions must be interoperable with C2BMC and contains language offering the C2BMC Planner as a government furnished product (GFP).

Ms. TAUSCHER. Secretary Young and General Obering, I understand that the United Arab Emirates (UAE) is interested in potentially purchasing several THAAD fire units. Could you provide us an update on the status of that potential sale? How many THAAD fire units and interceptors would be involved with the sale? Who would be the executive agent for this sale? MDA, the Army? Will the potential sale of THAAD help reduce the overall cost of the system? What are the key technology security issues associated with the potential sale to UAE?

General OBERING. Currently, the Congressional notification has been signed by the State Department and is awaiting completion of the pre-consultations with SFRC and HFAC staff. Once the pre-consultations are complete, the State Department will forward the Section 36(b) notification to Congress for a 20-day informal and then a 30-day formal notification. MDA is working on information for the Letter of Offer and Acceptance (LOA). After the Congressional notification process is complete, MDA will work with Army, the Implementing Agency, to complete the LOA process. This sale will involve a total of three (3) THAAD Fire Units (FU) plus an additional float radar, and will include one hundred and forty-four (144) interceptors in total. The Army will be the Implementing Agency for the UAE THAAD FMS case. The United States will expect cost savings as the number of THAAD fire units and spare interceptors increases. These increased production order quantities will mitigate production gaps and enable a reduction in average unit interceptor costs. With the appropriate anti-tamper measures in place on U.S. military systems provided or sold to a foreign partner, the United States can ensure that technologies are protected against compromise and reverse engineering. The THAAD Anti-Tamper Program has been approved within DOD and is fully funded.

Ms. TAUSCHER. General Obering, does the Missile Defense Agency plan to continue the development of the unitary warhead for the SM-3 IIA missile?

General OBERING. Yes, we will continue our unitary kill vehicle development efforts as part of the SM-3 Blk IIA Cooperative Development with Japan. This cooperative program with Japan is considered a top priority effort of critical importance to both MDA and Japan.

Ms. TAUSCHER. General Obering, the committee has been informed that MDA plans to manage all kill vehicles, both unitary and multiple, under the MKV Program Office. How will MDA ensure that this will not have the unintended effect of removing focus on developing and improving existing unitary kinetic kill vehicles, such as the unitary kill vehicle being jointly developed by the United States and Japan.

General OBERING. The MKV Office has transitioned to the BMDS Kill Vehicles Office to centralize the development of new unitary and multiple kill vehicles. MDA will deliver both a unitary kill vehicle for the SM-3 Block IIA Cooperative Development missile with Japan and multiple kill vehicle payloads for all midcourse weapon systems (Ground Based Midcourse Defense, Kinetic Energy Interceptor, and Aegis Ballistic Missile Defense SM-3 Block IIB). Existing kill vehicles and any improvements will remain the responsibility of the current office.

To ensure continued focus on the SM-3 Block IIA unitary interceptor, Aegis BMD will retain responsibility for managing the overall SM-3 Cooperative Development cost, schedule, and performance baseline. The BMDS Kill Vehicles office will execute the development of the SM-3 Block IIA kill vehicle with the priority to deliver the SM-3 Block IIA according to our commitments with the Government of Japan.

Ms. TAUSCHER. General Obering, I understand that MDA has agreed to DOT&E's recommendation for a third flight test of the two-stage GMD interceptor. According to DOT&E's European Test Concept, the third test should track "and intercept multiple threat representative intermediate-range targets from air launched platforms along with a long-range threat representative target launched from Kodiak Island. Interception of both the intermediate range targets by the new interceptors and the long-range threat simulated by two and three-stage interceptors (sim-over-live)." Does MDA plan to follow DOT&E's specific recommendations for the third test of the two-stage interceptor (i.e., multiple intercepts)? If not, why not?

General OBERING. Detailed planning, by MDA and DOT&E staffs, on these three tests is currently ongoing. The third flight test, as described in DOT&E's conceptual paper, is not currently supportable due to the lack of intermediate range air-launched targets and mobile test infrastructure. Additional considerations for range safety and airspace constraints will also factor into test planning restrictions. I am confident that we will reach agreement with DOT&E that is mutually acceptable for these tests.

