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HEARING

ON

NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2016

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS

BEFORE THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON STRATEGIC FORCES HEARING

ON

**FISCAL YEAR 2016 NATIONAL DEFENSE
AUTHORIZATION BUDGET REQUEST
FOR MISSILE DEFENSE PROGRAMS**

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FISCAL YEAR 2016 NATIONAL DEFENSE AUTHORIZATION BUDGET REQUEST FOR MISSILE DEFENSE PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES,
Washington, DC, Thursday, March 19, 2015.

The subcommittee met, pursuant to call, at 9:03 a.m., in room 2118, Rayburn House Office Building, Hon. Mike Rogers (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. MIKE ROGERS, A REPRESENTATIVE FROM ALABAMA, CHAIRMAN, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. ROGERS. I would like to call this hearing on the Subcommittee on Strategic Forces to order.

We have a full morning ahead of us on an increasingly important subject of ballistic and missile defense. We will start with this open hearing and then we will adjourn and move to the HASC [House Armed Services Committee] SCIF [Sensitive Compartmented Information Facility] for a closed session with the witnesses to finish discussing things that are not appropriate to talk about in open hearing.

We have an esteemed panel with us today to discuss the missile defense threat that the U.S. has to respond to. We have Mr. Brian McKeon, Principal Deputy Under Secretary of Defense for Policy, from the Department of Defense. We have Admiral Bill Gortney, U.S. Navy Commander, North American Aerospace Defense Command, U.S. Northern Command; Vice Admiral James Syring, U.S. Navy, Director of the Missile Defense Agency; and Lieutenant General David Mann, Commander, Joint Functional Component Command for Integrated Missile Defense.

Given the packed morning, I am going to ask the witnesses to summarize their prepared statements in 3 minutes. Your full statements will be submitted to the record.

I want to make a couple quick comments and then will yield to my good friend from Tennessee for any statement he wants to make.

First, I want to thank all of you for taking the time to be here and putting the effort in to these prepared statements and this testimony. I know it takes time and you are all busy. And so I appreciate it. As we prepare to write the fiscal year 2016 NDAA [National Defense Authorization Act], your testimony will help us to make some very important decisions about what programs we fund and what policies we set in place.

Secondly, I want to state my support for many of the priorities in this year's budget submission I am pleased to see. For example, the roughly \$700-million increase for this year in the Ground-based Midcourse Defense [GMD] system. We have only one ballistic missile defense system capable of defending the homeland. It is about time we properly fund it.

Admiral Syring, you inherited a mess at GMD with that system when you took over MDA [Missile Defense Agency]. And I think I speak for all of my colleagues when I say that you have rebuilt trust in the system, and I can't overstate how grateful we are for your service. I hope that, when you leave here to go home tonight, you will pass on to your family a great big thanks from this committee and the country for your service.

Admiral Gortney, Lieutenant General Mann, the same for you and your families. You have our respect, appreciation, and gratitude.

Mr. McKeon, as always, we appreciate your civil service as well.

I have concerns with the budget as well. While this year's budget is good, an improvement from recent years, I note it collapses in the out-years. As I plan, I am not sure I agree with the cruise and ballistic missile threat that the United States, our deployed forces, and our allies will get better in the next 5 years.

Likewise, I was deeply troubled by the November 2014 memo to the Secretary of Defense, signed by the Chief of Staff of the Army and the Chief of Naval Operations, concerning our missile defense capabilities.

This memo represents the kinds of things many of us have been worried about because of sequestration. Core missions, like missile defense, are difficult to sustain. Our Aegis ships, the THAAD [Terminal High Altitude Area Defense] batteries and Patriot batteries are expensive commitments to our regional security. We all know that.

I agree with the former Secretary Hagel that our current BMD [ballistic missile defense] policy is sound. To the services, I say missile defense is a core mission. It is not a nice-to-have mission. It is a must-have mission. But we must get you budget relief so that this core mission and all of your other core missions are executable.

[The prepared statement of Mr. Rogers can be found in the Appendix on page 31.]

Mr. ROGERS. And with that, I now yield to my friend and colleague from Tennessee, Mr. Cooper, for any opening statement that he may have.

Mr. COOPER. Thank you, Mr. Chairman.

In view of the tightness of the schedule, I will just submit my statement for the record.

[The prepared statement of Mr. Cooper can be found in the Appendix on page 33.]

Mr. ROGERS. All right. I appreciate that.

We will start, then, with Mr. McKeon. You are recognized for 3 minutes to summarize your opening statement.

**STATEMENT OF BRIAN P. McKEON, PRINCIPAL DEPUTY
UNDER SECRETARY OF DEFENSE FOR POLICY, DEPART-
MENT OF DEFENSE**

Mr. McKEON. Thank you very much, Mr. Chairman, Ranking Member Cooper, and members of this subcommittee. Thank you for this opportunity to be here today to discuss the fiscal 2016 budget request for missile defense. I am grateful for your attention to and support of this critical mission of defending our homeland, our partners and allies, and deployed forces from a growing ballistic missile threat.

The President's budget requests \$9.6 billion in fiscal year 2016, of which \$8.1 billion is for the Missile Defense Agency to develop, deploy missile defense capabilities to protect the homeland and strengthen our regional missile defenses.

Sequestration levels would be significantly lower and, as Secretary Carter has said, would make the Nation less secure. Even without sequestration, however, in these austere times, there is still not enough money to fund every program that we might wish to have and we are required to prioritize investments accordingly.

As members of this subcommittee, you are well aware of the ballistic missile threats and trends, some of which is spelled out in detail in our opening statements. I will focus on a few key policy priorities for addressing these threats: defending the United States against limited long-range ballistic missile attacks, strengthening defense against regional missile threats, fostering defense cooperation with partners, and examining how to advance missile defense technology base in a cost-effective manner.

The U.S. homeland is currently protected against potential ICBM [intercontinental ballistic missile] attacks from states like North Korea and Iran. To ensure that we stay ahead of the threat, we are continuing to strengthen our homeland defense posture and invest in technologies to better enable us to address emerging threats in the next decade. This requires continued improvement to the Ground-based Midcourse Defense system, including enhanced performance of the ground-based interceptors [GBIs] and deployment of new sensors.

We remain on track to deploy 14 additional interceptors in Alaska by the end of 2017. These interceptors, along with the 30 that are currently deployed, will provide protection against both North Korea and Iranian ICBM threats as they emerge and evolve.

We have also deployed a second forward-based missile defense radar to Japan, which is operating today thanks to the hard work of MDA and the Japanese Government. This radar strengthens both our homeland and regional defenses.

This year's budget also reflects the DOD's [Department of Defense's] commitment to modernizing the GMD system. It will move us toward a more reliable and effective defense to United States. It includes funding for the development of a new radar that, when deployed in Alaska, will provide persistent sensor coverage and improve discrimination capabilities against North Korea. It also continues funding for the redesign of the kill vehicle for the GBI.

As directed by the Congress, the MDA is also conducting environmental impact studies at four sites in the eastern part of the

United States that could host an additional GBI missile field. These will be completed next year.

The cost of building an additional missile defense site in the United States is very high. And given that the ICBM threat from Iran has not yet emerged and the need to fix the current GBI kill vehicles, the highest priorities for the protection of the homeland are improving reliability and effectiveness of the GBI and improving the GMD sensor architecture.

This current GMD system provides coverage of the entire United States from North Korean and potential Iranian ICBMs. And no decision has yet been made to deploy an additional missile field in the United States.

I will conclude here, Mr. Chairman, because I see the red light is on. You have the rest of my statement.

[The prepared statement of Mr. McKeon can be found in the Appendix on page 34.]

Mr. ROGERS. I thank you.

Admiral Gortney.

STATEMENT OF ADM WILLIAM E. GORTNEY, USN, COMMANDER, UNITED STATES NORTHERN COMMAND AND NORTH AMERICAN AEROSPACE DEFENSE COMMAND

Admiral GORTNEY. Chairman Rogers, Ranking Member Cooper, and distinguished members, thanks for allowing us to come here today as we talk about this critical mission set.

As I look at threats to the homeland, I look at threats from the most likely to the most dangerous. And right there in the middle of this is this critical mission set defending the homeland from ballistic missile defense, particularly the threats from North Korea and Iran.

But, as I look at the threats, the most likely and the most dangerous that is getting ready to confront us, I think it is sequestration and the impacts on my ability across all of my mission sets, but particularly in this particular case, to defend the homeland.

Sequestration, when it comes for the services, is the quickest way to hollow a force out. They have to take it out of readiness, and they are going to delay capability.

And when I look at the effects of sequestration on this mission set, my good friend here, Jim Syring, he doesn't have a readiness account that he can go to. He has to go into the New START [Strategic Arms Reduction Treaty] program, which is going to delay the long-range discriminating radar, the improved kill vehicle that we need to outpace this proliferating threat.

And so the specifics of those impacts I will leave to Jim here. But we look forward to your questions. And we really appreciate your support.

[The prepared statement of Admiral Gortney can be found in the Appendix on page 45.]

Mr. ROGERS. Thank you, Admiral.

Admiral Syring, you are recognized.

**STATEMENT OF VADM JAMES D. SYRING, USN, DIRECTOR,
MISSILE DEFENSE AGENCY**

Admiral SYRING. Mr. Chairman, Ranking Member Cooper, and distinguished members of this subcommittee, thank you for the opportunity to testify in front of you today.

Our budget request for fiscal year 2016 maintains the commitment to operate and sustain homeland defenses, including us remaining on track for 44 GBIs by 2017. We also request support for test requirements and continuing to enhance the Stockpile Reliability Program component agent testing to better maintain and understand the health of the deployed system.

Testing plan for 2016 includes a non-intercept flight test to evaluate the alternate divert thrusters and support algorithm development for the important discrimination improvements for homeland defense.

As was mentioned, we continue the development of the redesigned kill vehicle for improved reliability, availability, performance, and produceability. The first flight test of this will be in 2018. The first intercept test will be in 2019. If that goes according to plan, the initial deployment will begin in 2020.

We started acquisition planning and pre-construction activity for the long-range discrimination radar. We anticipate contract award for that by the end of this fiscal year.

Our 2016 budget request supports the deployment of Standard Missile-3 Block IBs and, beginning in 2018, the SM3-IAs on ships and Aegis Ashore sites in Romania and Poland.

We plan to procure 209 SM3-IBs by the end of 2016 and then will request multiyear procurement authorization. We also plan to deliver 48 additional THAAD interceptors to the Army for 155 total delivered by 2016.

And, finally, our advanced technology and development efforts that really ramp up this year will continue our discrimination sensor weapons technology, common kill vehicle, which includes early concept exploration of multi-object kill vehicles and technology maturation initiatives.

These investments will enable us to deploy a future BMDS [Ballistic Missile Defense System] architecture more capable of discriminating and killing reentry vehicles with high degree of confidence. Our low-power directed energy resources research is focused on providing the forward-tracking capability.

Mr. Chairman, MDA will continue to aggressively pursue cost reduction measures through competition, partnering, and cooperation as we deliver the best missile defense capabilities to protect our Nation, our deployed forces, and friends and allies at the lowest possible cost to the American taxpayer.

Thank you. And I look forward to the questions.

[The prepared statement of Admiral Syring can be found in the Appendix on page 55.]

Mr. ROGERS. I thank you.

Lieutenant General Mann, you are recognized.

**STATEMENT OF LTG DAVID L. MANN, USA, COMMANDER,
JOINT FUNCTIONAL COMPONENT COMMAND FOR INTE-
GRATED MISSILE DEFENSE**

General MANN. Chairman Rogers, Ranking Member Cooper, and other members of the subcommittee, thank you for your continued support of our soldiers, civilians, and their families.

This is my second appearance before this subcommittee and it is indeed an honor for me to testify on the importance of missile defense to our Nation and the need to maintain these capabilities in the face of a maturing threat and declining budgets.

Today I want to briefly summarize some of the missions of the organizations that I support. First, Space Missile Defense Command, SMDC, Army Forces Strategic Command, ARSTRAT, serves as the missile defense force provider in support of our combatant commanders out there.

Secondly, the Joint Functional Component Command for Integrated Missile Defense [JFCC-IMD] serves and supports USSTRATCOM [U.S. Strategic Command] on integrating and synchronizing our global missile defense operations.

Turning to the first organization that I mentioned, SMDC/ARSTRAT, we have three core tasks. We provide trained and ready global missile defenders. We build the future force in terms of both capabilities and force structure. And we also evaluate critical technologies to help us stay ahead of the threat. JFCC-IMD, on the other hand, supports operational-level planning and global missile defense operations on behalf of USSTRATCOM.

We execute five critical tasks in support of these responsibilities. We synchronize operational-level planning. We support ongoing operations. We integrate training and exercises and test activities globally. And we also provide recommendations on the allocation of missile defense resources. And, finally, we also advocate on future capabilities.

Today the missile defense threat continues to grow both in terms of sophistication and the number of systems. We, as a nation, cannot afford a decrease in our readiness. That said, we are extremely concerned about sequestration that will directly impact our readiness and our ability to evaluate and test new technologies in order to stay ahead of the threat.

This committee's continued support of missile defense operations and the men and women who develop and employ these systems is essential. Again, I appreciate the opportunity to discuss our Nation's missile defense capabilities and look forward to your questions.

Thank you.

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

Mr. ROGERS. I thank you.

And I will recognize myself first for a series of questions. I want the focus of this hearing to be mainly on the implications that these spending caps on defense will create if we go forward with them. I think that the Budget Control Act [BCA] is one of the most irresponsible things the United States Congress has done in recent memory, specifically, the caps that it has hoisted on the Defense Department.

I would remind everybody that the year before the BCA was adopted, this committee had voluntarily cut over \$500 billion out of the Defense Department just to show our recognition of the financial burden that this country was suffering. And then we had no idea that there would be another \$600 billion coming behind it the very next year. Those two things together is what really has created this mess that we are in.

But while the members of this committee, the full HASC as well as the subcommittee, I think, all are fully aware of the implications of these continued irresponsible cuts, I think it is important for you all, as the service members, to help describe for the members who are on this committee who will be reading about this hearing exactly what these cuts mean to your ability to continue to defend this country in an effective way.

So, with that, General Mann, I will start with you. Tell us what you think it means to you not just in this fiscal year 2016 budget—because the truth is you all have done a pretty good job up until now dealing with these cuts and keeping a straight face. It is time to start telling us what it means. So I will start with you.

General MANN. Thank you, Chairman.

I think we have to recognize that the threat is not standing still. We see a threat that, like I said in my statement, is growing both in terms of the sophistication of their weapon systems as well as the numbers.

So, in that context, the concern that we have is that a lot of our programs in terms of the modernization of the Patriot force, the improvements to the radar, the missile enhancement segment that we are trying to develop to give us that—to bridge that gap between the Patriot and the THAAD force, the software upgrades that are required—those programs, due to sequestration, could be impacted. They could be delayed. And, again, the threat is not standing still.

Also, in terms of homeland defense—

Mr. ROGERS. Before you go further, that 12,000-foot altitude gap between the Patriot and the THAAD, what vulnerability does that create for us? What threat do we have to worry about penetrating that gap?

General MANN. In terms of looking at the CENTCOM [U.S. Central Command] area of operations, there are early-release munitions that could be employed within that range that could impact our operations as far as putting munitions on airfields, ports of entry. So that is a critical gap, that we need that missile enhancement to cover that gap that I talked about.

Mr. ROGERS. Okay.

General MANN. So, again, in terms of the regional support, the modernization efforts. Also, we have a lot of efforts underway to get after the cruise missile threat that I am sure will be discussed later on today.

The indirect fire protection capability utilizing the AIM-9X missile will help us address that threat. Patriot does have a capability against cruise missiles, but we need to enhance that capability. So those efforts.

And, most importantly, the Army's number one air missile defense priority is the network, the air missile defense battle com-

mand network that basically takes all of the assets that we have out there and componentizes it.

Instead of having big units that have to deploy downrange being able to take those units and break them up, it is a little bit more of an affordable way of getting after the business of missile defense.

And, also, making sure that we get away from stovepipe command-and-control architectures out there and have one single integrated architecture that really addresses the tactical-level and the operational-level systems that feeds into C2BMC [command, control, battle management, and communications].

So those modernization efforts will be impacted and delayed and, again, all in the context the fact that the threat is not stopping. Improvements to our homeland defense capabilities, whether it is the GBI reliability that Admiral Syring and his folks are getting after.

Those capabilities as well as long-range discrimination that we need to make sure that we are as effective and as efficient as possible with the limited number of resources, because we will never be able to have enough missiles to address the number of threat vehicles that are out there.

Mr. ROGERS. Admiral Syring.

Admiral SYRING. Sir, if I can, let me start back in the first round of sequestration back in 2013, when those cuts came down midyear when we were under a continuing resolution.

Those cuts had an immediate impact in what we are doing. I have many, many contracts across the agency that require annual funding. If I didn't want to break those contracts, I immediately had to go into areas that I could affect, and I went to testing and I deleted several tests or delayed several tests. The GAO [Government Accountability Office] has noted this. And I would say that is a direct result of the sequestration cuts that came down.

In addition, I took further risk on the SM-3 IIA development program and essentially removed all of the development margin in that very important program that must deliver that missile in 2018 to support the Poland deployment. Critical effort.

We are now out of margin. So we are now into the projection of what next in terms of the hypothetical—not even hypothetical—the real possibility of sequestration cuts flowing down to the Missile Defense Agency.

There was a number mentioned yesterday in the Appropriations Committee's hearing of 18 percent, which would mean that I would take a reduction from \$8.1 billion to \$6.7 billion, over a \$1.4 billion reduction. Again, if I maintain my commitment to 44 GBIs by 2017, which is our top priority, and the EPAA [European Phased Adaptive Approach] commitments that we have made in Europe, there is not many places to go.

So we would immediately go to the efforts that were started last year, which are the redesigned kill vehicle and the long-range discriminator radar, approximately \$500 million between those efforts. That would immediately put those on hold or delay those.

And, to me, now you are starting to jeopardize our future capability in terms of what we are able to say to the American people and our ability to defend the homeland. With the development and

testing that I see going on with North Korea very specifically and the pace and the progress that they are making, I am in serious jeopardy, without those improvements, of going to the NORTHCOM [U.S. Northern Command] commander and advising him that the system is overmatched. That would be the path that we are on if we don't do these improvements between now and 2020. The system will be overmatched.

Mr. ROGERS. Admiral Gortney.

Admiral GORTNEY. As I said before, the biggest impact is the delay of capability for our ability to outpace the threats. And Admiral Syring just adequately—very well explained those particular impacts. So let me take another look. Let me mention this from a different way.

Defending the homeland is an away game. That is where our primary focus is, to delay the away game. The way sequestration is going to impact the services, they are going to have to go under their readiness accounts in order to do that, which is the quickest path to a hollow force.

That is going to drive these low-density, high-demand assets, be it Patriot, THAAD, or Aegis BMD ships. Their operational tempo is going to go up, only stressing a very, very stressed force as it is.

In my last job as a force provider for the Navy, those carriers and air wings, Amphibious Ready Groups and Marine Expeditionary Units and ballistic missile defense ships are the highest op tempo that we have. And those are the forces that are going to feel that impact. That is going to directly affect how well we defend ourselves in the away game.

Every commander's first responsibility is to protect the people that work for them. And having lived with my family underneath the Iranian threat in Bahrain for a couple years, you know, I am very, very concerned of that ability to outpace the threat in the Pacific and in the Gulf and in the Mediterranean in order to do that critical mission. That is how sequestration will affect us.

Mr. MCKEON. Mr. Chairman, I don't have a great deal to add to what my colleagues said.

If you look at the missile defense budget—or at least the MDA budget, \$6.2 billion out of the \$8.1 billion is in RDT&E [research, development, testing, and evaluation]. So looking for the investments we need to make to stay with the threats and advance our capabilities, that is where the heart of his budget is.

And we probably can't cut the O&M [operations and maintenance] parts of the Aegis and the other systems. So he would take it out of the R&D [research and development] side. And, as he explained, that would be pretty devastating to our systems.

Mr. ROGERS. Mr. Cooper.

Mr. COOPER. Thank you, Mr. Chairman.

I certainly second your strong objection to sequestration for the defense budget. I just hope that we can at least reach the President's budget levels and do that honestly.

I regret the failure of any committee, but it was a little bit heartening last night that the Budget Committee failed to get a budget. And I think they are starting to listen to the members of this committee and others saying that you need to plug that defense hole

and you need to plug it with real dollars, not borrowed dollars from China.

It was interesting yesterday that Senate Republicans objected to the way we were trying to plug the hole. And I don't know what their method is, but we have got to do this honestly and not just rely on the Chinese to fund our needs.

Apart from these urgent sequestration issues, I thought we should spend a moment on that memo from Greenert and Odierno to the Secretary of Defense back from November 5, 2014, because it uses nice bureaucratic language.

But I think the message of this memo is pretty important and pretty daunting. The first sentence says, "The growing challenges associated with ballistic missile defense are increasingly capable and continue to outpace our active defense systems."

Admiral Syring just said that we will be overmatched 2020 unless we do things right. This kind of implies we are being overmatched. And harsher language would say we are kind of losing right now.

Later in the memo it says, "Our present acquisition-based strategy is unsustainable in the current fiscal environment." "Unsustainable" is a polite word for saying that we don't have enough money, this isn't fixable. And I don't know whether they meant to not only fix sequestration, but go beyond that.

But it also has a little bit of a tone here at least vis-a-vis other military necessities that they feel MDA is being something of a resource hog because you all are getting money that they could use for readiness or other needs that are not being met.

I don't want to read too much into this. But to have Greenert and Odierno write something like this is pretty astonishing because it is harsher criticism than the committee has ever levied. You throw this in with a recent GAO report talking about smaller issues and we have a lot of work to do.

I worry, for example, that—you know, lots of people talk and we are underway in looking at four east coast sites. But will we have the money, the \$3 or \$4 billion, to do those? Because we have to admit to ourselves that is a lower priority for MDA than discrimination of targets and redesigning the kill vehicle and things like that.

So, being straightforward here, we have got to not only fix sequestration, we have got to have a strategy that seems to work better against ballistic missile threats. And Greenert and Odierno talk about things like "left of launch" and non-kinetic means of defense, lots of things that are strategic decisions that we need to make sure we are on top of, because this same old, same old won't necessarily fix the problem.

So we trust you gentlemen. We hope it is working. But this is kind of a vote of no confidence here from two of the most important people in the military.

So what do we do to best fix their concerns?

Admiral GORTNEY. Sir, I was in the Navy-Army staff talks that generated that particular lecture. And the fundamental issue from the services comes down to: Are we spending our money correctly? And what is the impact for the money that we are spending?

The primary concerns that they have is that we are relying at this particular point, whether it be ballistic missile defense for the homeland or theater ballistic missile defense, is that we are really emphasizing being a catcher and shooting a rocket down with a rocket, which is a very expensive proposition and it drives low-density, high-demand assets, their operational tempo, up.

So when they talk about unsustainable, it is not only in the terms of cost, but it is in terms of the operational tempo of the forces that are doing it. And so what we really need is—what they are asking for is a broader range, that we have a deterrence policy that helps keeps missiles on the rail for deterrence, we have kinetic and non-kinetic options to keep missiles on the rails, and then we start attriting the threat, once they get airborne, starting in the boost phase and throughout that particular flight, so that we start knocking down missiles in a more effective and a cost-effective manner.

We are on the wrong side of the cost curve and we are on the wrong side of the operational tempo curve. That is what they are trying to drive for.

That is why the impacts of sequestration are so critical, because Admiral Syring has laid in technological RDT&E money to go after other methods other than just the midcourse approach that will allow us to get on that correct side of the cost curve.

And, with sequestration, those will be impacted, which is counter to what the Chief Staff of the Air Force and the Chief of Naval Operations [CNO] have asked for, to get on the right side of the cost curve and, also, free up the operational tempo of the forces that are executing this critical mission.

Mr. COOPER. Chief of Staff of the Army, not the Air Force.

Admiral GORTNEY. Correct.

General MANN. Sir, if I could just add to that, I think that the Joint Staff and OSD [Office of the Secretary of Defense] is looking at a more holistic way of looking at global force management. Instead of just looking at platforms, whether it is BMD ships or THAAD or Patriot, how can we better address the COCOMs' [combatant commanders'] requirements in terms of capability?

So that is where you get left of launch. That is where we need improvements in ISR—intelligence, surveillance, reconnaissance—and being able to do a better job of seeing intent and taking actions before a launch and, also, making use of other non-kinetic, whether it is space control assets, whether it is maybe directed energy down the road, things that are more cost-affordable in terms of getting after this capability.

So what we are doing is we are really raising the level of sophistication as to how we get after our global force management.

Admiral SYRING. Mr. Cooper, I would just add two items that have been touched on as well.

One is force structure with the Navy in terms of the combatant commanders asking the CNO to provide more and more ships, more and more ships, for the ship stations with EPAA, more and more and more, and I see that escalating over the next several years.

CNO and the Navy have other things for those ships to do in terms of sailing with strike groups and protecting the strike

groups. I think you see the CNO saying that I don't have the assets in the future to cover all of the requirements from the combatant commanders around the world.

I am just asking for a new strategy in terms of how do we do that? How do we integrate left and right of launch? How do we move this into advanced technology and get on the right side of the cost curve, in his words?

Mr. COOPER. Thank you, Mr. Chairman.

Mr. McKeon.

Mr. MCKEON. The only thing I add, Mr. Cooper, is underlying this memo from the two officers is the tension that we see, and sequestration is also a factor in this, both the one we have already experienced and the one that is looming over us.

Even though we don't have over 100,000 forces forward-deployed right now, there is still stress on some of the force. The COCOMs still have requirements that they need to meet near-term threats and, balanced against that, the Secretary, the Chairman, the service chiefs, they are all trying to bring the forces back to full-spectrum readiness to get the forces healthy.

So it is a tension that is ongoing all the time, the demand for forces from the COCOMs against needing to enhance readiness, and I think that is what underlies some of the appeal in that memo.

Mr. COOPER. Thank you, Mr. Chairman.

Mr. ROGERS. Thank you.

The chair now recognizes the gentleman from Arizona, Mr. Franks, for 5 minutes.

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

Thank all of you for your gallant service to the country.

Admiral Syring, included in the fiscal year 2016 budget request from the President, there was multiyear procurement authority for the SM-3 IB in that.

Can you speak to that for the record as to the importance of the authorization?

Admiral SYRING. Yes, sir. Given design stability of that missile and the successes that we have had with intercept and where the predicted reliability is of that missile, we are pushing a multiyear certification authority through the Department to send over here to request multiyear procurement authorization.

We estimated there will be a 14 percent savings over annual procurements, and we view that as a good deal for the American taxpayer and the right thing to do.

Mr. FRANKS. Yes, sir.

Your FYDP [Future Years Defense Program] for fiscal year 2016 shows approximately \$191 million for an extended-range staff modernization program. I think Lieutenant General Mann was alluding to that.

Why is such capability needed based on your reality, your budget profile? Is it affordable, in your mind? And are there some options that would help you to afford this?

Admiral SYRING. Yes, sir. The money requested is not for a full development program. It is to explore the concept. I would like to defer to the classified session on the threat in terms of what that helps us with and helps us counter. And I can go into that.

But suffice it to say, it is necessary. The threat dictates it, in terms of what we are seeing with development, to move that interceptor into a higher-velocity design to help us counter the future threat.

Mr. FRANKS. Yes, sir.

Mr. McKeon, I might ask you, since looking at international cooperative development or financing would really fall under your purview of the policy of OSD, what would you express about such an opportunity?

MR. MCKEON. Well, Mr. Franks, as you know, our regional missile defense strategy is focused in critical respects on partnerships. And in the example of the Japanese, we are doing a co-development on one of the SM blocks.

So, we are always looking for partners. In a broad sense, it would depend, in particular, what the kind of arrangement we could have with them, what the technology releasability would be.

So there would be a lot of questions to answer, but it is something we are always focused on.

Mr. FRANKS. Well, Admiral Syring, I may come back to you.

Last year, when you came before the committee, you said that, if there was one thing you needed more of, it was increased discrimination capability.

Can you talk about and kind of express how far you have come and where we are headed in fiscal year 2016?

Admiral SYRING. Yes, sir. We have a very in-depth plan that has laid out near-, mid- and far-term objectives that are funded in this year's budget. Those deliveries will start next year to the components of the BMDS.

A critical component that we are requesting this year is the long-range discriminating radar in Alaska, which helps us stay ahead of the threat and makes sure that we are not overmatched in terms of threat complexity that we see developing in North Korea. Critical to that problem.

Mr. FRANKS. Yes, sir.

Well, you know, we have had each of the service chiefs and Secretaries as well as the SECDEF [Secretary of Defense] and Chairman before this committee this week alone.

And one of the recurring themes has been what support does each of the services provide to the warfighter, the combatant commanders. I suppose it is a rather obvious question, but it would be, I think, worth hearing your more elaborate expression of it.

From a missile defense perspective, what is the main thrust of your support that you provide to the warfighter? And I will start with you, Admiral Syring. And we will see what time we have after that.

Admiral SYRING. Yes, sir. Everybody is very familiar with the homeland defense and the operation of that by the Alaska National Guard in terms of protecting our homeland.

The regional defense capability that we fielded in Patriot and THAAD and Aegis go around the world. Thirty-three BMD ships today helping with defense of Japan, helping us when we need them, actually, in defense of the homeland, helping us in the Mediterranean in terms of limited defense of European countries and in

the Middle East, in the Gulf there, in terms of the stations that we keep. Those are just the Aegis ships.

I will let General Mann talk about the Patriot deployments on where we are, but we have gone around the world with that capability as well. We continue to expand Aegis, as you know, Mr. Franks, not just at sea, but what it will provide us in Romania and Poland.

As you know, there has been billions of dollars spent on the development of that regional capability with Patriot, THAAD, and Aegis that is now deployed worldwide in all theaters of operation.

Mr. FRANKS. Thank you, Mr. Chairman.

General Mann, did—

Mr. ROGERS. Go ahead.

General MANN. Sir, Admiral Syring kind of mentioned it.

I mean, number one, we support homeland defense. The 49th Battalion that is up there at Fort Greely, Alaska, and also down in Vandenberg provide that 24/7 capability against the limited threat emanating from Iran and North Korea. National Guard unit full-time. And I am enormously proud of what they do day in and day out.

As far as the Patriots, right now, 60 percent of our Patriot force is either forward-station and forward-deployed. In addition to the capabilities that they provide, they also serve a very, very important role in terms of theater engagement with our partners throughout the region and reassuring our allies out there. And so that cannot be overstated.

Mr. FRANKS. Thank you gentlemen.

Thank you, Mr. Chairman.

Mr. ROGERS. I thank you.

The chair now recognizes the gentleman from Colorado, Mr. Lamborn, for 5 minutes.

Mr. LAMBORN. Thank you, Mr. Chairman.

I appreciate the service that you all provide to our country.

And, Admiral Gortney, I hope you brought some of the great weather they have been having in Colorado Springs to the east coast here.

Mr. MCKEON. Sir, I was there on Tuesday and it was raining.

Mr. LAMBORN. The forecast I see for next week is in the 60s and sunshine.

Admiral Gortney, we touched on the long-range discriminating radar. But could you amplify the importance of that for the warfighter.

Admiral GORTNEY. Yes, sir. You know, sensors are key. If you can't see, you can't kill. And to the improvement for the long-range discriminating radar, our ability to better detect and discriminate where the threat is, and the types, will enhance the effectiveness, the lethality, of our kill vehicles, but we also need to enhance the lethality of our kill vehicles and we need to sustain them.

So the priorities that Admiral Syring has laid out, the three priorities of the better sensors, enhanced kill vehicles, and the sustainment and maintaining of that which we own, have to be done concurrently. It is not an either-or. All of them have to be done concurrently.

Mr. LAMBORN. Thank you.

Admiral Syring, on the issue of space, can you discuss your current and future space architecture needs and plans.

Admiral SYRING. Yes, sir. We are actively pursuing a space-based experiment which you are familiar with, and we can talk more about that in the classified session. That is very encouraging to us in terms of what it might provide with technology demonstration on hit and kill assessment, which is vitally important.

Longer term, we and the Air Force and other partners need to think through what is the partnership opportunities for a space-based application in terms of the real persistence and the real discrimination capability that will come from space.

You have heard me say, Mr. Lamborn, you can't just do it all with radars. We have got to get up to space and have that constellation presence over the threat from the west and the east, and you are going to see more thinking from us and our partners on that in future budgets.

Mr. LAMBORN. Well, that is very encouraging.

But, also, let me ask you about something we have talked about in my office privately: directed energy. That is something—there is a bipartisan agreement that that has tremendous potential for the future and is and should be part of our asymmetrical advantage as a country over people on the other side.

So what are you doing to apply the benefits of directed energy?

Admiral SYRING. Sure. There is two applications, obviously, tracking in terms of what that might provide from a space-based solution with laser capability and the maturation of that technology. The other very important part of that technology maturation effort is what it may mean for us scaling up to a boost-phase intercept capability.

Two very promising development efforts ongoing with MIT [Massachusetts Institute of Technology] and Livermore [Lawrence Livermore National Laboratory]. Both have advantages and disadvantages. We have gone out to industry and asked their ideas in terms of how can we get technology to a demonstration sooner than later.

And I think you will see us pursue that path for really a down-select in the 2018 time period to single up on one technology and one solution for tracking—and I will just leave it at tracking in this forum—and boost-phase intercept.

Mr. LAMBORN. Thank you.

And, lastly, Admiral Gortney, I will finish up by asking you about the cruise missile threat. I know on all these things we can get into more of the weeds in the classified session.

But, in general terms, what is the threat that we are looking at against the homeland today?

Admiral GORTNEY. The only nation that has an effective cruise missile capability is Russia, from either their long-range aviation, their Bear H's [bombers], from the cruise missile submarines, or they have an ability to put it on surface ships, both combatants and noncombatants.

I haven't been in the cruise missile business defending against them since I was a JG [lieutenant junior grade]. And I shot over 1,300 of them. I know that they are very effective and they are very difficult to shoot down.

Our current strategy is very focused on shooting the arrows. And we need to expand our strategy and our capabilities to be able to get the archer, hold the archer at risk.

And there is an approach, rules of engagement, that allows us to take the archer out and then be able to deal with the leakers that come through here. And that is what we are trying to get the program.

Mr. LAMBORN. Well, thank you again for the work that you do. Mr. Chairman, I yield back.

Mr. ROGERS. The chair now recognizes the gentleman from Alabama, Mr. Brooks, for 5 minutes.

Mr. BROOKS. Thank you, Mr. Chairman.

As you can imagine, defense budget spending is a major issue on Capitol Hill right now. By way of example, I was just notified that in a few minutes I am supposed to meet with the chairman and some other GOP HASC members about the Tom Price budget and the President's budget.

We all understand the adverse effect the Budget Control Act of 2011 and sequestration has had on defense capabilities. I want to focus on a little bit different light, the President's budget proposal versus the Tom Price budget proposal and how that impacts what you do.

In that vein, the President has proposed a budget, \$561 billion for base national defense, \$51 billion for overseas contingency operations—OCO—for a total of \$612 billion.

The Tom Price budget complies with the requirements of the Budget Control Act of 2011. Base national defense spending is at \$523 billion, but, as a sweetener, he adds \$90 billion for the OCO, totaling \$613 billion.

So you have got \$612 billion in total defense spending, President Obama, \$613—a little bit more—Tom Price, but then you have got the base difference of \$38 billion more under the Obama proposal, OCO \$39 billion more under Tom Price.

Shifting this money from base to OCO, how does that affect your commands in the programs that you oversee? And if we could just go from my right to left, General Mann first, Admiral Syring, and on down.

General MANN. Thank you, Congressman.

I would say that what is really essential is that we have some predictability with our programs so that we are able to work with our industry partners and provide a plan or a requirement that is not subject to a lot of variability in terms of what the funding is going to be. So I would just leave it at the fact that predictability is key.

Mr. BROOKS. And which provides better predictability? The base or the OCO?

General MANN. I think having more in the base would provide that predictability.

Mr. BROOKS. Right. Thank you.

Admiral SYRING. Sir, we've never at MDA spent or received OCO. Obviously, in the base would be better for us, unless there was some rule change that allowed us to do that in an efficient manner. But my preference, sir, would be in base.

Mr. BROOKS. So, if I understand correctly, as OCO spending has been spent in the past, the additional sums going to OCO would have no beneficial effect for the MDA?

Admiral SYRING. As currently structured, that is correct. Yes, sir.

Mr. BROOKS. Admiral Gortney.

Admiral GORTNEY. I will echo. It is the authorities that go and how you are allowed to spend base and how you are allowed to spend OCO. And for the critical investments that Admiral Syring needs to make, he doesn't have the authorities in order to do it.

Secretary Carter and General Dempsey yesterday went on the record that we want to be the best stewards of the American taxpayers' dollars. And keeping the money in the base and then use OCO for what OCO is for allows us to do that.

Mr. BROOKS. Mr. McKeon.

Mr. MCKEON. Congressman, I don't have a great deal to add to that. Since the beginning of the administration, we have tried to do an exercise to move things from OCO to base so that we don't get heavily dependent on OCO.

We haven't entirely succeeded in that. But I think base spending is always preferable. But in this budget for Admiral Syring, I don't believe we have any request in the OCO.

Mr. BROOKS. Consistent with what we have stated, the adverse effect of money being in OCO as opposed to base, there seems to be an effort behind the scenes to free up OCO so that, in effect, we would have one massive budget of \$613 billion and OCO funds could be used as base funds have been used in the past, understanding that this would be novel understanding, that we would have to get the votes from somewhere to make this change in our laws.

Would that affect your answers any?

General MANN. Again, Congressman, going back to my earlier point, I think predictability and the rules, the authorities, surrounding those appropriations would be key. Whatever would give us that predictability that would limit the amount of variability I think is what we are focused on.

Admiral SYRING. No, sir.

Admiral GORTNEY. Again, it goes back to the authorities of where we can make investments, where we can spend the money. We have always had operational costs where we called it earlier things before the wars 14 years ago to pay supplementals, to pay for operations around the world.

And so it really comes to the authorities. If someone is going to do that, with it has to come the authorities to spend the money where we need to spend the money to make the best decisions for the American people.

Mr. BROOKS. Well, thank you, Mr. Chairman. I see my time has expired. Please forgive me. I am going to run and see what the chairman of Armed Services has to say.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes the gentleman from Tennessee for some additional questions.

Mr. COOPER. Thank you, Mr. Chairman.

Our colleague, John Garamendi, has been called away to California for a family emergency. But he wanted these two questions asked; so, I will do so on his behalf.

Number one, directed energy. How much money is needed to advance directed energy research at the most rapid pace possible?

Admiral SYRING. Sir, we are rapidly—we requested in this budget a significant increase in directed energy. We are requesting over \$1.3 billion, both unclassified and classified, funding, which is a several-hundred-million-dollar increase over last year's budget. And I think it is right in terms of the balance of those resources.

Mr. COOPER. Thank you. Second question is: How much progress is being made on improving the reliability of current antimissile interceptors? Do we have a reasonable chance of defending the United States today with the current inventory?

Admiral SYRING. I will answer the first part and then let Admiral Gortney answer the second part.

The budget request that I have put forward and the additional funding for the GMD program is focused on reliability and improving reliability of the current fleet and the future fleet.

We believe we have the right balance between those two in terms of focusing on what we know about for the current fleet, improving the reliability of those that we are fielding, and then keeping the design going for the new one, which is the RKV [redesigned kill vehicle], which will be tested well before it is fielded.

Admiral GORTNEY. I have high confidence in the current system against the current threats. And I have that because of the way of the testing program that we have as we assess the threats that are out there that it is designed to go against and our ability to test and exercise the system of systems that makes up this architecture.

Should that change and I lose confidence, I will be the first to tell you that I lost confidence in the system, but I do not have that here. And as long as we are able to properly fund the capabilities that we have asked for in the budget and we are able to execute the testing and maintain the test schedule and we have the intel to see if we are pacing the threat, I am comfortable with it. But if it fails to do that, I will come back and tell you.

Mr. COOPER. Thank you, Mr. Chairman.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes the gentleman from Oklahoma, Mr. Bridenstine, for 5 minutes.

Mr. BRIDENSTINE. Thank you, Mr. Chairman.

Admiral Syring, thank you for spending time with me in my office just a couple of days ago. We had a number of great conversations.

First of all, I would like to publicly congratulate you for the successful test of FTG-06b. I know that maybe some of the tests before that were not perceived as being successful, but I would attest that every test there are lessons learned and we gain a lot from that. Even though some tests are not deemed as being successful, we learn a lot from that.

And my question for you is: As we prioritize going forward, are we going to prioritize testing for all systems beyond GMD? What are your priorities for testing going forward?

Admiral SYRING. Sir, we are very busy over the next 2 to—really, 2 to 4 years, and we have 12 tests this fiscal year, for example.

We are going up with a big—our focus is operational testing of capabilities such as Aegis Ashore, which we will test this summer before Romania is fielded in another operational test, before Poland is fielded. To really put it into the tactical combatant commanders' scenario, to completely test an integrated scenario, that is one priority.

The second priority is to continue to test as capability is developed. Aegis is rapidly developing increased capability with their Aegis weapon system baselines and their standard missile evolutions. And then what we don't talk too much about the sea-based terminal defense system, which will be tested this year as well.

THAAD, again, will be tested this summer as part of the integrated strategy of the operational tests, and I think you will continue to see us test that to prove that confidence to the warfighters. So we are testing on all fronts. And it is not just homeland. It is the regional defense systems as well.

Mr. BRIDENSTINE. Admiral Gortney, did you want to add anything?

Admiral GORTNEY. I am confident that his test schedule is exactly what we need. You are striking the fine line between how much test—we would always love to do more testing and more live fire tests. Who wouldn't? But striking that right balance gets confidence in the system, and I have confidence in the system today.

General MANN. I would just add that I think the cadence is also right on track, too.

Mr. BRIDENSTINE. "The cadence" meaning the series of tests upcoming?

General MANN. Exactly. And the frequency of doing those tests and when you are able to do them.

Mr. BRIDENSTINE. As far as funding, if there was more funding, would testing be prioritized going forward?

Admiral SYRING. That would be one lever we would turn.

Mr. BRIDENSTINE. When we think about MDA requesting \$96 million for the fiscal year 2016 technology maturation initiatives to build on the success of the discrimination sensors—we talked in my office about discrimination and targeting—this includes incorporating an advanced sensor into the MTS [multi-spectral targeting system] sensor.

Has MDA considered allowing competition for these tasks to evaluate other proven sensors to meet the technology maturation initiative?

Admiral SYRING. Yes, sir. We have gone out to industry with an RFI—request for information—recently and are assimilating that information and assessing the competitive landscape.

Mr. BRIDENSTINE. Excellent.