Ms. TAUSCHER. General Obering, Missile Defense Agency plans to conduct a lethal shoot-down demonstration of the Airborne Laser (ABL) during the 4th Quarter of fiscal year 2009. If that test is successful, will that prove ABL is operationally effective, suitable, survivable, and affordable? If not, what steps will need to take place to determine whether ABL is effective, suitable, survivable, and affordable?

General OBERING. No, FTL-01, the lethal shoot-down demonstration, by itself, will not prove ABL is operationally effective, suitable, survivable, and affordable. The ABL Tail 1 aircraft is a technology demonstrator that was never intended to be fully operational. MDA will address affordability, performance improvements, weaponization, and operability based on Tail 1 lessons learned, the flight test campaigns, and focused trades and studies.

Following a successful FTL-01, additional flight tests and studies are planned to determine the effectiveness, suitability, survivability and affordability of an operational ABL. The MDA FY09 budget request includes funds to initiate these trade studies that will eventually lead to ABL Tail 2, a production representative aircraft. As part of these trade studies, MDA will address ways to improve weapon system reliability, maintainability, supportability, manufacturing planning, and operability. In addition, results from these studies will help determine the potential operational effectiveness, suitability, and survivability of the operational ABL fleet. If FY09 funding to initiate these studies is cut, MDA's ability to make a decision will be delayed by at least one year.

Ms. TAUSCHER. General Obering, the Congressional Budget Office (CBO) estimated that it could cost as much as \$36.0 billion to develop, procure, and operate a fleet of seven ABL aircraft for 20 years. What is MDA's current total cost estimate for the ABL program? Has DOD Cost Improvement Group done an independent assessment of the likely costs of ABL? If not, why?

General OBERING. The \$26B (Base Year 06) ABL life cycle cost estimate provided in the FY06 Report to Congress included the cost to develop, procure and operate a fleet of seven aircraft for 20 years. MDA has continued to mature requirements for developing and fielding an operational ABL and estimates of the resulting costs.

We recognize the importance of affordability to ABL. The program is continuing to aggressively evaluate technical and affordability opportunities to improve the operational capabilities of the aircraft and make best use of limited resources. These will be implemented after FTL-01, the successful lethal demonstration in 4QFY09.

The Airborne Laser (ABL) Element is a Capability Development of the Ballistic Missile Defense System. Therefore, MDA has not requested the OSD Cost Analysis Improvement Group to perform an Independent Cost Estimate (ICE) for ABL. MDA intends to request an ICE for ABL at a later time, after reducing programmatic uncertainties and before deciding to commit resources to procuring and sustaining an ABL capability.

Ms. TAUSCHER. General Obering, in 2006, the Department of Defense's Office of Program Analysis and Evaluation conducted a review examining the potential effectiveness of the Airborne Laser (ABL) and the Kinetic Energy Interceptor (KEI) to perform the boost phase defense mission. What were the key findings of that study? What did the study have to say about the performance of ABL and KEI? How will the results of that study be taken into account as the Department makes future decisions regarding the future of its boost phase defense systems?

General OBERING. The PA&E study illustrated the significant (and different) performance sensitivities of the ABL and KEI weapons to varying threat characteristics (burn time, fuel type, hardness), countermeasure types, and operational engagement conditions (atmospherics and basing locations). MDA does not agree with many of the PA&E study results, particularly concerning the operational effectiveness of the Airborne Laser.

The PA&E study findings on KEI effectiveness were very consistent with the 2006 MDA Boost/Ascent Congressional report. For ABL, varying PA&E and MDA study assumptions on countermeasure extent and likelihood drove PA&E leadership to a more pessimistic view of ABL operational effectiveness than that captured in the 2006 MDA Congressional Report. ABL lethality and countermeasure effects testing conducted after the 2006 report supports MDA modeling assumptions contained in the 2006 report.