Fort Sill is in my State of Oklahoma. We are the Fires Center of Excellence there at Fort Sill. And Fort Sill is the institutional training base for THAAD. And I can tell you that I have been down there. What they do is really, really amazing work.

The budget request includes \$464 million for THAAD procurement to include the purchase of interceptors and training devices used at Fort Sill. It looks like there is an increased request in

THAAD training to account for procuring a radar training device, a radar training device.

Can you describe some of the devices that we are buying from a THAAD training standpoint. I guess this would be for General Mann or either—

Admiral SYRING. Well, let me talk about the radar training device to start with.

That was really a good cost-based decision for us to make that choice. The previous path was to have a full TPY-2 radar there tied up for training. And, really, this training device allows us to do the same thing in terms of providing the soldier training on that device and not tie up a TPY-2 radar. As you know, Mr. Bridenstine, we have five TPY-2 radars forward-deployed and then seven which will go with the seven THAAD batteries.

General MANN. As you know, the THAAD requirement is nine and right now we have the funding for the sixth. And we are working with MDA on that seventh battery. I mean, we are working the force structure.

I think we have a good handle on providing the manning for that. But the equipment, as you well know, is extremely expensive. So where you are able to use a training device and not have to tie up a radar, that is critically important.

Mr. BRIDENSTINE. I am out of time. So thank you.

Mr. Chairman, I'll yield back.

Mr. ROGERS. Thank the gentleman.

The chair now recognizes the gentleman from the great State of Virginia, Mr. Forbes.

Mr. FORBES. Mr. Chairman, thank you for this hearing.

Gentlemen, thank you.

And I know you are wearing uniforms. I am not going to put you in the political quandary of these money arguments that you have had. But I think it would suffice it to say that, if you have the money plus the authority to use the money, that meets your demands, and if you don't get money plus the authority, we are in kind of a crisis situation. That is the testimony we heard yesterday.

I am not going to ask you guys to say this. But the Secretary of Defense embarrassed himself yesterday. He lost a lot of credibility when he said, even if we got the money and the authority, that he would turn it down unless the EPA [Environmental Protection Agency] and IRS [Internal Revenue Service] and every other governmental program got sequestration lifted for that. And I am just going to tell you that is a travesty and I hope somebody in the Pentagon changes that.

Mr. McKeon, I want to ask you this question. 2009, the President announced the cancellation of his planned deployment of long-range missile defense interceptors and equipment in Poland and the Czech Republic and, basically, we put that on Navy ships.

Is that a fair assertion, that gap, that we used the BMD, that we put it on the Navy?

Mr. MCKEON. The European Phased Adaptive Approach has several phases which we are working through, the first phase being a radar in Turkey, second phase we have got some Aegis ships—

Mr. FORBES. What additional force structure did that require of the Navy, based on that decision?

Mr. MCKEON. We are forward-deploying four BMD Aegis ships to Spain. There are two there now. And there will be two more assigned—or will show up there this year. They have other missions that—

Mr. FORBES. But if they have that BMD on them, if they don't have the upgraded software, can they do the other missions that the Navy would use them for?

Mr. MCKEON. I better defer to one of the admirals to my left to answer that question.

Admiral GORTNEY. They are BMD ships. They are full-up capable ships. The only thing from a Flight IIA capability, they don't have the helicopter platform. But they are able to do the range-of-missile test.

Mr. FORBES. But, basically, Admiral, when you use them for BMD, the Navy can't use them with the flexibility it would have used them for other—

Admiral GORTNEY. Yes, sir. The naval component there would be constrained to, if it is for a BMD mission, he has to do the BMD mission.

Mr. FORBES. Did the Navy get any additional monies or resources to do that?

Admiral GORTNEY. We received—I am out of my lane here just a little bit. We received the money from MDA to make the necessary upgrades, but we were given no additional platforms to put them on.

Mr. FORBES. So what I am worried about is that—we are worried about the number of platforms that the Navy has. And I am just looking—in fiscal year 2012 to 2014, I know there were 44 ships that the combatant commanders needed based on their BMD requirements. But I am looking at fiscal year 2016. It is bumping up to 77. That is a huge jump.

Can you tell us what is driving that increased demand. And if we removed five cruisers from our fleet, how would that impact the BMD capabilities that we have, the five with BMD capabilities only?

Admiral GORTNEY. Well, in my previous force provider role, sir, the reason for the demand signal going up is the proliferation of the theater ballistic missile threat that—the BMD-equipped Aegis are a piece of the system of systems to defend that area for. So it is because of the proliferation of the threat and the global nature of it that demand signal from the COCOMs has gone up.

The ability to—CNO had to take five BMD upgrades out of the budget. The money wasn't there in order to do it. The downside of that is delaying the capability and the op tempo on the forces—the operational tempo of those forces that are manned, trained, and equipped do that mission today.

The forward-going to Rota really helped in that regard. When we can forward base forces, it reduces that rotational demand signal. When they get fully up, that is going to reduce the strain significantly for the east coast force. But it is just the reality and supports the memo that the Chief Staff of the Army and the CNO put out on going after the op tempo and going after the cost group.

Mr. FORBES. So the forward-deployed—the four that we are talking about that went to Rota and then you look at—the destroyers were the ones that we did the upgrades on. Is that correct?

But what about the cruisers? If we took five cruisers out of the fleet, would that impede the capability that they have on them? How would that impact the deficit that we would have?

Admiral SYRING. It would impact delivered BMD capability and it has been accounted for, Mr. Forbes, in the 43 ships that would be delivered by the end of 2020, now given the Navy's plan to reduce five more. But there is an impact to BMD.

Mr. FORBES. Thank you, Mr. Chairman. I yield back.

Mr. ROGERS. I thank the gentleman.

We are going to be called for votes in just a few minutes, but I want to try to get a few more things on the record while we are still in open session.

Mr. McKeon, when you first testified before this committee last December, among the responses to Russia's violation of the INF treaty were some "defensive options."

Can you tell me, is modification of our Aegis Ashore site—and I am thinking specifically in Deveselu, Romania—to provide it with some sort of AAW [anti-air warfare] capability that is intrinsic to it on our ships—would that be among those options that you are considering?

Mr. McKEON. Mr. Chairman, I am hesitating because I am not at liberty to get into the details on some of the options that we are still working through. If I could, I would like to talk to you about this a little bit more in the closed session.

Mr. ROGERS. I will state to you that I proposed this yesterday to Secretary Carter in open session because I think it is a very important signal to send, that we intend to protect that site and that there are consequences to the aggressive behavior that we have seen recently and the capabilities of those missiles that they are illegally testing.

But, anyway, Admiral Syring, when I asked you about this option last year, you responded it would be essentially a minor hardware and software modification to make this happen. Is that right?

Admiral SYRING. That is correct, sir.

Mr. ROGERS. How does the cost and capability compare to other options we could deploy, such as the Patriot battery?

Admiral SYRING. Sir, I am not in a position to make that judgment. I am in a position to say that modifications are the same that are fielded today on ships at sea, and we are not—the baseline is the same, but we have not enabled that capability because it has never been about defense of that site from—

Mr. ROGERS. I would like to request that, if you could in the next couple of weeks, kind of get me some information about what you think it would cost to make those modifications to that site.

Admiral SYRING. Yes, sir.

[The information referred to is classified and retained in the committee files.]

Mr. ROGERS. General Mann, do we have any spare Patriot batteries laying around?

General MANN. No, Congressman.

Mr. ROGERS. Would you please also get back to me in the next couple of weeks as to how much you think it would cost if we were to take one of our Patriot batteries which is currently being utilized and move it to Deveselu.

General MANN. Yes, sir.

[The information referred to can be found in the Appendix on page 109.]

Mr. ROGERS. Thank you, sir.

Admiral Syring, as you know, Chairman Thornberry and Ranking Member Smith are actively engaged across the whole committee with looking at how to reform the acquisition process in DOD, which we all agree is broken.

Tell me why is MDA's unique acquisition authority still important.

Admiral SYRING. Well, as you know, Mr. Chairman, it dates back to 2002. And the authorities given to MDA were to rapidly develop capability and field to the warfighter based on the urgent need not just with the homeland defense system, but the regional defense systems.

As you know, the homeland defense system was fielded rapidly under those authorities and it was to put a stopgap measure in place for the escalation that we were seeing with North Korea, and it served its purpose.

Now we are back increasing the reliability and increasing the capability of that system, but it allowed us to rapidly field that system. It has also allowed us to rapidly field and test THAAD, which has been fielded and fielded in numbers and I think greatly helped the warfighter in giving them options for deployment to the future.

I would like to say, sir, we are under a tailored 5000 process. So it is not without oversight. We go through a very rigorous process in terms of boards leading up to the quarterly Missile Defense Executive Board at the Mr. Kendall level. The programs are under strict baseline control that I report every year to Congress. So that accountability is there.

The other part of the authority serves in the JCIDS [Joint Capabilities Integration and Development System] process. And, technically, we are not under—

Mr. ROGERS. Under the what process?

Admiral SYRING. The JCIDS process, the requirements process.

And that said, we are not completely oblivious to that process. We have integrated priorities that are validated by the combatant commanders, NORTHCOM in particular and then STRATCOM at the higher level, that integrates those priorities.

And then the last piece would be—but when we need an integrated requirement with Joint Staff sort of buy-in, we are not hesitant to go do that. And we did that with the homeland defense requirement. As I was starting the radar development, as I was starting the kill vehicle development, we felt it is imperative that we get an overarching requirement from the Joint Staff, and we did that.

Mr. ROGERS. Does anybody else feel like they need to offer anything else on that? Great.

All right. There goes the votes. Let me try to get something else in.

Last November the Chief of Staff of the Army and the Chief of Naval Operations wrote Secretary Hagel detailing their concerns about their ability to meet combatant commander requirements for missile defense capabilities.

The Secretary, on the other hand, responded that he concluded our strategy is sound and that services should provide viable missile defense capability.

Admiral Gortney—well, this would be for any one of you. Do you share the services, the Navy and Army accept—do your services, the Navy and Army, accept the missile defense as a core mission?

Admiral GORTNEY. Yes, sir. I do view missile defense as a core mission. And it is missile defense from the range of capabilities that are out there, whether it is a homeland defense mission or whether or not it is defending the defended asset list, a shore facility or on a float facility that is out there. It is key. We train to it. It is an integrated process.

General MANN. Sir, it is a core capability for the Army.

Mr. ROGERS. I want to get back to that initial threshold question I started with when I opened this hearing.

Do you believe that you are going to be able to continue to responsibly maintain that core capability at current sequestration spending trend lines?

General MANN. We are going to be challenged. There is no doubt about that. I can tell you that the leadership of the Army closely monitors, almost on a weekly basis, the op tempo that we are going under. And I think what we are really concerned about is the balance between readiness and science and technology investments.

And so we talked about the threat evolving and the fact that we need to make upgrades to our systems and leverage technology. That is at risk under sequestration because we have got to make sure that readiness is there to deploy folks downrange.

Mr. ROGERS. Yeah. I guess the thing I am trying to get at is: One thing we know about the military. You all do a lot of planning, and it is the responsible thing to do. You all see what the future holds under the BCA defense spending caps in the out-years going forward.

I am curious to know: Is there a point in 2019, 2020, 2021, whatever, that you say, “At that point, I have an unfortunately high degree of confidence we will no longer be able to maintain in a responsible fashion that core mission or sustain it”? And that would be for any one of you.

Admiral GORTNEY. Our ability to predict the future is not very good. Just 3 short years ago, when we predicted the international security environment that we are in today, we didn’t exactly get that right. That is the challenge.

And so the impacts of the implementation of sequestration is the quickest way to hollow the force out. And that hollowness isn’t linear. It is exponential. And it is the way the services have to go after readiness in order to do it. But it is not predictive in nature. We won’t be able to execute the range of missions that we are supposed to do out there.

And what further complicates that, if we predict the threats capability wrong and it comes left, now we are in a very, very untenable position. So making the necessary investments and making

the investments in current readiness, which is investments in future readiness, is absolutely critical.

Mr. ROGERS. The gentleman from Tennessee wants to ask something.

Mr. COOPER. This week is so crucial because what we are really talking here is fixing a problem that will otherwise plague us for the next 7 years. So if we can get a better outcome now, we could be saving you gentlemen and your successors a 7-year nightmare here. So these talks like Mr. Brooks was talking about with the chairman is a very important time for the military to weigh in, very clearly.

Mr. ROGERS. Before we leave, let me ask one more thing. And this would be for any one of the three of you.

Sorry, Mr. McKeon.

To the extent the Army and Navy are concerned about changing the current acquisition approach for missile defense, where are their alternatives? And where do you see them in the 2016 FYDP?

Admiral SYRING. Mr. Chairman, I see opportunity in terms of the discussion that is going on within the building in terms of integration of left- and right-of-launch capability.

In terms of missile defense, can't be the only measure in terms of how we defeat the threat. We are part of a solution that must be integrated into an overall combatant commander strategy for defense of the homeland and our regional partners.

General MANN. Congressman, the only thing that I would add to that is I think it is critically important that we really leverage partner capabilities. And we know that a lot of countries around the world are buying a lot of technologies and are developing a capability. And so we have different exercises, like Nimble Titan, where we work with NATO and other partners in the GCC [Gulf Cooperation Council] and, also, in Korea and Japan.

And this has to be more than just a U.S. solution to global missile defense. We have to move out and really take our game to another level in terms of partnering with our allies, in terms of foreign disclosure, in terms of information-sharing, so that it is more than just the U.S. addressing this global issue.

Mr. ROGERS. Okay. With that, we will recess for about 30 minutes. I think we will then be able to get back in 2337.

With that, stand in recess.

[Whereupon, at 10:14 a.m., the subcommittee proceeded in closed session.]

A P P E N D I X

MARCH 19, 2015

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 19, 2015

Statement of Chairman Mike Rogers
Subcommittee on Strategic Forces
HEARING ON
Fiscal Year 2016 National Defense Authorization Budget Request for Missile Defense Programs
March 19, 2015

I call this hearing of the Subcommittee on Strategic Forces to order.

We have a full morning ahead of us on the increasingly important subject of ballistic missile defense.

We will start with this open hearing, and then we will adjourn to the HASC SCIF for a closed session with the witnesses to finish discussing things that aren't appropriate for an open hearing.

We have an esteemed panel here today to discuss the missile defense threat and U.S. responses to it:

- Mr. Brian P. McKeon
Principal Deputy Under Secretary of Defense for Policy
Department of Defense
- Admiral Bill Gortney, USN
Commander
North American Aerospace Defense Command and U.S. Northern Command
- Vice Admiral James Syring, USN
Director
Missile Defense Agency
- Lieutenant General David L. Mann, USA
Commander
Joint Functional Component Command for Integrated Missile Defense

Given the packed morning, I'm going to ask that the witnesses summarize their prepared statements in three minutes or less. Your full statements will be made a part of the record (without objection, it is so ordered).

I want to make a couple of quick comments and then I will yield to my good friend, the gentleman from that Yankee state of Tennessee for any statement he may wish to make.

First, I want to thank you all for taking the time to testify today. I know it takes time, and you all have busy jobs.

But, as we prepare to write the FY16 NDAA, your testimony will help us make some very important decisions about what programs we fund and what policies we set in place.

Second, I want to state my support for many of the priorities in this year's budget submission. I am pleased to see, for example, the roughly \$700 million increase this year for our Ground-based Midcourse Defense system.

We have only one ballistic missile defense system capable of defending the homeland. It's about time we fund it properly.

Admiral Syring, you inherited a mess in the GMD system when you took over at MDA. I think I speak for all of my colleagues when I say that you have rebuilt our trust in this system. I cannot overstate how grateful we all are for your service.

I hope when you leave here today and go home tonight, you will pass on to your family a great big "thank you" from us as well – we know that you don't serve alone. Your kids and wife serve with you. If your wife is anything like mine, I'm sure she's a six-star Admiral!

Admiral Gortney, Lt. Gen. Mann, the same goes to you and your families. You have our respect, appreciate and gratitude.

Mr. McKeon, we also appreciate your civilian service.

But I have concerns with this budget as well. While this year's budget is good, an improvement from recent years, I note it collapses in the out-years.

As a plan, I'm not sure I agree that the cruise and ballistic missile threat to the United States, our deployed forces, and our allies will get better in the next five years.

Likewise, I was deeply troubled by the November 2014 Memo to the Secretary of Defense signed by the Chief of Staff of the Army and the Chief of Naval Operations concerning our missile defense capabilities.

This memo represents the kinds of things many of us have been worried about because of Sequestration. Core missions, like missile defense, are becoming difficult to sustain.

Our Aegis ships, THAAD batteries, and Patriot Batteries, are expensive commitments to regional security. That is true.

I agree with former Secretary Hagel that our current BMD policy is sound.

To the services I say "missile defense is a core mission; it is not a nice to have, it is a must do."

But we must get you budget relief so that this core mission, and all of your other core missions, are executable.

I now yield to the distinguished gentleman from Tennessee, Mr. Cooper, for any opening comments he may have.

**Statement of Ranking Member Jim Cooper
Subcommittee on Strategic Forces**

HEARING ON

**Fiscal Year 2016 National Defense Authorization Budget Request for Missile Defense
Programs**

March 19, 2015

I would like to join Chairman Rogers in welcoming our witnesses to today's hearing.

An affordable and effective system plays an important role in maintaining a layered defense. Missile defense is a key aspect of national security but it is not a silver bullet; we also need strong nuclear nonproliferation programs, reliable intelligence capabilities, effective deterrence, and a ready and capable offensive force. General Odierno and Admiral Greenert recently warned against funding missile defense at the expense of other priorities and the need for a holistic approach.

Within this context, improving missile defense so we have an effective and affordable defense against growing threats from North Korea and Iran remains an important priority for national security. However, this must be done in alignment with fiscal realities, technological capabilities and without causing a nuclear arms race.

In a constrained fiscal environment, I look forward to your insights on where we should spend taxpayers dollars to provide the most value and to keep pace with the threat. I commend Admiral Syring and the Department of Defense for focusing on necessary, cost-effective steps to improve the system we have, such as improving discrimination and reliability, and for looking ahead to strengthen missile defense.

A strong acquisition strategy is key to implementing these priorities. After three test failures from 2010 to 2013, the Missile Defense Agency (MDA) has focused on understanding the problems, regrouped and conducted a successful CE-II flight intercept test in 2014. This was an encouraging and successful step forward, but there is still much work to be done. The Government Accountability Office (GAO) has had long-standing concerns about the level of concurrency in the Ground-Based Midcourse Missile Defense (GMD) program and the fact that it has contributed to test failures and rework. The cost to demonstrate the CE-II test failures cost nearly \$2 billion, ten times the original projection, underscoring the need for robust acquisition, including minimizing concurrency and continuing to "fly-before-you-buy." Similarly, the GAO had concerns about concurrency in the SM-3 1B program, that is, MDA tends to allow production to get ahead of testing. This issue applies to upcoming production decisions since the redesigned third stage rocket motor of the SM3-1B still needs to be flight tested, as MDA is entering into a block buy for these missiles.

I look forward to working with you to support a strong and effective missile defense system.

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THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF
BRIAN P. MCKEON
PRINCIPAL DEPUTY
UNDER SECRETARY OF DEFENSE FOR POLICY

BEFORE THE HOUSE
ARMED SERVICES SUBCOMMITTEE ON STRATEGIC FORCES
MARCH 19, 2015

NOT FOR DISTRIBUTION UNTIL RELEASED BY
THE HOUSE ARMED SERVICES COMMITTEE

Chairman Rogers, Ranking Member Cooper, members of the Subcommittee, thank you for the opportunity to testify on the Fiscal Year 2016 Budget Request for missile defense, a critical national security priority. I am grateful for your consistent attention to and continuing support of the critical mission of defending our homeland, our partners and Allies, and deployed forces from a growing ballistic missile threat.

Let me offer my assessment of how the programs and fiscal year 2016 budget request for the Missile Defense Agency (MDA) ensure we are sustaining and modernizing our homeland missile defense capability so that we remain ahead of the threat while providing effective, integrated, and interoperable regional ballistic missile defense (BMD) capability. The President's budget requests \$9.6 billion in FY 2016, of which \$8.1 billion is for the MDA to develop and deploy missile defense capabilities that protect the U.S. homeland and strengthen regional missile defenses. Sequestration levels would, of course, be significantly lower and as Secretary Carter has said, would make the nation less secure. Even without sequestration, however, in these austere times, there is still not enough money to fund every program we might wish to have, and we are required to prioritize investments accordingly.

I will begin with a discussion of ballistic missile threats and other trends, and then focus on several key policy priorities: defending the United States against limited long-range ballistic missile attacks, strengthening defense against regional missile threats, fostering defense cooperation with partners, and examining how to advance the missile defense technology base in a cost-effective manner.

Ballistic Missile Threats

Ballistic missiles continue to become more survivable, reliable, and accurate at greater ranges, and regional powers are basing more missiles on mobile platforms. Technical and operational measures to defeat missile defenses are also increasing. Several countries are designing missiles to launch from multiple transporters against a broad array of targets, enhancing their mobility and capacity for salvo fires, which increases their effectiveness on the battlefield. Shorter launch time preparations are making newer systems more survivable.

Iran

Iran already has the largest inventory of ballistic missiles in the Middle East, and today can strike targets throughout the region and into Eastern Europe. In addition to its growing missile inventories, Iran is seeking to enhance lethality and effectiveness of existing systems with improvements in accuracy and warhead designs. Iran is developing an anti-ship ballistic missile which could threaten maritime activity throughout the Persian Gulf and Straits of Hormuz. While Iran has not yet deployed an intercontinental ballistic missile (ICBM), its progress on space launch vehicles – along with its desire to deter the United States and its allies – provides Tehran with the means and motivation to develop longer-range missiles, including an ICBM. Iran publicly stated that it intends to launch a space-launch vehicle as early as this year capable of intercontinental ranges, if configured as such.

North Korea

North Korea's weapons and missile programs pose a serious threat to the United States and to East Asia. North Korea has conducted three nuclear tests. It is also seeking to develop longer-range ballistic missiles capable of delivering nuclear weapons to the United States, and continues efforts to bring its KN08 road mobile ICBM to operational capacity. While the reliability of an untested North Korean ICBM is likely to be very low, North Korea has used its Taepo-Dong-2 launch vehicle to put a satellite in orbit, thus successfully demonstrating technologies applicable to a long-range missile.

North Korea's efforts to produce and market ballistic missiles raise broader regional and global security concerns, by threatening the United States' allies and partners and increasing our concerns about ballistic missile technology proliferation.

Syria

While Syria does not pose a ballistic missile threat to the U.S. homeland, the Assad regime does possess short-range ballistic missiles, and has shown a willingness to use them repeatedly against its own people. Syria has several hundred short-range ballistic missiles, all of which are mobile and can reach much of Israel and large portions of Iraq, Jordan, and Turkey from launch sites well within the country.

Other Trends

In the regional ballistic missile context, one trend that particularly concerns the United States is China's development of advanced ballistic missiles. China is augmenting the over 1,200 conventional short-range ballistic missiles with a limited but growing number of conventionally armed, medium- and intermediate range ballistic missiles that will improve China's ability to strike regional targets at greater ranges. China also continues to deploy growing numbers of anti-ship ballistic missiles.

Russia's recent behavior currently poses one of our most pressing and evolving strategic challenges – challenges felt across the strategic forces mission space. We are confronted with Russia's occupation of Crimea, continuing Russian aggression in eastern Ukraine, Russia's increasingly aggressive nuclear posturing and threats, including the prospect of nuclear weapons in Crimea, and its violation of the Intermediate-Range Nuclear Forces (INF) Treaty.

Homeland Defense

The U.S. homeland is currently protected against potential ICBM attacks from states like North Korea and Iran. To ensure that we stay ahead of the threat, we are continuing to strengthen our homeland defense posture and invest in technologies to better enable us to address emerging threats in the next decade. This requires continued improvement to the ground-based midcourse defense (GMD) system, including enhanced performance of the Ground-Based Interceptor (GBI) and the deployment of new sensors.

We remain on track to deploy 14 additional interceptors in Alaska by the end of 2017. These interceptors, along with the 30 that are currently deployed, will provide protection against both North Korean and Iranian ICBM threats as they emerge and evolve. We have also deployed a second forward-based missile defense radar to Japan, which is operating today thanks to the hard work of the MDA and the Japanese government, to meet our goal of having the radar deployed by the end of 2014. This radar strengthens both homeland and regional defense.

This year's budget request also reflects Department of Defense's (DoD's) commitment to modernizing the GMD system. It will move us towards a more reliable and effective defense of the United States. It includes funding for development of a new radar that, when deployed in

Alaska, will provide persistent sensor coverage and improve discrimination capabilities against North Korea. It also continues funding for the redesign of the kill vehicle for the Ground-Based Interceptor. Although we have fixed the causes of past failures in the GBI related to the Exoatmospheric Kill Vehicle, the redesigned kill vehicle will have greater performance and discrimination capability.

As directed by Congress, the MDA is also conducting environmental impact studies (EIS) at four sites in the eastern United States that could host an additional GBI missile field. These EISs will be completed in 2016. The cost of building an additional missile defense site in the United States is very high. Given that the ICBM threat from Iran has not yet emerged, and the need to fix the current GBI kill vehicles, the highest priorities for the protection of the homeland are improving the reliability and effectiveness of the GBI and improving the GMD sensor architecture. The current GMD system provides coverage of the entire United States from North Korean and potential Iranian ICBMs. No decision has been made to deploy an additional missile field in the United States. If an ICBM threat were to emerge in numbers that necessitated the deployment of additional interceptors, the steps being taken now, to include conducting an environmental impact statement, will shorten the construction timelines associated with deployment of a new missile defense site.

Regional Defense

The Department's FY 2016 budget request also continues to implement deployment of missile defenses that are tailored to the security circumstances in Europe, the Middle East, and Asia-Pacific. Our focus is on developing and fielding missile defense capabilities that are mobile and relocatable, which allows us to address crises as they emerge. We are also encouraging our allies and partners to acquire missile defense capabilities, and to strengthen operational missile defense cooperation. This year, we initiated a Joint Staff-led effort to update the 2012 Joint Capabilities Mix study to ensure that we are making the most effective regional missile defense investments possible. In a regional context, we know that we will not be able to purchase enough interceptors to rely purely on missile defense for the duration of a conflict. In such a situation, we must protect our most valuable assets while also drawing on our other capabilities to provide a comprehensive military approach to defeating the threat from ballistic missiles.

Europe

We are continuing to implement the European Phased Adaptive Approach (EPAA), and we are working in close collaboration with our North Atlantic Treaty Organization (NATO) Allies to develop an advanced network of sensors and interceptors – on land and at sea – to protect NATO European territory, our military forces, and facilities. Since 2011, the United States has operated a forward-based radar in Turkey and maintained a sea-based missile defense presence in Europe. The Aegis Ashore site in Romania is on schedule to be completed by the end of 2015. Two additional U.S. Aegis BMD destroyers, the USS CARNEY and USS PORTER, will be joining USS DONALD COOK and USS ROSS later this year as they forward deploy to the naval facility at Rota, Spain. These multi-mission ships will support the missile defense mission, as well as other U.S. European Command and NATO maritime missions.

The President's budget request also supports the Aegis Ashore site that will be deployed in Poland in the 2018 timeframe and the development of the SM-3 Block IIA interceptor that will be deployed on land and at sea later this decade. As these capabilities become operationally available, they will extend BMD coverage to all NATO European territory.

Our NATO Allies are also making significant contributions to the European missile defense mission. Romania, Spain, and Turkey are hosting U.S. missile defense assets and provide the external security for the facilities. Beyond hosting the second Aegis Ashore site in Europe, Poland has also announced its intention to spend up to \$10 billion to acquire advanced air and missile defense capabilities. DoD is engaging directly with Poland to assist it obtaining a lower-tier missile defense system to meet its missile defense requirements. The U.S. Patriot system is a finalist in this competition. Several other Allies are in the process of considering the purchase of air and missile defense capabilities. The United States will continue to encourage its NATO Allies to do more to cooperate and invest in missile defenses that will contribute to Alliance security.

Several Allies have modern surface combatant ships that could be equipped with BMD sensor or interceptor capability upgrades. The Netherlands and Denmark have committed to upgrading the SMART-L radars on their frigates to contribute to NATO BMD.

The Netherlands and Germany have committed Patriot PAC-3 systems to NATO missile defense as demonstrated through the ongoing NATO deployment in defense of Turkey. Spain recently replaced the Netherlands in the defense of the Turkey mission through deployment of a Patriot system, and is strengthening its air and missile defense capabilities by acquiring additional Patriot systems from Germany.

France is planning to provide its Spirale satellite detection system and a long-range radar for NATO territorial missile defense and has offered the SAMP/T air and missile defense system, which became operational in 2013, to NATO BMD.

The United States conducts exercises designed to hone our Alliance missile defense capabilities and integration. U.S. European Command (USEUCOM) is engaged with NATO in the development of a biennial NATO-led BMD exercise event that serves to reinforce and expand upon other, routine BMD training evolutions that take place on a quarterly and semi-annual basis.

Many NATO Allies also participate in NIMBLE TITAN, an unclassified, two-year, multinational, BMD campaign of experimentation. The overarching purpose of NIMBLE TITAN is to serve as a venue for collaboration, exchange of views, and coordination of BMD policy and operational development among participating nations and organizations, along with U.S. government agencies and military organizations. The NIMBLE TITAN 16 campaign, which began last year, has 25 participating nations and organizations, including NATO.

Asia-Pacific

In the Asia-Pacific region, our force posture includes Aegis BMD capable ships, along with Patriot batteries deployed in Japan and South Korea. We have also maintained the THAAD battery deployment to Guam in response to North Korean provocation.

The cornerstone of our security and diplomacy in the region has been our strong bilateral alliances, including with South Korea, Japan, and Australia. All three of these nations play an important role in our regional efforts to achieve effective missile defense.

South Korea obviously has an immediate, proximate stake in preventing missile strikes from North Korea. We have worked closely with South Korea to ensure that our Alliance

maintains the capacity to do just that. The United States deploys Patriot PAC-3 batteries in South Korea to defend U.S. and South Korean forces. In addition, South Korea is taking steps to enhance its own air and missile defense systems, which include sea- and land-based sensors and Patriot PAC-2 batteries. DoD has been consulting with South Korea about how it can upgrade its missile defense capabilities as part of an Alliance response to the growing North Korean missile threat.

Japan has its own layered missile defense system, which includes Aegis BMD ships with Standard Missile-3 interceptors, PAC-3 batteries, early-warning radars, and sophisticated command-and-control systems. Japan is upgrading two ATAGO-class Aegis destroyers to BMD capability with certification scheduled for FY 2018 and FY 2019, and plans to build two additional Aegis BMD ships, which would increase its inventory to a total of eight BMD-capable ships. As mentioned earlier, Japan also hosts two U.S. missile defense radars.

Additionally, Japan is a critical international partner for BMD development. One of our most significant cooperative efforts is the co-development of an advanced version of the SM-3 interceptor, the SM-3 Block IIA.

The United States and Australia have forged a longstanding partnership on missile defense research and development – most notably with regard to sensors. In addition, Australia is involved in a trilateral discussion on missile defense in the Pacific involving the United States, Australia, and Japan.

We will continue to emphasize the importance of developing a regional ballistic missile defense system that includes the sharing of sensor data among Allies to take full advantage of the benefits of system interoperability and integration.

Middle East

We also maintain a robust missile defense presence in the Middle East including land- and sea-based assets deployed in defense of our forward deployed forces, allies, and partners. This is in addition to our efforts to build the capacity of those allies and partners that will ultimately contribute to their ability to defend themselves.

The United States maintains a strong defense relationship with Israel, and our cooperation on missile defense has resulted in a comprehensive missile defense architecture. Israeli programs such as Iron Dome, the David's Sling Weapon System, and the Arrow Weapon System, in conjunction with operational cooperation with the United States, create a multi-layered architecture designed to protect the Israeli people from varying types of missile threats. Missile defense figured prominently in the AUSTERE CHALLENGE exercise we conducted with Israel in the fall of 2012, the largest U.S.-Israeli military exercise in history. A similar exercise, JUNIPER COBRA, is scheduled to take place in May of this year.

The United States is also working with a number of Gulf Cooperation Council (GCC) countries on missile defense, including supporting the purchase of missile defense systems through the Foreign Military Sales program. The United Arab Emirates is procuring the Terminal High Altitude Area Defense (THAAD) system, with the first delivery expected later this year. This is in addition to the UAE's earlier purchase of Patriot systems, which have been delivered. Saudi Arabia is in the process of upgrading its existing Patriot PAC-2 batteries to the PAC-3 configuration. Kuwait is also purchasing Patriot PAC-3 batteries. Qatar also joined the international community of U.S. Patriot partners late last year – a community which also includes Saudi Arabia and Kuwait in addition to the UAE.

U.S. Air Force Central Command maintains a series of regular exchanges between United States and GCC air defense officers at the Combined Air Operations Center located at Al Udeid Air Base in Qatar. These exchanges provide an opportunity for increased situational awareness of missile threats in the region as well as the potential for future BMD planning and operational cooperation.

As the GCC states begin to field more capable systems, the United States and its Gulf partners must work toward greater integration of those capabilities across the region. The desired end state is a regional missile defense architecture in which GCC member states participate and contribute to the extent practical, leading to a networked, layered defense of key strategic centers that strengthens deterrence and increases our collective ability to defeat a ballistic missile attack.

Technology Development

We must continue to look ahead. This means ensuring that our investment strategy and priorities balance the needs of addressing the most dangerous threats we confront today while positioning us to respond to threat developments in the next decade. Areas for priority technology investment include persistent discrimination in the current and future Ballistic Missile Defense System sensor architecture; high power lasers for multiple BMD applications; common kill vehicle technology leading to a multi-object kill vehicle; advanced technology for high risk/high pay-off breakthroughs; and a rail gun to lower the cost per kill.

Conclusion

The austere budget environment will continue to compel us to make difficult choices here. Sequestration would undermine our ability to improve the GBI fleet, emplace new and more advanced sensors, and defend our deployed forces and Allies against ballistic missile attack. Quite simply, it would hinder our ability to keep up with the growing threat. We cannot let our guard down at any time, much less in the current security environment. I urge you to repeal sequestration before it causes irreparable damage to the nation's missile defenses.

Thank you for having me here today, and I look forward to your questions.



Brian P. McKeon

Principal Deputy Under Secretary of Defense for Policy



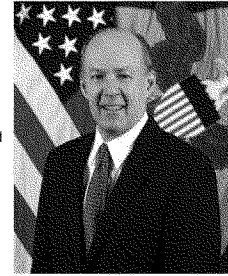
Brian P. McKeon was confirmed as the Principal Deputy Under Secretary of Defense for Policy on July 28, 2014. He is responsible for advising the Under Secretary of Defense for Policy and the Secretary of Defense on all matters pertaining to the development and execution of U.S. national defense policy and strategy.

Previously, Mr. McKeon served as Deputy Assistant to the President, Executive Secretary of the National Security Council (NSC), and Chief of Staff for the National Security Council staff at the White House, a position he held from 2012-2014. In this position, he was the Chief Operating Officer for two National Security Advisers, managing all administrative, budget, and personnel matters for the NSC staff. Prior to joining the NSC staff, Mr. McKeon served as the Deputy National Security Advisor to the Vice President from 2009 to 2012, where he advised Vice President Biden on all national and homeland security matters.

Before serving in the Executive Branch, Mr. McKeon was Chief Counsel for the Democratic members of Senate Foreign Relations Committee from 1997 to 2009; he served concurrently as Deputy Staff Director from 2007 to 2009. In addition to helping to manage the Committee's agenda and staff, he played a lead role on nominations, treaties, the management and operations of the Department of State, and was deeply involved in a broad range of regional and functional issues.

Mr. McKeon served as a law clerk to U.S. District Judge Robert G. Doumar of the Eastern District of Virginia in 1995 to 1996. Earlier in his career, he worked for Senator Joseph R. Biden, Jr. in various capacities from 1985 to 1995, including seven years as a Legislative Assistant for Foreign Policy and Defense.

Mr. McKeon received a B.A. in Government and International Studies from the University of Notre Dame and a J.D. from the Georgetown University Law Center.



HOUSE ARMED SERVICES COMMITTEE, STRATEGIC FORCES SUBCOMMITTEE

STATEMENT OF
ADMIRAL WILLIAM E. GORTNEY, UNITED STATES NAVY
COMMANDER
UNITED STATES NORTHERN COMMAND
AND
NORTH AMERICAN AEROSPACE DEFENSE COMMAND
BEFORE THE
HOUSE ARMED SERVICES COMMITTEE, STRATEGIC FORCES SUBCOMMITTEE
MARCH 19, 2015



HOUSE ARMED SERVICES COMMITTEE, STRATEGIC FORCES SUBCOMMITTEE

Chairman Rogers, Ranking Member Cooper, and distinguished members of the Subcommittee, thank you for allowing me to represent the men and women of United States Northern Command (USNORTHCOM) and North American Aerospace Defense Command (NORAD). I come before you today after my first three months in command to share my thoughts on missile defense and to discuss many of our future challenges.

Upon taking command this past December, I led a detailed analysis of the missions we are tasked to execute as part of the President's Unified Command Plan (UCP) and the NORAD Agreement. From a clean slate, we examined our available ways, means, and desired end-states to prioritize the commands' efforts so that the functions and tasks we perform in support of the United States and Canada are those most important to mission success. In doing so, I have focused our efforts along several important lines of operation.

Defense of our Homelands is our paramount line of operation, common to both USNORTHCOM and NORAD, and the focus of my testimony to you today. The two commands complement each other in this endeavor as evidenced by the integration across nearly all our headquarters functions. USNORTHCOM's homeland defense missions include Ballistic Missile Defense (BMD), while NORAD's mission set includes aerospace warning of ballistic and cruise missile attacks against North America. However, today's threats are quite different from those we faced even a few years ago.

Accordingly, we depend on and foster another line of operation, *Homeland Partnerships*, in order to accomplish our missions, and consider them our strategic center of gravity. The partnerships we have built within the homeland serve as the foundation for all our responsibilities. Our nation's BMD capabilities are built on the foundation of strong partnerships with the Missile Defense Agency (MDA), United States Strategic Command (USSTRATCOM),

and the regional Geographic Combatant Commands (GCCs), while NORAD's close ties with the interagency community in the National Capital Region (NCR) bring important components together.

Although each Service is responsible for the day-to-day welfare of its people, nearly 90 percent of our nation's military and civilian personnel live and work in our Area of Responsibility (AOR). We owe them and their respective Services a commitment to lines of operation for both *Professionalism and Excellence* and the well-being of our *Warfighters and Families*. As we welcome back and care for those who have been in combat, we have an opportunity to re-commit ourselves to the profession of arms and ensure we are prepared to perform our missions in an ever-changing threat environment, for make no mistake: those who would attack our families and friends have never stopped trying since September 11th, 2001.

DEFENSE OF OUR HOMELANDS—MISSILE DEFENSE

Defense of our homeland is a sacred mission for the men and women of USNORTHCOM and NORAD. The mission requires a defense in depth, made possible because of close partnerships with allies, other combatant commands, and federal agencies.

We remain vigilant against states that may seek to put North America at risk with ballistic missiles. Today we are focused primarily on North Korea and Iran, as both seek to advance their nuclear and ballistic missile capabilities. North Korea has successfully test-detonated three nuclear devices and, through its space program, has demonstrated many of the technologies required for an Intercontinental Ballistic Missile (ICBM) that could target the continental United States. Meanwhile, North Korean military parades have showcased the new KN08 road-mobile ICBM. This system will complicate our ability to provide warning and defend against an attack, thereby increasing the credibility of North Korea's strategic deterrent.

Iran has likewise committed considerable resources to enhancing its ballistic missile capabilities and has already placed another satellite into orbit this year using a new booster that could serve as a demonstrator for ICBM technologies. Despite international condemnation and sanctions, Iran has failed to cooperate fully with the International Atomic Energy Agency to resolve all outstanding concerns regarding its nuclear program, particularly those concerning its possible military dimensions. While we remain hopeful that current negotiations with the five permanent members of the United Nations Security Council plus Germany (P5+1) will lead to a diplomatic solution which addresses the international community's concerns regarding Iran's nuclear program comprehensively and in a durable fashion, we will continue to remain vigilant.

I want to emphasize that USNORTHCOM could not address these threats without the close coordination of our fellow GCCs. A significant event in the homeland from an external threat may not originate in our AOR, as such an event or attack is more likely to emanate from the AORs of United States Central Command (USCENTCOM) or United States Pacific Command (USPACOM). Since the enemy lives in the seams, we are seeking a new level of understanding and efficiency among the GCCs in order to deter, detect and, when necessary, defeat threats before they pose a danger to the homeland.

Last September marked the tenth anniversary of Ground Based Interceptor (GBI) missiles standing alert at Fort Greely, Alaska, manned by soldiers of the 49th Missile Defense Battalion of the Alaska Army National Guard and overseen by soldiers of the 100th Missile Defense Brigade of the Colorado Army National Guard. We have high confidence in the ability of this system to defeat an ICBM strike against the United States from an enemy with limited ICBM capabilities. As the Committee noted in the Fiscal Year (FY) 2015 National Defense Authorization Act (NDAA), the GBI fleet requires continued vigilance and investment to ensure

reliability and mitigate obsolescence, and we believe we are on a prudent, viable course of action to do just that.

The FY 2014 Defense Appropriations Act included initial funding for an additional 14 GBIs, in addition to the 30 GBIs currently based at Fort Greely and Vandenberg Air Force Base, California, while improving the existing fleet by incorporating the second generation Exo-atmospheric Kill Vehicle (CE-II EKV). The improved CE-II EKV accomplished its first successful test last June when a GBI launched from Vandenberg Air Force Base successfully intercepted a ballistic missile target launched from Kwajalein Atoll over the Pacific Ocean. A continued steady testing schedule and investment are critical to increase reliability and resilience across the missile defense enterprise. We believe the MDA is on track to have the additional GBIs on line by 2017.

Our BMD capability relies on a series of infrared space sensors as well as land and sea-based radars for targeting. This year, a second AN/TPY-2 radar will be brought on-line in Japan that improves our ability to persistently track potential threats to the homeland originating from East Asia.

Like everything we do in defense of the homeland, many of the systems and sensors we rely on reside in other AORs, which makes developing partnerships between MDA, USSTRATCOM, and the regional GCCs critical. This includes developing and deploying Long Range Discrimination Radar (LRDR) system for more efficient and time-sensitive BMD. The Sea-Based X-Band Radar, currently in Limited Test Support Status, provides unique discrimination and tracking capabilities that are unavailable in current operational systems. I believe we must continue to invest in these types of emerging technology BMD capabilities to counter tomorrow's missile threats. Engaging a target that is flying over 15,000 miles per hour

in space with a kill vehicle that is roughly the size and weight of a basic military trainee's foot locker continues to expand the limits of what is technically possible.