The MDA and PA&E have consistent analytical representations of ABL and KEI operational effectiveness when consistent assumptions of the threat, countermeasures, and operational conditions are applied. The 2009 Knowledge Points for ABL and KEI, along with parallel objective system engineering and planning work, will provide us with the performance, cost, schedule, and risk information we need to refine our BMDS acquisition strategy for boost phase capabilities.

Ms. TAUSCHER. General Obering, the Missile Defense Agency has stated that ABL is its “primary” boost phase missile defense program. What were the specific criteria MDA used to designate ABL as its “primary” boost phase system?

General OBERING. The ABL is our primary boost phase capability because it is the only capability that can intercept all ranges of threat in the boost phase. KEI boost phase intercept is limited to long range threats that burnout in the exoatmosphere (greater than 100 km altitude). By significantly thinning that threat in the boost phase, ABL has the potential to greatly augment our ability to defeat large raids of short range and medium range ballistic missiles, of which our adversaries are known to have large quantities.

Ms. TAUSCHER. General Obering has said that if ABL’s 2009 lethal shoot-down demonstration is successful, the Missile Defense Agency will initiate an evaluation process to examine the long-term affordability of the ABL system. What are the key criteria that will guide this evaluation? How long do you anticipate this evaluation to take? Will that review also examine issues such as operational effectiveness, survivability, and suitability?

General OBERING. The long-term affordability of ABL will be considered only in the context of the entire Ballistic Missile Defense System (BMDS). The scope of work and maturity of other technology and development programs within MDA must also be considered in making decisions about a particular element of the BMDS. MDA will consider criteria that will include affordability, operational effectiveness, technology maturity, producibility, ground and flight test data and, technical performance during buildup activities. Data and knowledge gathered during the buildup and flight tests of ABL will be a part of the evaluation. Operational effectiveness, survivability, and suitability will be examined.

Other factors may influence a decision about whether to include ABL capability within the BMDS, including other investment opportunities, program timing, total funding availability, BMDS functionality, and dynamic warfighter requirements. We expect the evaluation to be completed about 12 months after the FTL-01 lethal demonstration.

The affordability of ABL assets and the defense capability ABL would provide, will be among the many factors MDA weighs in considering a commitment to this capability. ABL has significant upfront investment costs, however, engineering estimates indicate that the cost per shot for ABL would be insignificant relative to the cost of a missile intercepting and destroying an enemy ballistic missile. At this time, there are no conclusive decisions on affordability or the other long-term issues associated with ABL.

Ms. TAUSCHER. General Obering, I remain concerned about the status of MDA’s targets program. The lack of effective and reliable targets has become the pacing item of the Agency’s overall testing program. In your view, what are the key reasons for the continuing challenges associated with the targets program? What specific actions are you taking to rectify these challenges?

General OBERING. Key reasons for the continuing challenges associated with the targets program?

- Requirements variability and interpretation are key challenges to the Targets program. Mission specific interpretation of target requirements with Elements occurs late in the target development cycle and drives changes that increase cost and jeopardize schedule.
- Progress on the 72” variant of the flexible target family (FTF) has been slower than expected primarily due to hardware qualification. This delay increased overall development cost and stressed Target budgets.
- The Targets and Countermeasures (TC) Office has relied heavily on aging Polaris motors for long range targets. Over an extended period, TC built and maintained an inventory of Polaris motors and flight hardware. This inventory of motors and flight hardware is nearly depleted. This prompted TC’s transition to C-4 Trident motors for the FTF 72” variant of long range targets. The flexibility afforded by the newer Trident hardware inventory will not be achieved before the FTF 72” flight and inventory units complete production.

What specific actions are you taking to rectify these challenges?