Since September 11th, we have focused on terrorist groups that have demonstrated the capability and intent to strike within our borders. However, resurgent state actors have invested in new capabilities that make North America vulnerable in ways not seen in a generation. Russia is progressing toward its goal of deploying long-range, conventionally-armed cruise missiles with ever increasing stand-off launch distances on its heavy bombers, submarines and surface combatants, augmenting the Kremlin's toolkit of flexible deterrent options short of the nuclear threshold. Should these trends continue, over time NORAD will face increased risk in our ability to defend North America against Russian cruise missile threats.

We remain concerned with the development of conventional cruise missiles that could provide near peer adversaries with options to strike the United States without the perceived risk of retaliation of a nuclear exchange. For over forty years we have enjoyed an unchallenged ability to employ precision conventional cruise missiles at low altitudes evading radar detection. However, the emerging capability of near peers to generate similar long-range strike effects could complicate our decision-making.

Moreover, the need for improved situational awareness in the high latitudes and maritime domain continues to increase. Whether it is a strategic bomber, a submarine, or a surface combatant, defeating the archer is technically more feasible and affordable than defeating the arrow. The ability to locate, intercept, and if necessary destroy these platforms before they can launch a strike is crucial. We are working with our Canadian partners to develop plans to modernize or replace current assets such as the North Warning System that will further leverage emerging technologies.

Before we can engage an airborne threat, we must be able to see it. We are continuing to work with our partners to employ advanced surveillance capabilities that will enhance our ability to detect, track, and investigate suspicious aircraft to include cruise missiles and unmanned aerial systems, and when necessary, cue our defense systems against the full spectrum of air threats of all sizes, at all altitudes, and at all speeds.

Our first Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) aerostat is now airborne, with a second that is scheduled to be deployed later this year, beginning a three-year operational exercise. Using these aerostats moored at Aberdeen Proving Ground in Maryland, we will take the radar data these platforms provide and integrate it into our NCR air defenses, as well as the larger NORAD air defense architecture. Assessing JLENS' capability to enhance our surveillance capabilities is important to determine the best way forward to protect against a potential cruise missile threat from near-peer adversaries. We appreciate the support of Congress for full funding of the JLENS FY16 President's Budget request to keep the operational exercise on track and on schedule.

CONCLUSION

Today, we face increasing challenges from near peer competitors, rogue regimes, myriad terrorist organizations, individual violent extremists, and transnational organized crime looking for weaknesses to exploit. Near peers continue to erode what has always been our military technological advantage and the ability to hold targets at risk anywhere in the world.

I am confident that today we are able to execute our assigned missions with forces by the Services that remain capable and ready. As a combatant commander, it is my responsibility to identify the capabilities required to meet my requirements; it is the Services' responsibility is to

fulfill it. But investment in readiness today leads to a ready force in the future. This includes training, recapitalization, and modernization across the Services.

And so I continue to be strongly concerned about the long-term fiscal situation of the DOD. Sequestration targets both current and future readiness and risks a hollow force undertrained and underprepared for today's emerging threats. The across-the-board cuts required to meet sequestration spending levels beginning again in FY 2016 mean critical capabilities USNORTHCOM and NORAD depend on to accomplish our missions could be in jeopardy, even as our potential adversaries remain persistent and innovative. Of particular concern, the BMD investment in LRDR and EKV upgrades of the past two years and the new effort to redesign the kill vehicle will likely be at great risk should sequestration return.

Our true competitive advantage is the remarkable people dedicated to professionalism and excellence accomplishing our missions every day, including one of the most experienced civilian workforces in the entire DOD. While their dedication has never wavered, let me add my voice to those who have sounded the alarm over the morale of our civilians after several cycles of threatened and realized furloughs, pay freezes, and reductions in forces. We have broken faith with our civilians and can, and should, do better.

We appreciate the Subcommittee's work to highlight for the entire Congress the adverse effects our current budget process not only has on missile defense and our national security, but also on our dedicated warfighting men and women, our exceptional civilian workforce, and their families. USNORTHCOM and NORAD are fully prepared to defend the homelands from those who would do us harm. I welcome your questions.



United States Navy
Biography

Admiral Bill Gortney
commander, North American Aerospace Defense Command
U.S. Northern Command

Adm. Bill Gortney graduated from Elon College in North Carolina, earning a Bachelor of Arts in History and Political Science in 1977. He entered the Navy as an aviation officer candidate, received his commission in the United States Naval Reserve in 1977, and earned his wings of gold in 1978.

On three different occasions, Gortney commanded forces in the U.S. Central Command area of operations, providing support to Maritime Security Operations and combat operations for Operations Enduring Freedom and Iraqi Freedom. These assignments included commander, U.S. Naval Forces Central Command / U.S. 5th Fleet / Combined Maritime Forces, Bahrain, 2008-2010; commander, Carrier Strike Group 10, on board USS Harry S. Truman (CVN 75), 2007-2008; and commander, Carrier Air Wing 7, on board USS John F. Kennedy (CV 67), 2002-2003.



Additional command tours included VFA-106, the East Coast FA-18 Fleet Replacement Squadron, NAS Cecil Field, Florida, 1996-1997; and VFA-15, 1994-1995, on board USS Theodore Roosevelt (CVN 71).

Gortney's fleet assignments included VA-82, 1981-1984, on board USS Nimitz (CVN 68); VFA-87, 1988-1990, on board USS Theodore Roosevelt; executive officer, VFA-132, 1991-1992, on board USS Forrestal (CV 59); executive officer, VFA-15, 1992-1994, on board USS Theodore Roosevelt; and deputy commander, Carrier Air Wing 7, on board USS Dwight D. Eisenhower (CVN 69).

Other overseas assignments included deputy for Current Operations, Joint Task Force Southwest Asia, Saudi Arabia, 1999; chief, Naval and Amphibious Liaison Element to the Combined Forces Air Component Commander, U.S. Central Command, for the opening months of OIF at Prince Sultan Air Base, Saudi Arabia; and chief of staff, U.S. Naval Forces Central Command / U.S. 5th Fleet, NSA Bahrain, 2003-2004.

Shore assignments included VT-26, NAS Beeville, Texas, 1978-1980; VFA-125, NAS Lemoore, California, 1984-1988; Aide and flag lieutenant to the assistant chief of Naval Operations (Air Warfare), Washington D.C., 1990-1991; Joint Staff, J-33 Joint Operations Department CENTCOM Division, 1998-1999. A 1996 graduate of the Naval War College, he earned a Master of Arts in National Security and Strategic Studies. His first flag tour was as the deputy chief of staff for Global Force Management and Joint Operations, U.S. Fleet Forces Command, Norfolk, Virginia, 2004-2006. From 2010-12 he served as director, Joint Staff. His most recent assignment was as commander, U.S. Fleet Forces Command, 2012-2014.

Gortney has flown over 5,360 mishap-free flight hours and completed 1,265 carrier-arrested landings, primarily in the A-7E Corsair II and the FA-18 Hornet. He is authorized to wear the Defense Distinguished Service Medal, Navy Distinguished Service Medal (two awards), Defense Superior Service Medal, Legion of Merit (four awards), Bronze Star, Defense Meritorious Service Medal (two awards), Meritorious Service Medal (three awards), Air Medal (three awards: Gold Numeral One, two Strike/Flight), Defense Commendation Medal (three awards), Navy and Marine Corps Commendation Medal, Navy and Marine Corps Achievement Medal, Sea Service Ribbon (8 awards), and the Overseas Service Ribbon (2 awards).

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Unclassified Statement of

Vice Admiral J.D. Syring, USN

Director, Missile Defense Agency

Before the

House Armed Service Committee

Subcommittee on Strategic Forces

Thursday, March 19, 2015

*Embargoed Until Released by the
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United States House of Representatives*

**Vice Admiral J.D. Syring, USN
Director, Missile Defense Agency
Before the
House Armed Services Committee
Strategic Forces Subcommittee
March 19, 2015**

Good afternoon, Chairman Rogers, Ranking Member Cooper, distinguished Members of the subcommittee. I appreciate this opportunity to testify before you today. Our current budget request of \$8.127 billion for Fiscal Year (FY) 2016 will continue the development of defenses for our Nation, deployed forces, allies, and international partners against increasingly capable ballistic missiles. The FY 2016 missile defense program will continue to support the warfighter and needs of the Combatant Commands (COCOMs) with the development and deployment of interceptors, sensors, and the command, control, battle management and communications (C2BMC) system for the integrated Ballistic Missile Defense System (BMDS). Our request for FY 2016 will improve and expand homeland and regional missile defenses and invest in advanced technology development and future capabilities to counter the increasingly complex threat.

Ballistic Missile Threat

The threat continues to grow as our potential adversaries acquire a greater number of ballistic missiles, increasing their range, incorporating BMD countermeasures, and making them more complex, survivable, reliable, and accurate. Space-launch activities involve multistage systems that further the development of technologies for intercontinental ballistic missiles (ICBMs). In addition to the Taepo Dong 2 space launch vehicle/ICBM, North Korea is developing and has paraded the KN08 road-mobile ICBM and an intermediate-range ballistic missile (IRBM) capable of

reaching Guam and the Aleutian Islands. As part of a series of provocations last year, North Korea conducted multiple short- and medium-range ballistic missile launches and threatened to conduct additional longer-range launches. Today it fields hundreds of Scud and No Dong missiles that can reach U.S. forces forward deployed to the Republic of Korea and Japan.

Iran has publicly stated it intends to launch a space launch vehicle as early as this year (2015) that could be capable of intercontinental ballistic missile ranges if configured as such. Iran also has steadily increased its ballistic missile force, deploying next-generation short- and medium-range ballistic missiles (SRBMs and MRBMs) with increasing accuracy and new submunition payloads. Tehran's overall defense strategy relies on a substantial inventory of theater ballistic missiles capable of striking targets in southeastern Europe. Iran continues to develop more sophisticated missiles and improve the range and accuracy of current missile systems, and it has publicly demonstrated the ability to launch simultaneous salvos of multiple rockets and missiles. Demonstrating it is capable of modifying currently deployed ballistic missile systems, Iran has flight-tested a Fateh-110 ballistic missile in an anti-ship role. By adding a seeker to improve the missile's accuracy against sea-based targets, Iran could threaten maritime activity throughout the Persian Gulf and Strait of Hormuz.

Support for the Warfighter

Our overriding goal is to support the warfighter, which includes delivering greater missile defense capability and capacity. With this budget we will maintain our commitment to build out homeland defenses to 44 Ground Based Interceptors (GBIs) by the end of 2017. We also will maintain our commitment to deploy Phases 2 and 3 of the

European Phased Adaptive Approach (EPAA) on schedule, which will include the deployment of Standard Missile-3 (SM-3) Block IB missiles and SM-3 Block IIAs (first available in 2018) on ships and at Aegis Ashore sites in Romania (2015) and Poland (2018). We currently have 33 Aegis BMD ships, on the way to 35 by the end of FY 2016. We are continuing efforts to improve the performance of the Aegis Weapons System and plan to procure a total of 209 SM-3 Block IBs by the end of FY 2016. We announced a Technical Capability Declaration this past December for the second forward-based X-band AN/TPY-2 radar in Japan, which improves homeland and regional defense capabilities and increases our global operational AN/TPY-2 radar posture. By the end of FY 2016, MDA is scheduled to deliver 48 additional Terminal High Altitude Area Defense (THAAD) interceptors, for a total of 155 interceptors fielded, and we are continuing our support of the operational Guam THAAD battery.

Last year we conducted or participated in several multi-event exercises and wargames, which are critically important to the warfighter and the intensive engineering efforts across the Agency. In response to the continued fielding by U.S. adversaries of air, missile, and rocket capabilities, as Technical Authority for Integrated Air and Missile Defense (IAMD), MDA is leading the integration of evolving MDA, Service, and COCOM command and control capabilities through systems engineering analysis and development of technical integration requirements and interface control documents. Other IAMD initiatives include integrating C2BMC with the Army's Integrated Battlefield Control System (IBCS) to exchange ballistic missile data and exploring THAAD integration within the IBCS Army architecture.

We continue to work closely with the Director, Operational Test & Evaluation (DOT&E), independent testers, and the Services to develop an Integrated Master Test Plan (IMTP) to execute a robust, cost-effective flight test program that features operationally realistic conditions and integrates U.S. government stakeholders – to include Soldiers, Sailors, Airmen, and Marines – and allies to prove BMD capabilities. We have entered a period of unprecedented testing complexity and increased testing tempo. Our flight tests will involve increasingly stressful threat representative targets as well as longer range interceptors for our homeland and regional capabilities. From October 2013 to the present, we have executed seven high profile flight tests. In FY 2015 we will conduct 12 flight tests, and in FY 2016 seven flight tests.

Homeland Defense

MDA remains committed to operating, sustaining, and expanding our nation's homeland missile defenses and requests \$1.76 billion for the Ground-based Midcourse Defense (GMD) program, or \$613 million over our PB 2015 request. This budget request will allow us to grow the number of currently deployed Ground Based Interceptor (GBI) fleet to 44 by the end of 2017, continue flight and system ground testing, continue Redesigned Kill Vehicle (RKV) development, enhance the Stockpile Reliability Program, modify the current booster to increase survivability and hardness to support RKV integration and expand the battle space to enable later GBI engagements, upgrade the GMD ground system, and deploy upgraded GMD fire control software to enhance our ability to use land-based sensor discrimination data.

The successful FTG-06b intercept test this past June allowed us to assess the performance and interoperability of homeland defense weapon systems, including

GMD, an Aegis BMD ship, the Sea-Based X-band radar (SBX), and C2BMC. An Aegis BMD ship acquired an Intermediate Range Ballistic Missile (IRBM) target and forwarded the track through C2BMC to the GMD fire control system, which developed a weapon task plan that the warfighter used to launch a GBI. The SBX acquired the target objects and forwarded precision tracks with discrimination data through the GMD ground system to the in-flight GBI. The interceptor used SBX data to locate the target objects, complete discrimination, and successfully intercept the target. Our analysis indicates that all components of the system performed as designed. This was the first flight test of an operationally configured GBI that demonstrated the ability to correctly discriminate and intercept the reentry vehicle in the presence of countermeasures. FTG-06b also demonstrated that a Capability Enhancement-II (CE-II) exo-atmospheric kill vehicle (EKV) with a cradled Inertial Measurement Unit dampens the vibration environments experienced during the failure of the FTG-06a flight test conducted in December 2010. With this successful flight test we were able to resume production of eight planned GBIs in the proven FTG-06b configuration.

We are implementing several fixes to address the failed FTG-07 flight test in July 2013. While the GBI was in flight, a voltage shift caused by battery electrolyte leakage shut down the flight computer and prevented EKV separation. We developed EKV software for CE-I GBIs, which includes a capability to reset and recover the flight computer following a voltage shift. This software was fully tested and is now fielded to all deployed CE-Is. New battery and ground ties, once tested, will be incorporated in the CE-II Block 1 deliveries beginning in FY 2016.

The next flight test of the GMD system will take place late this year. GM CTV-02+ is a non-intercept test of a CE-II GBI to demonstrate the performance of alternate divert thrusters in a flight environment and test end-to-end discrimination of a complex target scene through the GMD fire control loop. The EKV will use Aegis BMD SPY-1, SBX, and AN/TPY-2 data for target selection. Data collected from this test will be used to evaluate Discrimination Improvements for Homeland Defense (DIHD) objectives. At the end of calendar year 2016 we plan to conduct FTG-15, which will be the first intercept flight test for the CE-II Block 1 GBI and the first intercept of an ICBM range target. Following a successful intercept, the plan is to deliver 10 CE-II Block 1 GBIs over the next year to achieve our goal of 44 GBIs by the end of 2017.

In addition to increasing the operational fleet from 30 to 44 GBIs by 2017, MDA will complete the refurbishment and reactivation of Missile Field 1 at Fort Greely by 2016 to provide sufficient silos for 44 GBIs. We will deliver eight new CE-IIs in 2015, upgrade eight currently fielded CE-IIs in 2016, and deliver 10 new CE-II Block 1 GBIs in 2017. Four previously fielded CE-II GBIs will be used for flight and Stockpile Reliability testing.

MDA completed a GBI Fleet Assessment last year that pointed out the need for improvements in reliability of the EKV, GBI, and ground systems, and we will continue to implement its findings in FY 2015 and beyond. We have introduced an enhanced Stockpile Reliability program to better understand the service life and reliability of the fielded fleet and are conducting design and reliability analysis on the fielded CE-IIs and booster to establish performance margins. We are analyzing the GBIs to identify potential failures modes and reliability risks so that we can conduct the right ground

tests. These efforts will improve confidence in the current GBI fleet and influence our development of the next GBI with a Redesigned Kill Vehicle.

We will continue development of a Redesigned Kill Vehicle (RKV) for initial deployment in 2020. The RKV will be a modular design using mature subassemblies and components to improve reliability, maintainability, producibility, and affordability when compared to the current EKV. The program will perform full qualification and reliability testing of components and subassemblies. The RKV will incorporate performance enhancements in target acquisition and discrimination and include on-demand communications. On-demand communications enables better use of off-board sensor data and provides improved situation awareness for the warfighter. The RKV also will include survivability enhancements. The first flight test of the RKV is planned for 2018, and the first intercept test is planned for 2019. We will acquire two additional boosters beginning in FY 2016 to support RKV flight tests.

This year we will finish construction of the GBI In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT) at Fort Drum, New York. The east coast IDT will enable communication with GBIs launched from Fort Greely, Alaska and Vandenberg Air Force Base in California over longer distances and improve defenses for the eastern United States.

MDA will implement upgrades to the GMD ground system to improve reliability, maintainability, and eliminate obsolescence problems. The existing GMD ground system was built in 2004 using technology developed in the 1990s. Without an upgrade, the ground system reliability would decay and impact GBI availability to the warfighter. Phase I will upgrade the GBI command launch equipment, GMD fire control

servers, and address obsolescence problems on the IFICS data terminal by 2017.

Phase II upgrades the GMD communications network and launch systems equipment and modifies the IFICS data terminal to support on-demand communications with the RKV by 2020.

Working with our Japanese partners, we completed the deployment of the AN/TPY-2 radar in Kyogamisaki in southern Japan to complement the radar currently operating in Shariki in northern Japan. This radar and a new C2BMC capability will enhance the overall performance of the Kyogamisaki and Shariki radars when operating in a mutually supporting AN/TPY-2 dual radar mode. We made a Technical Capability Declaration for the Kyogamisaki radar this past December. Together with the Shariki AN/TPY-2 radar in the north, the new radar will enhance the ability to defend our forward deployed forces, Japan, and the U.S. homeland from ballistic missile attack by providing improved tracking coverage for launches out of North Korea.

We will continue missile defense upgrades of the Early Warning Radars in Clear, Alaska and Cape Cod, Massachusetts. We expect to complete the Clear radar upgrade in 2017 and the Cape Cod upgrade in 2018. In FY 2016 we will continue to support flight testing with the SBX to demonstrate improvements to discrimination and debris mitigation. Our budget request of \$72.9 million for SBX includes funds for improving reaction time and conducting contingency operations for defense of the homeland. We also plan to support a near-term discrimination capability in 2016 and fielding near-term discrimination improvements for homeland defense in 2020 to enhance the tracking and discrimination capabilities of currently deployed sensors.

In FY 2016 we request \$137.6 million to continue the development of the Long Range Discrimination Radar (LRDR), the new midcourse tracking radar that will provide persistent coverage and improve discrimination capabilities against threats to the homeland from the Pacific theater. LRDR will provide larger hit assessment coverage enabling improved warfighting capability to manage GBI inventory and improving the capacity of the BMDS. We have completed technical trade studies and defined requirements for the LRDR and started acquisition planning and pre-construction activities. MDA has released a Request for Proposal (RFP) for the development, deployment, and initial operation of the LRDR. We anticipate contract award before the end of FY 2015. In FY 2016 we plan to conduct a System Requirement Review and Preliminary Design Review. MDA worked closely with Air Force Space Command to verify LRDR's inherent capabilities to support the space situational awareness (SSA) mission. The Command is jointly exploring system design and operations alternatives to maximize the exploitation of LRDR's inherent SSA capabilities. Air Force Space Command envisions using LRDR to augment the Space Surveillance Network capabilities as a secondary mission if it proves viable.

A Continental United States (CONUS) Interceptor Site (CIS) study, conducted in accordance with Section 227 of the FY 2013 National Defense Authorization Act, determined the following sites were viable candidates to be included in the Environmental Impact Statement (EIS): Fort Drum, New York; Portsmouth SERE Training Area, Maine (Rangley); Camp Ravenna, Ohio; and Fort Custer Combined Training Center, Michigan. The Department is conducting EIS activities that will evaluate each of the four candidate sites, to include potential impacts to land use, water

resources, air quality, transportation, socioeconomics and other factors established by the National Environmental Policy Act. The EIS will take approximately 30 months and should conclude in 2016. There has been no decision by the Department to move forward with an additional CONUS interceptor site. The current GBI sites at Fort Greely and Vandenberg AFB provide capability necessary to protect the U.S. homeland against the current and projected ICBM threat from North Korea as well as the future Iranian ICBM threat should it emerge. Even though an additional CONUS interceptor site would add battle space and interceptor capacity, a decision to construct the new site would come at a significant material development and service sustainment cost. Near-term, upgrading the kill vehicle on the GBI and enhancing the homeland defense sensor network are higher priorities and prerequisites for improving protection against limited ICBM attack.

Regional Defenses

Deployment of regional defenses to protect our deployed forces, allies and international partners remains one of our top priorities. Our FY 2016 budget request funds the continued development and deployment of defenses against SRBMs, MRBMs, and IRBMs in support of Combatant Commanders' near-term and future priorities and supports the President's commitment to EPAA.

Terminal High Altitude Area Defense

Today, four Terminal High Altitude Area Defense (THAAD) Weapon System Batteries are delivered, with the fifth planned for activation this year. To meet the demand from combatant commanders for THAAD, in FY 2014, MDA accelerated procurement of THAAD Battery 7 for delivery in FY 2017, two years earlier than

previously planned. We also completed the development and fielding of THAAD Software Build 1.4, which includes critical updates to weapon system components and Information Assurance update. MDA also continued its support of the first deployed THAAD battery in Guam, exceeding the Army's required operational readiness rate.

This year THAAD will participate in two flight tests, FTT-18 and FTO-02. In FTT-18 THAAD will demonstrate an intercept of a separating IRBM target using the THAAD radar, launcher, fire control and communication, interceptor operations and engagement functions. In FTO-02, Event 2, THAAD will engage a SRBM and demonstrate advanced radar algorithms. During this operational test of our regional defense architecture, which will include the attempted intercept of an MRBM and air-breathing target by Aegis BMD, THAAD will demonstrate a layered defense capability.

For FY 2016, MDA is requesting \$464.1 million for THAAD procurement, which includes the purchase of 30 THAAD interceptors and procurement of training devices for the THAAD institutional training at Fort Sill, OK. By the end of FY 2016, MDA will deliver an additional 48 THAAD interceptors to the U.S. Army, for a total of 155 interceptors delivered. We will continue to support the forward deployed THAAD battery in Guam. We are requesting \$228.0 million in RDT&E funding in FY 2016 as part of the continued development of THAAD capabilities, and begin concept development and risk reduction activities for THAAD follow-on capabilities. These activities will explore and mature the design concept of expanding THAAD system interoperability with air and missile defense systems, and expanding the battlespace and defended area of the current baseline THAAD Weapon System. We are also

requesting \$63.7 million for THAAD operation and maintenance for 6 delivered batteries.

Aegis Ballistic Missile Defense

In FY 2014, MDA continued to expand global BMD capability for the Aegis Fleet. Together with the U.S. Navy, we completed four BMD Weapons System installations on Aegis ships -- one Aegis BMD 3.6 ship and three Aegis BMD 4.0 ships -- and we commenced upgrades on existing BMD ships, two from 3.6 to 4.0 and one from 3.6 to Aegis Baseline 9.C1 with BMD 5.0CU. We now have a total of 33 BMD capable Aegis ships in the Fleet. We continued delivery of Standard Missile-3s to the Fleet, including 29 Block IAs and 26 Block IBs.

In FY 2014, MDA conducted several critical flight tests to prove the operational capability of the Aegis BMD weapon system. In FTM-22, we successfully engaged and destroyed an MRBM target using the Aegis BMD 4.0 weapon system and an SM-3 Block IB. This test exercised the second-generation Aegis BMD 4.0 weapon system and supported production decisions for the SM-3 Block IB by completing developmental and operational testing for both the weapon system and missile. With the successful completion of DOT&E testing requirements, Aegis BMD 4.0 and the SM-3 Block IB were found to be operationally suitable and effective. FTM-22 was also the final flight test executed by the USS Lake Erie, the BMD test ship for over 10 years.

We also brought ballistic missile defense flight testing back to the east coast in FY 2014. In FTX-18 we successfully simulated engagements against a raid of three short-range targets using the Aegis BMD 4.0 Weapons System and simulated SM-3

Block IBs to evaluate the effectiveness and suitability of the weapon system in a raid environment off the coast of Virginia at NASA's Wallops Island facility.

As construction began at the Aegis Ashore site in Romania, we conducted the first Controlled Test Vehicle at the Aegis Ashore Missile Defense Test Complex at the Pacific Missile Range Facility (PMRF) in Kauai, HI. This flight test proved the design of the Aegis Ashore system and the ability to launch an SM-3 from land. The first Aegis Ashore intercept test from PMRF will occur in the third quarter of this year to support turn-over of the Romanian site to the Navy for operation.

In its homeland defense role, Aegis BMD executed long range surveillance and track to provide data for the GBI launch in FTG-06b. In the test, USS Hopper, with the BMD 4.0 weapon system, acquired the target and sent track data to the BMDS Command, Control, Battle Management and Communications system, directly contributing to successful intercept of the target.

This past fall we conducted two operationally representative tests for certification of the Navy's Aegis Modernization Baseline 9 weapon system. In FTX-20, we used our new MRBM target to exercise several BMDS sensors and C2BMC. This was also the first tracking exercise for the new Navy/MDA Integrated Air and Missile Defense Baseline 9 test ship, USS John Paul Jones. A couple of weeks later, in FTM-25, USS John Paul Jones launched an SM-3 Block IB to intercept an SRBM target while simultaneously launching two SM-2 Block IIAs against two air-breathing threats, successfully exercising the Navy's Integrated Air and Missile Defense capability inherent in Baseline 9.

In FY 2016, we will continue our commitment to develop, test, and deliver global naval capability to the warfighter and support defense of our deployed forces and NATO

European allies through delivery of EPAA Phases 2 and 3. We request \$448.0 million in FY 2016 to procure 40 SM-3 Block IBs, for a total of 209 procured and 107 delivered by the end of FY 2016. In anticipation of FY 2016 and beyond Multiyear Procurement Authorization for the SM-3 Block IB, MDA requests \$147.8 million in economic order quantity for missile components for FY 2016-19 Block IB multiyear procurements. By moving to a multiyear procurement, we may realize an estimated cost savings of up to 14 percent across the FYDP. To recertify SM-3 rounds which have been previously delivered and deployed to the Fleet, MDA requests \$19.8 million for sustainment of these assets.

We request \$172.6 million for the SM-3 Block IIA cooperative development effort with the Japan Ministry of Defense. In FY 2014, the SM-3 Block IIA completed Propulsion Test Vehicle-01, in which the missile and new composite canister both demonstrated successful and safe ignition and egress from the vertical launching system. Upon completion of this test and the system level critical design review, the SM-3 Block IIA transitioned into the integration and testing phase and will execute the first controlled test vehicle flight test in third quarter FY 2015. Along with a total of five flight tests for the SM-3 Block IIA through FY 2018, FY 2016 will focus on an extensive ground test campaign to prove system design and missile capability. We are committed to delivering the SM-3 Block IIA to the Fleet to meet global threat requirements, and specifically to support EPAA Phase 3.

MDA is strongly committed to further enhancing capability of the Aegis BMD weapon system to give Sailors the tools needed to successfully execute their mission. MDA requests \$40.7 million for the BMD 4 series weapon systems to bring advanced

threat and raid scenario capability to the legacy Aegis BMD Fleet. As we wrap up BMD 5.0CU development, MDA has prioritized delivering BMD 5.1 capability on schedule and requests \$180.6 million to continue software development and testing to certify in FY 2018 and meet the delivery timeline of the SM-3 Block IIA missile for deployment on ships and at Aegis Ashore sites. In addition to weapon system development, MDA requests \$110.9 million to procure weapon system equipment for installation and upgrade to the BMD Fleet and \$12.6 million to sustain BMD specific equipment on the existing Fleet.

We also continue development of a Sea Based Terminal capability to provide protection of maritime forces against observed or demonstrated advanced anti-ship ballistic missiles and increased layered defense for forces ashore. Using an incremental development approach, we are incorporating BMD capability into the Navy's Baseline 9 architecture, to include terminal defense with the SM-6 guided missile and the BMD 5 series weapon systems. In 2014, we completed Sea Based Terminal Increment 1 missile (SM-6 Dual I) software build 1, and we demonstrated its performance in a simulated environment. We plan to test and certify the first increment of Sea Based Terminal capability in fourth quarter FY 2015 in four Multi-Mission Warfare events, with follow-on performance testing in FY 2016. Sea Based Terminal Increment 2 is on schedule to be certified and operational in 2018.

European Phased Adaptive Approach

We will continue to expand the EPAA to provide additional coverage of European NATO territory from Iranian ballistic missile threats by investing resources for EPAA development, testing and deployment. EPAA Phase 1 was implemented in 2011 with

the fielding of an AN/TPY-2 radar in Turkey and stationing of an Aegis BMD ship in the Eastern Mediterranean.

MDA is on schedule to deliver EPAA Phase 2 by the end of 2015, which will enhance U.S. and NATO capabilities with the addition of more capable Aegis BMD SM-3 Block IBs and upgraded Baseline 9 weapon system with BMD 5.0CU. Phase 2 will include deployment of Aegis Ashore to Romania with capability to launch both SM-3 Block IA and IB variants and upgraded versions of the Aegis BMD weapon system. Required military construction, installation, integration and testing activities will be complete for technical capability declaration in 2015. After having tested the system at the Moorestown, New Jersey site in 2014, the deckhouse, including all weapon system equipment was disassembled, packed and shipped to Romania. MDA requests \$33.4 million in FY 2016 to complete site activation, integration, and testing of the system in-country and to maintain the test site at PMRF to support system-wide testing for Phase 2 deployment. We are on track to turn over Aegis Ashore Romania to the Navy, and in FY 2016 we have requested \$13.9 million for sustainment of the system once it is operational. MDA also completed installations and upgrades to the BMD-capable multi-mission ships that are shifting homeports from Norfolk, VA to Rota, Spain, which will support the EPAA Phase II architecture. The homeport transfer of four multi-mission Aegis BMD ships to Rota, Spain began in 2014 with the USS Donald Cook and USS Ross. The remaining two Aegis BMD ships, USS Porter and USS Carney, will transfer this year.

EPAA Phase 3 will improve defensive coverage against medium- and intermediate-range threats with the deployment of a second Aegis Ashore site in

Poland, equipped with the BMD 5.1 weapon system and capability to launch SM-3 Block IIAs. Construction at Redzikowo, Poland is expected to begin in FY 2016. We request \$30.6 million in FY 2016 for procurement of Aegis Ashore equipment and \$169.2 million for the construction of the Aegis Ashore site in Poland. We need this funding to complete this site by the end of 2018.

Command, Control, Battle Management, and Communications and Sensors

C2BMC provides persistent tracking, cueing, discrimination, and fire control quality data to Aegis BMD, GMD, THAAD, and coalition partners to support homeland and regional defense objectives. Last June we successfully forwarded Aegis BMD system track data through the C2BMC system to the GMD fire control system during FTG-06b. We continue to support warfighter command and control and battle management needs across the globe by providing the strategic BMD planner, which provides Combatant Commanders situational awareness tools to support weapons release authority for homeland defense and control and tasking of forward-based AN/TPY-2 radars. C2BMC operators and maintainers are deployed forward in some of the world's highest threat spots and continue to provide around-the-clock support to the local commanders. As the BMDS integrating element, C2BMC has also demonstrated proven interoperability across regional BMD architectures.

In addition to continuing the enhancement of global BMD survivable communications and support for operations and sustainment of C2BMC at fielded sites, this year we will integrate Space Based Infrared System Increment 2 capabilities into C2BMC to support cueing of BMD sensors worldwide. We have initiated a Space Based Kill Assessment (SKA) demonstration that will host sensors on commercial

satellites to collect data on missile intercepts, make an independent kill assessment, and pass that information on to the BMDS to support a multi-sensor kill assessment of the target.

The Services and COCOMs, with logistical support from MDA, are operating forward based X-band radars (AN/TPY-2(FBM)) in Japan, Israel, Turkey, and United States Central Command. All of these radars contribute to regional defense, and some, including the second AN/TPY-2 radar deployed to Japan last year, also provide a significant contribution to the defense of the U.S. homeland. Last year we also continued our AN/TPY-2 (Terminal Mode) support to warfighters on Guam. We accepted AN/TPY-2 Radar #9, providing it to THAAD Battery #4, and AN/TPY-2 Radar #10. We also awarded a production contract for AN/TPY-2 Radar #12, and for additional spares. In FY 2016 we plan to develop and test advanced discrimination algorithms to counter evolving threats to provide additional capability to the Combatant Commanders as well as close Materiel Release conditions for the Terminal Mode and Forward-Based Mode AN/TPY-2 radars. We plan to deliver Radar #10 to THAAD Battery #6, start production of an Antenna Equipment Unit Float, and complete production of AN/TPY-2 Radar #12, which will be allocated to THAAD Battery #7.

We request \$536.5 million in FY 2016 to develop, deploy and test BMDS sensors (includes \$138 million for the continued development of the Long Range Discrimination Radar), and \$187.5 million to sustain the nine AN/TPY-2 radars and support the UEWRs and Cobra Dane radar. We will continue communications support for the AN/TPY-2 radars and C2BMC upgrades. We request \$450.1 million in FY 2016 to develop, test, field, sustain, and operate all C2BMC spirals. We also will integrate

additional space sensors into the BMDS and enhance the track and discrimination capabilities of C2BMC to provide fire control quality data to BMD weapon systems in support of homeland and regional defense. We request \$31.6 million for continued operation of the Space Tracking and Surveillance System in FY 2016.

Developing New Capabilities

MDA is developing fiscally sustainable, off-setting technologies to address gaps in the BMDS and extend our dominance in missile defense. MDA's goal for these investments is to deploy a future BMDS architecture more capable of discriminating and destroying a reentry vehicle with a high degree of confidence.

In 2014 and 2015, the warfighters emphasized the importance of improving discrimination capability, the missile defense function that distinguishes between lethal and non-lethal objects, in order to reduce the need for large, unaffordable interceptor inventories. Radars and electro-optical/infrared (EO/IR) sensors are central to this capability. However, sensors require sufficient sensitivity and resolution to measure features useful for inferring which objects are lethal or non-lethal. Between now and 2020, we will use available technology to improve existing sensors, battle management and fire control, and kill vehicles. After 2020, our plan is to field new advanced EO/IR sensors and upgrade discrimination capabilities based on our new technology investments.

Relying purely on terrestrial radars for precision tracking and discrimination of the threat is a potential weakness the enemy could exploit in the future. Adding persistent electro-optical sensors to the BMDS architecture is a high payoff solution for this gap. Last fall during FTM-25 we accelerated the Discrimination Sensor Technology flight test

program by nearly six months to prove that our Aegis Weapon System could launch a Standard Missile based solely on tracks generated by remote sensors on Unmanned Aerial Vehicles (UAVs). MDA requests \$28.2 million for our Discrimination Sensor Technology development and test plan to provide a cost-effective, stepping stone towards our goal of achieving persistent discrimination coverage of enemy missiles in all theaters, including ICBMs targeting the homeland. In FY 2016, we plan to upgrade UAV-borne sensors and demonstrate even greater discrimination capability in conjunction with Aegis flight testing in the first quarter FY 2017 as a precursor to the development and test of a prototype advanced sensor under our Technology Maturation Initiatives program element.

We request \$45.4 million in Weapons Technology to continue development, integration, and testing of our high-powered directed energy program to build the foundation for the next-generation UAV-borne laser system. A UAV-borne laser would be capable of acquiring, tracking and eventually destroying an enemy missile at a much lower cost than the existing BMDS. Within the Directed Energy project, we will develop and demonstrate the technology necessary to scale laser power jointly with our Air Force and DARPA partners. The Massachusetts Institute of Technology's Lincoln Laboratory (MIT/LL) Fiber Combining Laser achieved 34 kilowatts continuous power in October 2014, a record for fiber combined lasers. The Lawrence Livermore National Laboratory (LLNL) achieved similar success with their Diode Pumped Alkali Laser system, reaching five kilowatts last year. In our effort to mature high altitude, low Mach UAVs for directed energy applications, we successfully completed five Phantom Eye flights at the Air Force's Edwards Flight Test Center in California. The Phantom Eye

demonstrator achieved a record altitude of 53,241 feet and collected over 33 hours of data from launch to landing.

In FY 2016, MIT/LL will conduct a Fiber Combining Laser critical design review and begin fabrication and integration of a lighter, more compact Fiber Combining Laser system, driving the weight of the system down from five kilograms per kilowatt to one kilogram per kilowatt. LLNL will demonstrate a DPAL system at 30 kilowatts average power, six times more powerful than ever achieved by a hybrid laser.

Within the Interceptor Technology project, MDA develops technology to enhance the hit-to-kill capability within current and future BMDS architectures. MDA will invest in cutting edge technology for the competitive development of the next generation, solid Divert and Attitude Control System (DACS) for the Multi-Object Kill Vehicle. We will also investigate the suitability of rail gun technology for missile defense missions.

MDA requests \$96.3 million for Technology Maturation Initiatives to build on the successes in weapons technology and discrimination sensor technology. Airborne discrimination sensors and low power tracking lasers are sufficiently mature to develop flight prototypes that address complex tracking and discrimination challenges from evolving threats to the homeland. In FY 2016, MDA will incorporate an advanced sensor into the tactically proven Multispectral Targeting System and MQ-9 Reaper combination to prove precision track and discrimination performance of airborne sensors at strategic ranges, or thousands of kilometers. MDA will also contract with industry for the design of a UAV-borne laser demonstrator to quantify the target acquisition, tracking, and handover performance required for boost phase missile defense under realistic conditions.

MDA requests \$46.7 million for the Common Kill Vehicle Technology effort. Last year, we began the first phase of a two phase, development strategy for the next generation of our exo-atmospheric kill vehicles. In that first phase, we defined concepts and developed requirements for a new Redesigned Kill Vehicle for our ground-based interceptor program. In FY16, we are implementing phase II of that strategy during which we will work jointly with industry to define concepts for deploying multiple kill vehicles from a single booster. This year we plan to award several contracts with industry to define concepts for Multi-Object Kill Vehicles (MOKV). In parallel, we will reduce technical risk in several areas that are critical to making this revolutionary concept a reality. For example, we will develop and test, by 2017, MOKV command and control strategies in both digital and Hardware-in-the-Loop venues that will prove we can manage the engagements of many kill vehicles on many targets from a single interceptor. We will also invest in the communication architectures and guidance technology that support this game changing approach. Ultimately, these Multi-Object Kill Vehicles will revolutionize our missile defense architecture, substantially reducing the interceptor inventory required to defeat an evolving and more capable threat to the Homeland.

MDA requests \$17.4 million for Advanced Research and development that capitalizes on the creativity and innovation of the Nation's small business community and academia to enhance the BMDS. We are also fostering research between U.S. and foreign universities of allied nations through international cooperative science and technology projects. We awarded 216 new contracts for innovative new research in eight missile defense related topics last year.

MDA also requests \$12.1 million for the Advanced Concepts & Performance Assessment effort, which models the capability of advanced BMD technology to address evolving threats to the warfighter. The request will fund the digital simulation and hardware-in-the-loop framework and models required for testing of the Airborne Advanced Sensor, Kill Vehicle Modular Open Architecture test bed, and maturing sensor fusion algorithms.

International Cooperation

The FY 2016 budget request includes funding for regional missile defense capabilities in order to protect U.S. forces, reassure allies and partners, and build cooperative regional security architectures. MDA is engaged with over twenty countries and international organizations, such as NATO. MDA remains committed to expanding work with our international partners, to include conducting joint analyses to support partner missile defense acquisition decisions, cooperative research and development projects, deployments, Foreign Military Sales (FMS), and co-production. Our major international efforts reflect the Department's goals in the Asia-Pacific, Middle East, and Europe and will help implement EPAA, build partner BMD capacity, and support the strategic shift to Asia-Pacific.

As allies and partners invest in their own missile defense capabilities, this will enable us to build more effective regional security architectures and complement U.S. regional missile defense capabilities. MDA is currently executing an FMS case with the United Arab Emirates for two THAAD batteries and accompanying launchers, radars, and interceptors. This calendar year, we will deliver the first THAAD battery to our UAE partners to begin New Equipment Training. We continue to be actively engaged with

several nations, particularly those in the Gulf region, to provide program information and cost data that may inform future decisions to procure THAAD.

We continue to have a very strong cooperative missile defense partnership with Israel. In FY 2014 the Israel Missile Defense Organization (IMDO) and MDA achieved a second successful intercept using the David's Sling Weapon System to defeat shorter-range ballistic missiles and conducted the second fly-out of the Arrow-3 upper tier interceptor, demonstrating its key functional capabilities in-flight. Arrow-3 is intended to intercept longer-range threats. The Arrow Weapon System 2 is a currently fielded capability operated by the Israeli Air Force. This past September, IMDO and MDA conducted an intercept test of the Arrow-2 interceptor missile against a MRBM target over the Mediterranean. The Department also reached agreement in March 2014 with Israel regarding coproduction of the Iron Dome defense system. The agreement garnered approximately \$263 million in U.S. work share for coproduction of Iron Dome components. We are requesting \$55.0 million to procure Iron Dome radars and associated equipment.

MDA and our Japanese counterparts continue to make significant progress with the SM-3 IIA interceptor, our largest co-development effort. This development work, which remains on track for first delivery in the 2018 time frame, would expand extended deterrence to our friends and allies and establish an important vehicle for closer defense cooperation ties. These cooperative activities enable U.S. partners to be less vulnerable to coercion and ballistic missile attack. In addition, our strong partnership with Japan enabled a technical capability declaration of the second AN/TPY-2 radar now located at the Japan Air Self-Defense Force (JASDF) base in Kyogamisaki, Japan

in just over two years from the initial announcement to proceed. We are also working with other strategic partners in the region.

In addition to implementing our EPAA commitments to our NATO Allies, we continue to work with NATO to ensure U.S. C2BMC and NATO command and control networks are fully interoperable. We have successfully demonstrated interoperability between NATO and the U.S. command and control networks. MDA will continue to engage our NATO Allies to address international cooperation in missile defense.