MDA is sharpening its focus to keep Targets from impairing or delaying successful BMDS flight test execution through:

- Lockheed Martin and Government Senior Leader involvement in solving target issues; and Independent Reviews addressing supplier management, risk management, and program executability.
- Increased rigor and accountability in schedule management, cost management and budget development. Implemented daily action/resolution tracking of critical items.
- Improved communication with BMDS Elements and MDA/DE to adjudicate requirements in a timely manner.
- MDA is developing Long Range Target Roadmap (3 yr+) to facilitate planning, and achievement of Program Objective Memorandum requirements, as well as to describe technical target capabilities requiring future development from the Targets Office.
- Funding planned for the upcoming FY2010 budget submission will optimize manufacturing flow and support short notice requirements thereby mitigating overall target risk to BMDS test events through utilization of a Rolling Spare.

Ms. TAUSCHER. General Obering, I understand that MDA plans to launch the two Space Tracking and Surveillance System (STSS) demonstration satellites this November. I also understand that MDA is restructuring its plans with regard to the STSS follow-on program. How confident are you that the STSS satellites will be launched in November as planned? What are the key lessons that you hope to learn from the two demonstration satellites and how will those lessons be incorporated into the proposed follow-on constellation? Can you provide an idea of the key changes you plan to make to the STSS program as a result of the restructure?

General OBERING. MDA has medium confidence in a November launch date for the STSS Demonstration satellites. The prime, NGST, is currently working through three technical issues on the critical path for final acoustic testing. We will have a much better idea if the November launch date is achievable once these issues are resolved and acoustic testing is accomplished. Current projection for completion of this testing is late July 2008.

The STSS Demonstration satellites will acquire ballistic missile targets in boost phase and will continuously track deployed objects. STSS tracking data will be used to demonstrate that interceptors can be launched and directed to their targets using only space sensor feeds. This will be a crucial step toward adding a robust early intercept layer to the BMDS.

The STSS Demonstration satellites will show how an operational BMDS Low Earth Orbit (LEO) tracking layer would function as part of an integrated space sensor architecture of functionally specialized satellites. MDA intends to demonstrate the handover of boost phase cues from high altitude early warning satellites to the low altitude constellation of tracking satellites.

STSS Demonstrators will also exercise ground control processes and procedures for monitoring, maintaining, upgrading and commanding the satellites on-orbit. Lessons learned may lead to ground segment innovations that will significantly reduce manpower requirements and cost.

Finally, the STSS Demonstration satellites will collect fundamental phenomenological and space environment data that may influence the design of the spacecraft and payload for the operational STSS constellation.

The engineering design of the operational STSS capability will almost surely look different than the STSS Demonstration satellites that fly in November. However, the STSS Demonstration satellites will collect essential engineering design data and will execute important proof-of-principle experiments that will materially inform the constellation development, most significantly in the area of sensor designs.

Given initiation of the STSS constellation activity early in FY09, the Preliminary Design Review (PDR) for the constellation work is anticipated in early FY10. Data from the STSS Demonstration satellites will be available to support detailed sensor design trades that will follow PDR.

Changes to the STSS Constellation fall into three categories:

1. MDA has redefined the planned operational STSS constellation to reflect our new understanding of the evolving threat.
2. MDA has frilly integrated STSS into the BMDS architecture, focusing on assigning to STSS only the unique BMDS functions that a low earth orbit sensor constellation can best provide. This architecture leverages capabilities from external sensors, such as DSP/SBIRS, and BMDS radars.

3. The commercial space imaging industry is the model for quick delivery to market of highly capable satellites in small packages at relatively low cost. MDA is applying the lessons of those engineering precedents and others to design the operational capability. Trade studies and engineering analyses are ongoing.

While key design trades are still underway, the resulting STSS constellation MDA is requesting to initiate in FY09 will be smaller, and of simpler design than the previously planned program. The simpler design promises to be less expensive and allows MDA to deliver this capability to the warfighter in the timeframe requested in STRATCOM's Prioritized Capabilities List (PCL).

Ms. TAUSCHER. General Obering, Page 39 of the Director of Operational Test and Evaluation's FY2007 Assessment of the Ballistic Missile Defense System states: "There is limited flight test data demonstrating EKV performance overall, and only a single flight test (FTG-03a) using the current EKV with its new software configuration. No EKV model/simulation is currently validated or accredited for performance assessment." When is it likely that MDA will have validated and accredited models for the existing EKV?

General OBERING. The current EKV software build is 20.7. The EKV models which emulate this software build are currently being assessed and their expected accreditation by the GMD Program Office will be in September 2008.

Ms. TAUSCHER. General Campbell, in testimony before the Senate Armed Services Committee last year, General James Cartwright, the former commander of U.S. Strategic Command and current Vice Chairman of the Joint Chiefs of Staff, said that his focus with regard to missile defense was to expand "beyond long-range intercontinental ballistic missiles to start to address those that hold at threat our forward deployed forces, or allies and our friends. Those are more in the short- and medium-range ballistic missiles, things that Patriot, Standard Missile-2 and [Standard Missile]-3 will be able to address, and THAAD as it comes on." Do you agree with General Cartwright that we need to focus greater attention on countering the threat from short- and medium-range missiles? If so, what role will STRATCOM play to ensure that sufficient resources are devoted to countering the short- and medium-range threat?

General CAMPBELL. There is a continuing global trend toward the development of increasingly survivable short, medium, and long range ballistic missiles by nations that are not necessarily friendly to our national interest. Therefore, General Cartwright's assessment remains true today—it is vital to expand the ballistic missile defense system to effectively address all threats at all ranges. We should maintain a balanced missile defense investment portfolio.

The U.S. Strategic Command's (STRATCOM) role with regards to missile defense resource allocation was recently expanded. The Missile Defense Executive Board (MDEB) is reviewing a set of transition and transfer business rules that codify the warfighter's role in the development of the missile defense investment strategy. These new business rules identify STRATCOM and the Joint Integrated Air and Missile Defense Organization as co-leads in establishing warfighter capability requirements. These warfighter capability requirements, vetted through the MDEB, will influence the missile defense investment decisions within the Department.

Ms. TAUSCHER. General Campbell, I was wondering if you could clarify for me a couple of things about the Joint Capabilities Mix II study. First, regarding the inventory requirements for additional THAAD and SM-3 interceptors identified in JCM II, am I correct in thinking that those conclusions represent the bare MINIMUM of the upper-tier, interceptor inventory necessary to meet COCOM war-fighting requirements? Therefore, is it fair to say that additional THAAD and SM-3 interceptors—higher than the level recommended by JCM II—may be required to fully meet COCOM war-fighting requirements?

General CAMPBELL. That is correct. The most recent iteration of the Joint Capability Mix (JCM) Study supports the previous study findings of the minimum quantities of SM-3 and THAAD interceptors for combat operations in two nearly simultaneous conventional campaigns in the 2015 timeframe. I do believe that your statement regarding additional THAAD and SM-3 inventory beyond the levels outlined in the JCM Study to satisfy Combatant Commander war fighting requirements is fair.

Ms. TAUSCHER. General Campbell, I understand the Army's original requirement for THAAD called for procuring 8 fire units and 1,250 interceptors. What were the factors that drove the Army to the original 1,250 interceptor number? What factors account for the key differences between the JCM II findings and the Army's previous analysis?

General CAMPBELL. The original quantity of 1,250 interceptors was based on an Army force structure of two THAAD battalions with each consisting of four firing batteries. The later conducted Joint Capability Mix (JCM) Studies determined the quantity of THAAD batteries and interceptors necessary to counter a defined future threat-set placed in two specific operational scenarios. While the quantities defined represent an expected minimum number of required interceptors, the JCM studies did not address additional operational scenarios or Army requirements for testing, maintenance or potential war reserves that significantly increase inventory requirements.

Ms. TAUSCHER. General Campbell, has STRATCOM conducted a study to examine current and future GMD inventory requirements? If so, what were the key findings from that study? Is the current number of planned GMD interceptors sufficient to meet warfighter requirements in the near- to-mid-term?