Cybersecurity/ Supply Chain Risk Management

We are very cognizant of the growing cyber threat and aggressively working to ensure the Nation's missile defenses will be able to operate in a highly contested cyber environment. Potential adversaries are developing cyber forces as part of their military structure and integrating them into their overall strategy. We are working with the Armed Services, the Combatant Commands, especially Strategic Command's USCYBERCOM, and other agencies in DoD and the Federal Government to counter this growing threat.

We are improving the cyber hygiene of our missile defense capabilities by ensuring our cybersecurity infrastructure has the latest security upgrades. We are assessing our systems, suppliers, and acquisition processes and ensure our critical software and hardware are strongly configured and trusted to lessen the risk of malicious activities. We have a rigorous cyber and Supply Chain Risk Management inspection program to examine everything about our systems from the trusted supply chain to the fielded capability. This helps us ensure the highest possible compliance levels. In May 2014, DISA Field Security Operations conducted a USCYBERCOM-

directed Command Cyber Readiness inspection on MDA's classified networks at MDA's Missile Defense Integration and Operations Center in Colorado. MDA received an "Excellent" score. In June 2014 the MDA Computer Emergency Response Team (CERT) was inspected as a Tier 2 Computer Network Defense Service Provider by USCYBERCOM/DISA Field Security Operations. The MDA CERT received a "Commendable" rating (second highest rating possible) and was awarded another three year Authorization to Operate. Over the last year we conducted four Enterprise Cyber Range Environment experiments with independent, DOT&E red team penetration testing on the Joint Information Operations Range. The purpose of these experiments is to better understand the cyber robustness of BMDS capabilities to insider threats. MDA also has one scheduled for May 2015. MDA completed 62 cybersecurity inspections worldwide to ensure DoD and MDA compliance. We follow up on these inspections to ensure remediation of any identified cyber risks.

We must build resilient cyber defenses that are capable of detecting and mitigating threats without impeding operations in order to "fight through" the cyber threat. MDA collaborates with the Director of Operational Test and Evaluation to conduct cyber penetration testing on key missile defense capabilities. We then use the results of those tests to conduct risk assessments to prioritize cybersecurity improvements, develop mitigation strategies, and improve cyber training. We are also working to develop better cyber CONOPS to ensure every network defender in every location knows how to quickly react to cyber challenges.

We are working hard to incorporate cybersecurity requirements early into our acquisition lifecycle to ensure we are building cybersecurity into missile defenses, not

just bolting it on after the fact. In addition, we are working with our Industry Partners in the Defense Industrial Base to ensure they can protect any missile defense program sensitive information from getting into the hands of potential adversaries. We have seen too many instances where malicious cyber actors attempt to exfiltrate information from them, especially from their unclassified, commercial networks that have exposure to the internet. We will continue to work with Industry and the FBI to identify these issues and raise the costs of this type of behavior to those responsible in coordination with National authorities and in accordance with policy.

Conclusion

This budget balances investment in homeland and regional missile defense capabilities while pursuing advanced technology to pace the emerging threat. We will do this by improving current system capabilities and investing in the most promising technology to reverse the adversary's numerical advantage. MDA continues to aggressively pursue cost reduction measures through competition, partnering, and cooperation. MDA is on track with the Department's schedule for financial improvement and audit readiness, ensuring full accountability of resources and processes.

Mr. Chairman, we have several critical developmental and operational flight tests coming up this year and next. We will adhere to our "fly before you buy" approach, testing elements of the system to demonstrate they work before we commit to their fielding in order to ensure the warfighter will have cost-effective and reliable weapon systems. With the successful GMD intercept this past June, continued emphasis on GMD reliability and commitment to increase GBI inventory, planned RKV investments, and renewed focus on improved tracking and discrimination, I believe we are turning the

corner with our homeland defenses. We remain on track with our EPAA deployments and continue to make good progress with our international partners across the globe. I am also committed to investing in advanced technologies to defeat the threat of the future and to looking for new and innovative ways to deliver missile defense capability to protect our nation, our forward deployed forces and our friends and allies at lower cost to the government and the taxpayers.

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



United States Navy Biography

Vice Admiral James D. Syring Director, Missile Defense Agency

Vice Admiral James Syring is from Muncie, Indiana. A 1985 graduate of the United States Naval Academy with a Bachelor of Science degree in Marine Engineering, he received his commission as an ensign. Subsequent to commissioning, he was designated an engineering duty officer. In 1992, Syring earned his Master of Science degree in Mechanical Engineering from the Naval Post Graduate School.

Ashore, Syring served in numerous engineering duty officer assignments including: ship superintendent for USS *Port Royal* (CG 73); Aegis test officer for new construction DDG 51 class ships; combat systems, test and trials officer in the DDG 51 Aegis Shipbuilding Program Office; Combat Systems Baseline manager in the Aegis Technical Division; director for Surface Combatants, Office of the Assistant Secretary of the Navy (Research, Development and Acquisition). Syring served as the technical director for the U.S. Navy's DDG 1000 Shipbuilding Program and followed that tour as the DDG 1000 major program manager.



Upon selection to flag rank in 2010, Syring served as the program executive officer for Integrated Warfare Systems, responsible for acquiring, developing, delivering and sustaining integrated weapons systems for ships, submarines, carriers and aircraft within the Fleet and Joint Force.

In November 2012, Vice Admiral Syring became the 9th director of the Missile Defense Agency (MDA), Office of the Secretary of Defense, Pentagon, Washington, D.C. In this capacity, he oversees the MDA's worldwide mission to develop a capability to defend deployed forces, the United States, allies, and friends against ballistic missile attacks.

Syring's personal awards include the Distinguished Service medal, Legion of Merit (2 awards), the Meritorious Service medal (4 awards), Navy and Marine Corps Commendation medal, and Navy and Marine Corps Achievement medal.

RECORD VERSION

STATEMENT BY

LIEUTENANT GENERAL DAVID L. MANN, USA
COMMANDING GENERAL,
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/
ARMY FORCES STRATEGIC COMMAND
AND
JOINT FUNCTIONAL COMPONENT COMMAND FOR
INTEGRATED MISSILE DEFENSE

BEFORE THE

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

FIRST SESSION, 114TH CONGRESS

FISCAL YEAR 2016 BUDGET REQUEST FOR MISSILE DEFENSE

MARCH 19, 2015

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UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE

**Lieutenant General David L. Mann, USA
Commanding General
U.S. Army Space and Missile Defense Command/
Army Forces Strategic Command
and
Joint Functional Component Command for
Integrated Missile Defense**

Chairman Rogers, Ranking Member Cooper, and distinguished Members of the Subcommittee, thank you for your continued support of our Service Members, Civilians, and Families. In the same capacity as my previous appearance before this subcommittee, I appear before you today bringing both a Joint and Army perspective on effective missile defense capabilities. Let me again express my appreciation to this Subcommittee for its continued support of the Army, the U.S. Strategic Command, the Department of Defense, and the missile defense community. I am honored to testify before this Subcommittee along with these distinguished witnesses who provide missile defense capabilities to our Nation, forward deployed forces, partners, and allies.

As outlined during an appearance before this subcommittee last year, my responsibilities encompass three main areas. First, as the Commander of the U.S. Army Space and Missile Defense Command (USASMDC), I have Title 10 responsibilities to train, maintain, and equip space and global ballistic missile defense forces for the Army. Second, as the Commander, Army Forces Strategic Command (ARSTRAT), I am the Army Service Component Commander (ASCC) to the U.S. Strategic Command (USSTRATCOM). I am responsible for planning, integrating, and coordinating all Army space and missile defense forces and capabilities in support of USSTRATCOM missions. Third, as the Commander of USSTRATCOM's Joint Functional Component Command for Integrated Missile Defense (JFCC IMD), I am responsible for synchronizing missile defense planning, supporting ballistic missile defense operations, and advocating for missile defense capabilities on behalf of the Combatant Commanders.

In addition to these three roles, the Chief of Staff of the Army recently designated USASMDC as the Army's Air and Missile Defense Enterprise Integrator with responsibility to synchronize the Army's air and missile defense (AMD) strategy in

coordination with other organizations involved in providing this critical capability. My task is to ensure the implementation of a holistic Army AMD strategy that includes force planning requirements, coordinated combat and materiel development, AMD acquisition and life cycle management, and strategic communications.

In accordance with these responsibilities, my intent today is to highlight the greatest missile defense asset—our great people; to briefly outline the strategic environment; to emphasize USASMDC/ARSTRAT's missile defense force provider responsibilities with respect to the Army and the Geographic Combatant Commanders (GCCs); to outline JFCC IMD's role as an operational integrator of Joint missile defense for USSTRATCOM; and finally to summarize a few of the key Army ballistic missile defense activities and developments in the context of a comprehensive approach to addressing an evolving ballistic missile threat.

The Workforce—Recognizing and Protecting Our Greatest Asset

The challenges that we face cannot be mitigated without the dedication of our greatest asset—our people. Just as I mentioned last year, I feel it important to highlight our workforce, my concern of sequestration on our workforce, and the Army's continued commitment to deter instances of sexual harassment and assault. At USASMDC/ARSTRAT and JFCC IMD, our people remain our most enduring strength. The Service Members, Civilians, and Contractors support the Army and Joint Warfighter each and every day, both those stationed in the homeland and those globally deployed. We remain committed to providing trained and ready Service Members and Civilians to operate and pursue enhanced capabilities for the Nation's ballistic missile defense system (BMDS).

As recently highlighted during Congressional testimony by the Service Chiefs, the potential return of sequestration causes great concern—especially with regards to its impact on the workforce and our overall readiness. Within my commands, sequestration will negatively impact the space and missile defense enablers our Soldiers and Civilians provide to the Combatant

“Sequestration is the single greatest barrier to the effectiveness of our Armed Forces”

***— CSA SASC Statement
January 2015***

Commanders. Specifically, readiness, training, and enhancements to space and missile defense capabilities will be degraded. Also, the return of sequestration will negatively impact the morale of our workforce. I believe that a more prudent course of action should be identified and implemented to ensure that we can continue to meet our current global responsibilities and those of tomorrow.

Sexual harassment and assault violate the Army's core values and harm the Soldiers, Civilians, and Family Members that make up our Army—it must be eliminated. In accordance with the Chief of Staff of the Army's guidance and direction, my leadership team fully embraces the importance and fundamental necessity of an effective Sexual Harassment/Assault Response and Prevention (SHARP) Program. The SHARP program effort has made noticeable strides in preventing assault and encouraging reporting of sexual harassment incidents. In line with Army requirements, our program provides Soldiers, Civilians, and Family Members with a SHARP program manager, sexual assault response coordinators, and victim advocates who are available 24/7/365 in order to safeguard our personnel and maintain their trust. I require my leadership to comprehensively investigate and report each claim of sexual harassment or assault. I demand nothing less than utmost prevention, accountability, and advocacy of our personnel—they deserve nothing less.

The Advancing Threat

Ballistic missile threats of our adversaries continue to grow, both quantitatively and qualitatively. Today, nine nations possess, or are suspected of possessing, nuclear weapons and 22 have ballistic missile capabilities that could carry nuclear weapons. Additionally, approximately 75 countries are developing unmanned aerial systems and several of these countries are exploiting land, sea, and air attack cruise missile capabilities. In the future, we expect to encounter more complex threats, to include advanced electronic

“Maintaining the capability to deter and defeat attacks on the United States is the Department's first priority.”

*—Quadrennial Defense Review
March 2014*

and cyber intrusions, multiple simultaneous attacks, and even directed energy or supersonic capabilities.

To meet the objectives of the current Quadrennial Defense Strategic Guidance, USSTRATCOM and the Army continue to provide and enhance homeland and regional missile defense. In accordance with the Department's strategy to rebalance to the Asia-Pacific region, we have worked with partners in U.S. Pacific Command (USPACOM), U.S. Northern Command (USNORTHCOM), and USSTRATCOM to review and improve our capabilities in the USPACOM area of responsibility. In addition to the deployment of a Terminal High Altitude Area Defense (THAAD) battery in Guam that enhanced our ability to protect U.S. interests in the region, we have deployed an additional forward-based sensor in Japan to bolster our defense capabilities.

The emplacement of 14 additional Ground-Based Interceptors at Fort Greely, Alaska, scheduled for completion in 2017, and an operational second missile defense sensor in Japan will provide improved capability and capacity to defend the Nation against a limited intercontinental ballistic missile (ICBM) attack. Toward this end, we continue to work with regional partners and allies to increase our information and data sharing and develop a global AMD force posture that leverages ever growing partner nations' capabilities. This will result in reduced strain on our force and enable more timely modernization of our AMD assets.

The Quadrennial Defense Review also establishes a priority to maintain a strong commitment to security and stability in Europe and the Middle East. We are continuing to maintain capability and capacity in these regions consistent with our regional security goals. In conjunction with our allies and partners, the DoD has deployed Patriot air and missile defense forces to Turkey and Jordan in order to enhance our current AMD posture while sending a strategic deterrence message to potential adversaries. It should be noted that these deployments add to the stress of an already highly deployed Patriot force. Without significant reduction in our worldwide deployments, it will be challenging for the Army to execute critical planned modernization of our AMD force over the next 5 years.

In summary, enemy air and missile threats continue to develop in complexity, quantity and capacity. The evolution of multiple sophisticated capabilities requires a

holistic approach that effectively integrates offensive and defensive, kinetic and non-kinetic, and alternative capabilities to defeat air and missile threats. The growing complexity of the strategic environment based on technological advances of the threat and fiscal realities requires cost efficient and effective methods of integrating current and future capabilities. We continue to prioritize integrated missile defense resources to optimize all our capabilities in support of the Warfighter, particularly in light of the expense associated with traditional approaches. We continue to partner with the Missile Defense Agency (MDA), Combatant Commands, and Services to ensure we pursue a fiscally responsible path to keep pace with evolving threats by identifying and prioritizing additional capabilities that provide the greatest operational value.

Providing and Enhancing Missile Defense Capabilities

USASMDC/ARSTRAT, a force provider of missile defense capabilities, is a split-based command with dispersed locations that are manned by multi-component Soldiers, Civilians, and Contractors. Commands around the world, including USSTRATCOM, USNORTHCOM, and the GCCs, leverage our capabilities. Our Title

“I believe that effective missile defense is an essential element of the U.S. commitment to strengthen strategic and regional deterrence against states of concern—continued investments in this area are essential to national defense.”
*— USSTRATCOM Posture Statement
 February 2014*

10 responsibilities include operations, planning, integration, control, and coordination of Army forces and capabilities in support of USSTRATCOM's missile defense mission. USASMDC/ARSTRAT also serves as the Army's global operational integrator for missile defense, the Army's proponent for

global missile defense force modernization, and the Army's technical center lead to conduct air and missile defense related research and development in support of Army Title 10 responsibilities.

Our operational function is to provide trained and ready missile defense forces and capabilities to the GCCs and the Warfighter—in other words, to address the

requirements of today. For example, USASMDC/ARSTRAT Soldiers serving in the homeland and in remote and austere forward deployed locations operate the Ground-based Midcourse Defense (GMD) system and the Army-Navy/Transportable Radar Surveillance Forward-Based Mode (AN/TPY-2 FBM) radars. Highlights of the ongoing missile defense capabilities provided by our missile defense professionals include:

Support to Global Ballistic Missile Defense (BMD): Soldiers from the 100th Missile Defense Brigade, headquartered in Colorado Springs, Colorado, and the 49th Missile Defense Battalion, headquartered at Fort Greely, Alaska, remain ready, 24/7/365, to defend our Nation and its territories from a limited intercontinental ballistic missile attack. Under the operational control of USNORTHCOM, Army National Guard and active component Soldiers operate the Ground-based Midcourse Defense Fire Control Systems located at the Fire Direction Center in Alaska, the Missile Defense Element in Colorado, and the GMD Command Launch Element at Vandenberg Air Force Base, California. These Soldiers, in conjunction with USNORTHCOM, also oversee the maintenance of GMD interceptors and ground system

“...will remain ready to deter and defeat threats to the homeland...”

***– National Security Strategy
February 2015***

components. At the Missile Defense Complex at the Fort Greely site, 49th Missile Defense Battalion military police secure the interceptors and communications capabilities at the Missile Defense Complex from physical threats. This brigade will also soon be responsible for security at the Fort Drum, New York, In-Flight Interceptor Communication System Data Terminal. The GMD system remains our Nation’s only defense against an ICBM attack.

GMD System Test and Development: In addition, Soldiers from the 100th Missile Defense Brigade actively participate in GMD test activities and continue to work with MDA developers on future improvements to the GMD system.

Support to Regional Capabilities: The 100th Missile Defense Brigade also provides GCCs with trained and certified AN/TPY-2 FBM radar detachments. These operational capabilities are present today at strategic locations around the globe.

Ballistic Missile Early Warning: In support of the Joint Force Commander's theater force protection, USASMDC/ARSTRAT continues to provide ballistic missile early warning within various theaters of operations. The 1st Space Brigade's Joint Tactical Ground Station (JTAGS) Detachments, under the tactical control of USSTRATCOM's Joint Functional Component Command for Space, but operated by USASMDC/ARSTRAT space-professional Soldiers, monitor launch activity and other infrared events. They provide essential information to members of the air, missile defense, and operational communities. Our JTAGS Detachments are forward deployed around the globe, providing 24/7/365, dedicated, assured missile warning to USSTRATCOM and GCCs in support of deployed and forward-based forces.

Our second major task is to build and mature future missile defense forces—our capability development function. These are the missile defense capabilities we will provide tomorrow. A major component of our capability development function is to provide relevant and updated training on our global missile defense systems. During the past year, USASMDC/ARSTRAT trained over 350 Soldiers and was recertified as an Army Learning Institution of Excellence for missile defense training.

The Army uses established and emerging processes to document its missile defense needs and pursue Joint and Army validation of its requirements. As a recognized Army Center for Analysis, USASMDC/ARSTRAT conducts studies to determine how to best meet the Army's assigned missile defense responsibilities. With these insights, we develop the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) domains to address evolving threats and potential vulnerabilities to the GMD and AN/TPY-2 FBM missile defense systems. This disciplined approach helps to ensure limited resources are applied where Warfighter operational utility can be most effectively served.

Providing Future Warfighters with Innovative Missile Defense Capabilities

In our third major missile defense task, USASMDC/ARSTRAT provides critical technologies to address future needs that will enhance Warfighter effectiveness—our materiel development function. In USASMDC/ARSTRAT, our technology development

function is primarily focused on the space and high altitude domains. However, while MDA is the principal materiel developer for ballistic missile defense capabilities, USASMDC/ARSTRAT has a number of supporting missile defense related materiel development efforts, to include supporting research and development of an OSD-sponsored conventional prompt global strike capability to address ballistic missile threats. Following is a brief summary of two of our research and development efforts, as well as an overview of the capabilities of an essential Army testing range.

High Energy Laser Mobile Demonstrator: The technology objective of the High Energy Laser Mobile Demonstrator (HEL MD) is to demonstrate a solid-state laser weapon system to complement kinetic energy capabilities in countering rockets, artillery, and mortar (RAM) projectiles. This directed energy weapon system will also have a significant capability against unmanned aerial vehicles (UAVs). Considerable technology developments were realized over the past year for the HEL MD. Successful demonstrations were conducted for a pathfinder 10 kilowatt-class laser at White Sands Missile Range, New Mexico, and Eglin Air Force Base, Florida. These demonstrations served as a risk reduction for future subsystem development and integration while advancing this technology effort to a 50 kilowatt demonstration in 2017. The 50 kilowatt HEL MD will consist of a ruggedized and supportable high energy laser installed on a tactical military vehicle to enhance the safety of deployed forces. Another major component of the HEL MD is the beam director which will provide full sky coverage and engage below-the-horizon targets. As technology matures, higher power lasers will integrate with improved pointing and tracking capabilities to extend range and increase system effectiveness. The continued positive technology advances and testing results were recognized by the Army's senior leadership as HEL MD was recently selected by the Army Science and Technology Working Group as one of only three Army Capability Enabler programs to be further evaluated. The synergy of both directed and kinetic energy systems has the potential to significantly enhance both regional and homeland defense capabilities, particularly against cruise missile and indirect fire threats.

Low-Cost Target Development: The Army continues to pursue a technology effort to develop a suite of low-cost targets for the Patriot testing program. The intent is to design threat-representative targets at a substantially reduced cost for short-range

ballistic missile testing. Over the past year, we completed preliminary designs for three new short range ballistic missile targets based on existing excess solid rocket motors. The Army will realize significant savings conducting operational test events using these new targets beginning in Fiscal Year 2017. In addition, the Missile Defense Agency will use our targets in its test program later this year. We will continue to leverage existing missile inventory and technology advancements to develop less expensive targets that are representative of real world threats.

Missile Defense Testing: USASMDC/ARSTRAT operates the Ronald Reagan Ballistic Missile Test Site (RTS). RTS, located on the U.S. Army Garrison—Kwajalein Atoll in the Republic of the Marshall Islands, is critical to both offensive and defensive missile testing requirements, such as the GMD system and the U.S. Air Force strategic ballistic missile systems. In addition to their testing mission, personnel at the Reagan Test Site conduct continuous deep space surveillance and object identification missions. Just this past month, the U.S. Air Force began construction of their most advanced surveillance system—the Space Fence. In a few years, this improved surveillance capability will enable proactive space situational awareness while complementing existing systems at Reagan Test Site.