General CAMPBELL. The U.S. Strategic Command has not conducted a study to examine current and future GMD inventory requirements. However, our assessment, currently reflected in the Military Utility Assessment, is that the ballistic missile defense capability is sufficient to meet warfighter requirements in the near- to-mid-term.

Ms. TAUSCHER. General Campbell, has STRATCOM (or any other part of the Department of Defense) conducted a comprehensive analysis examining overall missile defense inventory requirements against short-, medium-, and long-range missile threats? If so, what were the key findings from that analysis? If not, does STRATCOM have a plan to undertake such an analysis?

General CAMPBELL. There have been at least two studies addressing warfighter missile defense requirements in countering short and medium ballistic missile threats: the 2001 Joint Missile Inventory Study and the recent Joint Capability Mix (JCM) Study. Both studies were conducted by the organization formerly known as the Joint Theater and Air Missile Defense Organization (JTAMDO), now known as the Joint Integrated Air and Missile Defense Organization (JIAMDO). The Joint Missile Inventory Study addressed missile quantity requirements for Patriot and the canceled Navy Area Defense while the JCM Study addressed the upper tier requirement for SM-3 and THAAD. Both studies identified the minimum inventory requirements for the theater missile defense systems.

For the defense against long range ballistic missiles, I am not aware of any warfighter studies that have been conducted since the abolishment of the Anti-Ballistic Missile Treaty. The U.S. Strategic Command plans to work with the Joint Integrated Air and Missile Defense Organization to develop new studies to address a wide spectrum of warfighter missile defense issues, including the sufficiency of the missile inventory. These studies are under development and will be conducted, staffed, and finalized at a later time.

Ms. TAUSCHER. General Campbell, STRATCOM has been working to develop a concept of operations for global, integrated ballistic missile defense operations for several years. One challenge in developing such a concept is how to coordinate command and control across combatant commanders' areas of responsibility. What is the status of STRATCOM's efforts to develop a global BMDS concept of operations? How has STRATCOM worked to achieve consensus across all the combatant commands? How will this concept be vetted, approved, and implemented? How will this concept influence warfighters' requirements for ballistic missile defense capabilities? How will U.S. Strategic Command ensure that the individual element concepts are coordinated with the global concept? What challenges exist in developing a global concept, which could affect force structure requirements, when DOD has already announced the force structure for its intended European ballistic missile defense capability?

General CAMPBELL. At the direction of the U.S. Strategic Command, the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD) has been collaborating with the Geographical Combatant Commanders (GCCs) in developing the Global Concepts of Operations (CONOPS). The intent of the Global CONOPS is to benchmark command relationships, optimizing the employment of the ballistic missile defense system across the GCCs. We have successfully conducted a series of table-top and computer aided exercises that established GCC consensus on employment principles and attributes. This consensus led to the development of options for the command architecture within the Global CONOPS. We are currently coordinating with the Joint Staff and GCCs on these options and expect to reach resolution shortly.

Once the Global CONOPS is complete and the Joint Staff has issued its guidance, JFCC-IMD will work closely with all stakeholders to implement the plan. JFCC-IMD intends to leverage the existing joint contingency and crisis action planning processes to synchronize warfighter requirements for the BMDS command architec-

ture and provide the framework to evolve the BMDS Element concepts. Additionally, JFCC-IMD will work closely with the Missile Defense Agency (MDA) to provide timely warfighter guidance to evolve the European capability. JFCC-IMD has already been engaged in MDA design and requirements reviews to minimize any adverse impact of the Global CONOPS to the ongoing development efforts.

The DOD announced force structure for the European capability only addresses the employment of ground-based interceptors and the associated X-band radar site. The Global CONOPS will integrate all of the ballistic missile defense capabilities—tactical, regional, strategic and Allied missile defense capabilities to optimize the defense of a supported Combatant Commander's area of responsibility. The challenges to the Global CONOPS are maintaining the currency and validity of defense plans to negate trans-regional threats and creating an environment of shared situational awareness between the GCCs. Having a common set of missile defense priorities and a common operating environment will enable the GCCs to exercise sound military judgment to maximize defense of the Homeland and their respective areas of responsibility.

Ms. TAUSCHER. General Campbell, I understand that you have been playing an important role with regards to the command and control issues associated with the proposed European interceptor site. I understand that there is discussion about having U.S. Northern Command (NORTHCOM) control the proposed long-range interceptors in Poland. What is STRATCOM's current view as to which combatant command should have control over the long-range interceptors in Poland—EUCOM or NORTHCOM? What signal would it send to our NATO allies if we controlled the Polish-based interceptors from Colorado Springs?

General CAMPBELL. We continue to work closely with the Geographic Combatant Commanders (GCCs) to finalize the Global Concept of Operations (CONOPS) and provide the necessary framework to guide the potential deployment of the European Capability and an associated command structure. Until the CONOPS are finalized, there is not a view on the specific command and control structure of a potential European Capability. Our objective remains to adhere to the established principle that best enables each GCCs to defend their own area of responsibilities (AOR).

In my view, the location of the command and control facility is less important to our NATO allies than common situational awareness and transparency regarding use. Continued work with our NATO allies is critical to developing a command and control concept that addresses their concerns.

Ms. TAUSCHER. General Campbell, in 2002, the Unified Command Plan (UCP) assigned the U.S. Strategic Command (STRATCOM) responsibility for planning, coordinating, and integrating global missile defense operations. That said, much has occurred since then. Given the lessons we have learned since 2002, do you anticipate any changes or revisions to the UCP with regard to missile defense? If so, what are those changes? Is it possible that STRATCOM could potentially be assigned execution authority?

General CAMPBELL. The 2002 Unified Command Plan (UCP) has been replaced by a 2006 UCP. The current version reiterates the same overarching missile defense responsibilities for U.S. Strategic Command (STRATCOM). However, due to the rapidly evolving air and missile defense missions and the lessons learned while developing the Global Concepts of Operations, the 2008 UCP, now under development, will further refine STRATCOM's global missile defense responsibilities. The proposed change updates the language but does not significantly alter existing roles and missions.

Ms. TAUSCHER. General Campbell, in 2004, STRATCOM and MDA established the Warfighter Involvement Program to increase warfighter involvement in the missile defense program. However, the committee has been told by the military services that the current WIP process does not provide them adequate insight into the missile defense requirements. What is your current process for ensuring that the military services (e.g., corporate Army) are fully involved in the WIP? Do the military services, who will ultimately be responsible for operating the various systems, currently play a major role in the development of the WIP? If not, how can that process be improved to ensure that they play a larger role in the WIP?

General CAMPBELL. The Warfighter Involvement Process (WIP) has continued to evolve since its inception in 2004. It should be noted that the WIP is one of many venues available to the Services to address specific missile defense issues or requirements. The WIP addresses Services' operational requirements through the sponsoring Combatant Commands. Other forums, such as the Board of Directors (BOD), address Services' corporate requirements (i.e. transition and transfer) with the Missile Defense Agency (MDA).

Recognizing that disparate interests and requirements exist, two actions have been taken to harmonize the Services' requirements and participation in the enter-

prise-wide management of missile defense capability. First, U.S. Strategic Command is expanding Service participation in the WIP to address more than operational issues. Second, the DOD has established the Missile Defense Executive Board (MDEB), with four permanent Standing Committees, to address the Services' corporate issues. The MDEB is reviewing a set of business rules that codify the roles of the Services in missile defense enterprise-wide management to include warfighter requirements.

QUESTIONS SUBMITTED BY MR. REYES

Mr. REYES. Secretary Young, General Obering, General Campbell, and Dr. McQueary, the Standard Missile-3 has been successfully demonstrated in six flight tests last year and in the successful real-world shoot down of an errant satellite earlier this year. It is clearly our most thoroughly tested and operationally ready missile defense interceptor. Given this tremendous track record, why would the missile defense agency plan to change the successful design of the Solid Divert Attitude Control System for block IB? Wouldn't this change invite operational risk and cost the taxpayer tens of millions of dollars in non-recurring engineering? Why not stay with a successful, proven, cost-effective design?

Secretary YOUNG. The Solid Divert and Attitude Control System (SDACS) has been a key part of the success of the Standard Missile (SM)-3 Block IA. However, the SDACS is challenging to produce and is extremely sensitive to process and material changes. The SM-3 Block IB includes a Throttleable Divert and Attitude Control System (TDACS), which provides multiple advantages over the SDACS. First, the modularity of the design improves its producibility reducing overall cost. Second, the scalability of the design establishes a baseline for future growth in the SM-3 Block IIA Kinetic Warhead (KW). Additionally, the single propellant grain in the TDACS facilitates incorporation of Mil-Standard safety requirements that are unachievable with current technology for the multiple pulse SDACS design.

The Agency selected the TDACS as the baseline design for the SM-3 Block IB based on these technical and programmatic advantages. The Aegis BMD 4.0.1 weapon system is designed to take advantage of the SM-3 Block IB's more flexible TDACS control system. To revert back to an SDACS configuration in the Block IB KW would require additional non-recurring engineering and a minimum 18 month delay in the Block IB fielding schedule. This would result in a delay in testing and fielding the much more capable Block IB KW.

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Dr. MCQUEARY. The Missile Defense Agency (MDA) is responsible for the initial development and any upgrades to the elements of the Ballistic Missile Defense System (BMDS). My job is to evaluate the capabilities of these elements after the MDA develops them. The MDA and the warfighters are in the best position to determine what improvements and upgrades are required or planned for the BMDS.

I understand the MDA is undertaking a new design approach to the Divert and Attitude Control System (DACS) in the Standard Missile-3 interceptor for three reasons. First, the new design is intended to improve the divert performance of the SM-3 missile against more complex threats of the future. Second, the redesigned DACS may save money in the long run if the design is more producible and reliable. Third, this redesign is intended to reduce the risk associated with development of the more capable SM-3 Block IIA interceptor.

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General OBERING. The Agency selected the Throttleable Divert and Attitude Control System (TDACS) as the baseline design for the SM-3 Block IB based on technical and programmatic advantages. The Aegis BMD 4.0.1 weapon system takes advantage of the SM-3 Block IB's more flexible TDACS engine. MDA and the Aegis BMD Directorate anticipate SM-3 Block IB round cost savings over SM-3 Block IA rounds resulting from the more producible, modular TDACS design. Finally, lessons learned from the SM-3 Block IB TDACS development will serve as a risk reduction effort for the SM-3 Block IIA Kinetic Warhead. To revert to a Solid Divert Attitude Control System (SDACS) configuration in the Block IB KW would require additional non-recurring engineering and a minimum 18-month delay in the Block IB fielding schedule.

Mr. REYES. Secretary Young, General Obering, General Campbell, and Dr. McQueary, the Standard Missile-3 has been successfully demonstrated in six flight tests last year and in the successful real-world shoot down of an errant satellite earlier this year. It is clearly our most thoroughly tested and operationally ready missile defense interceptor. Given this tremendous track record, why would the missile defense agency plan to change the successful design of the Solid Divert Attitude Control System for block IB? Wouldn't this change invite operational risk and cost the taxpayer tens of millions of dollars in non-recurring engineering? Why not stay with a successful, proven, cost-effective design?

General CAMPBELL. In my discussions with the Standard Missile (SM)-3 developer, the Missile Defense Agency (MDA), it is my understanding that the Solid Divert and Attitude Control System (SDACS) is an essential element of the SM-3 Block IA. However, per the developer, the SDACS is difficult to produce. As the operator, we have been informed by MDA that the Throttleable Divert and Attitude Control System (TDACS), which is used in the SM-3 Block IB, provides advantages over the SDACS. MDA also informs us that there are performance advantages and no operational risk associated with the use of TDACS. Finally, the developer has stated that conversion back to the SDACS would slow the fielding schedule and result in additional costs for the SM-3 Block IB.