**Joint Functional Component Command for Integrated Missile Defense—
Synchronizing Global Missile Defense Planning, Force Management, and
Operations Support**

The Joint Functional Component Command for Integrated Missile Defense, or JFCC IMD, is USSTRATCOM's missile defense integrating element. This past January, we held a ceremony to honor the 10 year anniversary of the JFCC IMD. Like the other Joint Functional Component Commands, JFCC IMD was formed to operationalize USSTRATCOM missions and allow the headquarters to focus on integration and advocacy. Headquartered at Schriever Air Force Base in Colorado Springs, Colorado, the JFCC IMD is manned by professional Army, Navy, Air Force, Marine Corps, Civilian, and Contractor personnel.

As the Secretary of Defense and various Combatant Commanders have previously testified, the Warfighter remains confident in our ability to protect the Nation

against a limited intercontinental ballistic missile attack, even in the face of the changing fiscal environment. Over the past year, we have deployed a new forward-based sensor in Japan to bolster regional and homeland defense capability and, following the June 2014 successful ground-based interceptor (GBI) test, we are in the process of integrating enhanced interceptors at Fort Greely. Additionally, MDA is on schedule to complete construction of the new Aegis Ashore site in Romania to meet our commitment to our allies in Phase 2 of the European Phased Adaptive Approach (PAA) and we continue to collaborate with MDA to initiate the procurement of the Long Range Discrimination Radar (LRDR) and the redesign of the GBI kill vehicle. These developments and deployment efforts are in line with warfighter priorities, which consist of sensor improvements, improved GBI reliability and performance, and increased regional capability and capacity.

On behalf of USSTRATCOM, JFCC IMD is working across our DoD enterprise to improve the integration of existing capabilities in order to maximize our efficiency and effectiveness to protect the homeland, deployed forces, partners, and allies. The key force multiplier is "integration," which is a critically important mission area for JFCC IMD and directly supports USSTRATCOM's assigned Unified Command Plan (UCP) responsibilities for missile defense.

As an operational and functional component command of USSTRATCOM, JFCC IMD has derived five key mission tasks from the USSTRATCOM UCP responsibilities:

- Synchronize operational missile defense planning, security cooperation activities, and the global force management process for missile defense capabilities.
- Conduct global ballistic missile defense operations support, above element joint ballistic missile defense training, asset management, and alternative execution support.
- Integrate, synchronize, and conduct training, exercises, and test activities. As the Warfighter interface, lead the planning and development of operational input for execution of the Integrated Master Test Plan (IMTP).

***Defense of the Homeland
Priority Requires Execution
of a Holistic Global Missile
Defense Plan***

- Advocate and coordinate for global missile defense capabilities, conduct analysis and assessments of current and future capabilities, and recommend operational acceptance.
- Protect information systems and provide network support for ballistic missile defense operations.

To accomplish each of these five tasks, we maintain close collaborative relationships with the GCCs, MDA, the Services, the Office of the Secretary of Defense (OSD), the Joint Staff, and our allies.

We will maintain "a robust missile defense capability to defend the homeland against a limited ballistic missile attack."

*--Quadrennial Defense Review
March 2014*

Through collaborative processes, we continually enhance our deployed capabilities while gaining operational experience and confidence in our collective ability to defend the Nation, deployed forces, partners, and allies. Furthermore, I will highlight some of our

collaborative efforts to enhance missile defense planning and capabilities for both the homeland and regional architectures.

Expansion and Integration of the Missile Defense Architecture: In response to the evolving strategic environment, we continue to bolster homeland and regional missile defense capabilities. In addition to the deployed AN/TPY-2 FBM radars and deployment of the THAAD battery to Guam, we are expanding our missile defense collaboration with allies. We continue to mature the European PAA with the forward deployment of Aegis BMD ships in Rota, Spain, developing the Aegis Ashore site in Romania, and continuing the production of the SM-3 IB interceptors used for ballistic missile defense. Given many of the challenges associated with implementation of these architectures, JFCC IMD, supporting USSTRATCOM as the global synchronizer for missile defense, is collaborating with the GCCs to assess and address the cross-regional gaps in the areas of planning, policy, capabilities, and operations.

Global Planning and Assessment: Regional and global missile threats continue to increase in numbers and complexity. This year, JFCC IMD led the missile defense community in the development of the Global Missile Defense Concept of Operations

which better articulates systemic risk with the likely simultaneous execution of GCC operational plans across multiple areas of operations. This fundamentally changes the way the missile defense enterprise analyzes and assesses the operational environment. The output of this analysis directly informs the Global Integrated Air and Missile Defense Assessment (GIAMDA). The GIAMDA serves to shape recommendations for global force management and advocacy efforts for future capability investments. We have completed the 2014 GIAMDA and are currently conducting the 2015 assessment. For the 2014 assessment, we continued to expand the assessment to look at integrating cyber, electronic warfare, and global strike in order to provide a more holistic set of military capabilities to counter an evolving adversary threat.

Global Force Management: The increasing demand of BMD assets is managed by the Joint Staff and the Services. USSTRATCOM, as the designated Joint Functional Manager for missile defense, relies upon JFCC IMD to evaluate and recommend sourcing of BMD requirements based on assessed risk. Due to the high demand, low-density nature of missile defense assets, all sourcing decisions have a direct and significant impact to other Combatant Commanders' campaign and contingency plans. The Global Force Management process enables senior leaders to make more informed BMD sourcing decisions based on global risk.

Multi-Regional BMD Asset Management: JFCC IMD, in coordination with USSTRATCOM and the GCCs, manages the availability of missile defense assets to balance operational readiness postures, scheduled and unscheduled maintenance activities, and the MDA and Services' test requirements. This important process allows us to continually assess our readiness to defend against a ballistic missile attack and to recommend adjustments to optimize the overall BMD architecture.

Allied Ballistic Missile Defense Integration: JFCC IMD continues to focus on the integration of allies into regional missile defense architectures, enhanced security cooperation between missile defense capable nations, and shared regional deterrence and defense responsibilities across partner nations. One tool employed to promote cooperation is the Nimble Titan campaign, a biennial series of multi-national missile defense experiments designed to explore policy and operational concepts required for coalition missile defense. The Nimble Titan campaign provides a unique venue to

advance U.S. missile defense policies and combatant command regional security objectives. The Nimble Titan community of interest consists of 23 nations and 2 international organizations. The campaign goals for Nimble Titan are four fold:

- Examine national and multinational BMD decision making processes and their effects on planning, design, and execution.
- Explore the effects of policy guidance on defense design.
- Develop a common understanding of integrated air and missile defense.
- Examine and identify opportunities to support planning and execution of integrated air and missile defense operations.

“Building partnerships and establishing multilateral agreements will be an important part of future regional and global security architectures in missile defense”

*—Joint Integrated Air and Missile Defense Vision 2020
December 2013*

In April 2014, we concluded our fourth biennial series—Nimble Titan 14. Nimble Titan 14 included Ministry of Foreign Affairs and Ministry of Defense representatives from 21 nations and 2 international organizations, along with Department of State, OSD, Joint Staff, MDA, and combatant command representatives. In addition, 40 senior leaders from the United States and 13 other nations participated in a concurrent senior leader program. For the first time, Nimble Titan 14 included participants from the Middle East and non-NATO aligned European nations. Through Nimble Titan, we continue to focus on cross-regional coordination, sensor integration, and multinational MD planning solutions.

Nimble Titan is critical to developing a common understanding of policy hurdles associated with combined missile defense architectures and to influence future U.S., ally, and partner missile defense policy development and cooperation. Additionally, this exercise provides participating nations with critical experience in information-sharing as well as command and control procedures that enhance synchronized missile defense capabilities. Conclusions derived from this exercise continue to inform policy decisions

and multinational BMD planning. Planning has already begun for the next iteration of this war game—Nimble Titan 16.

Joint BMD Training: DoD designated USSTRATCOM as the lead for integrating and synchronizing Joint BMD training. In coordination with USSTRATCOM, the Joint Staff, Combatant Commands, and the Services, we have developed a comprehensive and innovative training program to close gaps between Service, Joint, and regional BMD training and education. New and updated courseware has been developed and

“A steady-testing schedule and continued investment are needed to increase reliability and resilience across the missile defense enterprise.”

*– USNORTHCOM Posture Statement
March 2014*

fielded to enhance combatant command and warfighter training needs. Blended learning courseware and a Joint BMD Training Community of Practice are under development to improve efficiency in delivery and reduce costs. Over the past year, JFCC IMD provided 140 courses to over 2,300 students around

the world via the Joint BMD Training and Education Center. Additionally, in keeping with Joint Vision 2020, JFCC IMD provided several training courses to ally and partner nations.

Warfighter Acceptance and Integrated Master Test Plan: As the missile defense architectures mature, Warfighters require a credible, comprehensive assessment of new capabilities to inform operational acceptance. In 2014, we tested our new AN/TPY-2 FBM in Japan, conducted a successful intercept flight test of the GMD system, and flight tested a triple engagement of both cruise and ballistic missiles with our Aegis BMD system. The focus of this year’s operational tests is to demonstrate the integrated capability of Phase 2 of the European PAA architecture, which will include Aegis BMD ships and Aegis Ashore. Additionally, JFCC IMD continues to work closely with the MDA, the Office of the Director, Operational Test and Evaluation, and USNORTHCOM to address issues future improvements of both the Capability Enhancement (CE)-I and CE-II variants.

In summary, JFCC IMD serves an integrating role for missile defense across multiple regions as we operationalize new capabilities, enhance command relationships,

and reinforce our missile defense partnerships with allies. In view of worldwide events and current fiscal challenges, JFCC IMD remains focused on our key mission task to collaborate with the GCCs and MDA to meet current and future ballistic missile threats. While work remains to be done, we have made significant progress in evolving our global missile defense capabilities, thereby strengthening the defense of the homeland and advancing our partnerships with allies in this pressing endeavor.

Army Contributions to the Nation's Missile Defense Capabilities

The Army works closely with MDA and continually supports its materiel development efforts to develop and field systems that are integral to our Nation's air and missile defense capabilities. A summary of the Army's major air and missile defense programs follows.

Army Integrated Air and Missile Defense (IAMD): As we transition from an Army at war to one of deterrence, air and missile defense (AMD) units have become a key strategic enabler. AMD is an enduring Army core function and an essential component of the Army mission to provide wide area security. In addition to defense against ballistic missiles, the current AMD strategy seeks to develop a more comprehensive portfolio of IAMD capabilities to provide protection against cruise missiles, unmanned aerial systems, and long-range precision rocket, artillery, and mortar attacks.

The IAMD Battle Management Command System (IBCS) remains an Army priority effort and serves as the foundation for Army AMD modernization. Modernization is critical in our quest to stay ahead of the advancement of the threat. The program will field a common mission command system to all echelons of Army AMD forces in order to defend against cruise missiles, manned and unmanned aircraft, air-to-ground missiles, tactical ballistic missiles, and rocket, artillery, and mortar attacks. IBCS will provide a common and flexible AMD mission command network capable of coordinating air surveillance and fire control across Services and with coalition partners. When fielded, IBCS will componentize the AMD force, breaking the current system-centric paradigm, which will facilitate open industry competition in support of the AMD community. Additional efforts are underway to integrate IBCS and Command and

Control, Battle Management, and Communications (C2BMC) to support the BMD mission.

As the lead integrator for the AMD enterprise, one area of concern is the ever increasing operational demand and how this demand will impact planned modernization. Starting next fiscal year, the AMD enterprise will begin its most comprehensive modernization effort ever undertaken as IBCS is fielded to the AMD force. IBCS will interact with every AMD weapon component—shooters, sensors, and C2BMC. The AMD convergence between the existing demand and upcoming modernization effort will be a major undertaking for the AMD enterprise and the Army.

Patriot/Patriot Advanced Capability-3 (PAC-3): The Patriot air and missile defense system remains the cornerstone of our BMD forces deployed in support of GCCs. It remains the Army's premier weapon system against air and tactical ballistic missile threats. The Patriot system is now over 35 years old and, not surprisingly, the effort and costs associated with maintaining operational reliability rise steadily each year. Fortunately, several years ago, the Army embarked on a comprehensive modernization strategy that will completely replace Patriot's command and control hardware and upgrade the radar, launcher, and interceptor components through competitive development and procurement. The aim is to increase reliability, drive down operational and sustainment costs, and remain viable well into the future. Each facet of this strategy, development of IBCS, radar and launcher modernization and the Missile Segment Enhancement (MSE) are critical to our Nation's ability to provide our Combatant Commanders with more innovation and capabilities in the face of an ever evolving threat. With nearly half of all Patriot units currently deployed, operational tempo and stress remain high.

A number of significant Patriot/PAC-3 capability enhancements have been accomplished over the past year. Among the accomplishments were the completion of the Army's planned PAC-3 capability upgrades of all 15 Patriot battalions and continued successful operational flight tests of the next generation PAC-3 missile, the MSE. During recent successful testing, both tactical ballistic missiles and air breathing threats were simultaneously engaged. The Army remains on track for delivery of the MSE to the Warfighter by the fourth quarter of 2015. Additionally, the Patriot radar is receiving a

new radar digital processor. Coupled with recent software upgrades, the new processor increases performance of the radar against evolving threats while dramatically improving reliability, availability, and maintainability. To make maximum use of the MSE missile and the radar upgrades, the Army is also preparing to test the next version of the Patriot software, Post Deployment Build-8. Successful testing and fielding of this software will advance the Patriot system into the next generation of hardware capability.

Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System

(JLENS): Homeland air and missile defense is heavily reliant on early warning and over-the-horizon target acquisition in order to provide decision and battle space. In accordance with guidance from OSD and the Joint Staff, the Army has deployed the JLENS system to Aberdeen Proving Grounds, Maryland, for a three-year operational exercise. This exercise will demonstrate the capability to detect, track, and identify potential air threats to the greater Washington, D.C. area, and to integrate JLENS into the North American Aerospace Defense Command's (NORAD) air defense architecture. During the 3-year exercise window, JLENS capabilities will be fully explored in a real-world environment and evaluated for its operational utility in support of NORAD's homeland defense mission.

The JLENS system leverages proven aerostat technology to provide situational awareness and track airborne objects such as cruise missiles, manned and unmanned aircraft, and large caliber rockets. The JLENS consists of two unmanned aerostats with radar systems for surveillance and fire control. Each radar system employs a separate 74-meter tethered aerostat, a mobile mooring station, radar and communications payloads, a processing station, and associated ground support equipment.

Terminal High Altitude Area Defense System: THAAD, a key component of the BMDS architecture, is designed to defend deployed and allied forces, population centers, and critical infrastructure against short and medium-range ballistic missiles. THAAD is a high demand, low-density asset that is mobile and globally transportable. A fully operational THAAD battery consists of 95 Soldiers, an AN/TPY-2 radar, six launchers, a fire control and communications element, a battery support center, and a support element. THAAD has a unique intercept capability in both the endo- and exo-atmosphere using proven hit-to-kill technology. There are now four activated THAAD

batteries. Equipment training and fielding has been completed for three of the batteries. In April 2013, one of these batteries conducted the first-ever operational deployment of THAAD in response to the escalation of tensions in the Pacific region. The fourth THAAD battery is currently undergoing training and will be operationally available next year. A fifth battery is scheduled to become fully operational the following year. By 2019, the THAAD force is scheduled to consist of seven batteries. A new training facility, which enables virtual training for the Soldiers who will operate the THAAD system, recently opened at Fort Sill, Oklahoma. The addition of THAAD capabilities to the Army's air and missile defense portfolio brings an unprecedented level of protection against missile attacks to deployed U.S. forces, partners, and allies.

Conclusion

Mr. Chairman and Ranking Member Cooper, as a member of the Joint missile defense community, the Army continues to pursue enhancements to the Nation's missile defense system. As a Service, the Army has lead responsibility for GMD, AN/TPY-2 FBM, Patriot, JLENS, and THAAD. Our trained and ready Soldiers operating GMD elements in Colorado, Alaska, and California remain on point to defend the homeland against a limited intercontinental ballistic missile attack. As a force provider to the GCCs, our Soldiers provide essential regional sensor capabilities and ballistic missile early warning. Our regional forces continue to leverage ally collaboration and planning efforts in developing integrated and interoperable defenses against the various threat sets. USSTRATCOM, through the JFCC IMD, continues to integrate BMDS capabilities to counter global ballistic missile threats and to protect our Nation, deployed forces, partners, and allies.

While the operational, doctrine, and materiel development enhancements of the BMDS are essential, our most essential assets are the Soldiers, Sailors, Airmen, Marines, Civilians, and Contractors who develop, deploy, and operate our missile defense system. I appreciate having the opportunity to address missile defense matters and look forward to addressing your questions.



U.S. Strategic Command Biography

*Lieutenant General David L. Mann
Commander, JFCC-IMD*

LTG David L. Mann assumed command of the U.S. Army Space and Missile Defense Command/Army Forces Strategic Command and Joint Functional Component Command for Integrated Missile Defense in August 2013. He is a Distinguished Military Graduate of Gettysburg College after graduating from Millersville University in 1981. He has served in a variety of command and staff assignments, both in the continental United States and overseas.

Most recently, he served as the Commanding General of the U.S. Army Recruiting Command at Fort Knox, KY. Before that he served as the Commanding General, 32nd Army Air and Missile Defense Command, a theater-level air and missile defense (AMD) organization responsible for executing global operations in support of the Combatant Commands (COCOMs).

Additional command assignments include: Battalion Commander, 2nd Battalion, 44th Air Defense Artillery Regiment, 101st Airborne Division (Air Assault), Fort Campbell, KY., where elements of the battalion deployed to Kosovo in support of Operation Joint Guardian; Brigade Commander, 108th Air Defense Artillery Brigade, XVIII Airborne Corps where he deployed to Iraq in support of Operation Iraqi Freedom; and as the Commanding General, White Sands Missile Range, N.M.

Previous staff assignments include: Aide-de-Camp to the Commanding General, 24th Infantry Division (Mechanized), Fort Stewart, GA.; Battalion Operations Officer, 1st Battalion, 3rd Air Defense Artillery (BSFV/Stinger), 4th Infantry Division (Mechanized) where he deployed to Guantanamo Bay, Cuba, as part of Joint Task Force 160; Operations Research and Systems Analysis Officer, Directorate of Program Analysis and Evaluation, Pentagon; Aide-de-Camp to the Vice Chief of Staff of the Army; Senior Planner with duty on the Operation Enduring Freedom Current Operations Team, the Joint Staff following the events of 9-11; Chief of Staff, U.S. Air Defense Artillery Center, Fort Bliss, TX.; and as the Deputy Commanding General, U.S. Army Recruiting Command, Fort Knox, KY.

LTG Mann holds a Master of Science in Engineering Management from George Washington University and a Master of Arts in National Security and Strategic Studies from the U.S. Naval War College.

His awards and decorations include the Distinguished Service Medal (oak leaf cluster), Legion of Merit (three oak leaf clusters), Defense Meritorious Service Medal, Meritorious Service Medal (four oak leaf clusters), Army Commendation Medal, Joint Service Achievement Medal (oak leaf



cluster), Army Achievement Medal (oak leaf cluster), Parachutist Badge, Air Assault Badge, Recruiter Badge, and the Joint and Army Staff Identification Badges.

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**WITNESS RESPONSES TO QUESTIONS ASKED DURING
THE HEARING**

MARCH 19, 2015

RESPONSE TO QUESTION SUBMITTED BY MR. ROGERS

General MANN. As noted in the Fiscal Year 2016 Army posture statement, demand for Patriot assets “exceeds our capacity, significantly limiting options in emerging crises, and exceed[s] the Army’s ability to meet Department of Defense deployment-to-dwell rotation goals.” A deployment of a Patriot Battery to Romania would require an adjustment to the current worldwide posture and could delay critical modernization of Patriot equipment. However, if directed by the Department, the Army would explore several possible options to provide a Patriot Battery capability to the Deveselu, Romania region. The most cost effective option is a non-permanent, deployment of a battery from the Continental U.S. to Deveselu. Based on very preliminary analysis, the estimated annual tactical movement and operational sustainment costs for a battery is approximately \$7,000,000. This estimate assumes that current Patriot hardware (missiles, launches, fire control, and radar) would be transported to Deveselu and that the battery’s manning would be sourced from current Army Patriot force structure. The estimate does not provide for military construction of any personnel quality of life facilities but we expect that, at a minimum, items such as physical fitness equipment, laundering facilities, and some morale, welfare, and recreational assets would be required. Likely force protection infrastructure, such as fencing and personnel for perimeter security, is not included in the estimate. Finally, as with all other Patriot locations, there could be other operational requirements to provide the desired capability. [See page 23.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MARCH 19, 2015

QUESTIONS SUBMITTED BY MR. ROGERS

Mr. ROGERS. There has been quite a bit of media reporting on the possibility of deploying missile defense assets to South Korea and Japan and China's objections to this. Could you speak to these systems? What kind of protection would they provide our allies in the Asia-Pacific region?

Mr. MCKEON. The Department of Defense maintains a robust set of missile defense capabilities in the Asia-Pacific region, including PATRIOT units deployed in the Republic of Korea and Japan as well as forward-deployed ballistic missile defense-capable Aegis ships at Yokosuka, Japan. In time of crisis, the Department also maintains the ability to surge additional ballistic missile defense capabilities into the region in times of crisis in defense of forward-deployed U.S. forces and our allies and partners. Although I cannot comment on specific internal deliberations regarding the current and future disposition of these systems, I can say that the Department continually evaluates the global positioning of U.S. ballistic missile defense forces in order to meet Combatant Commander requirements, including forces assigned and/or allocated to the defense of U.S. interests on the Korean Peninsula and in Japan.

Mr. ROGERS. Japan already has Aegis ships for the defense of its territory from North Korea ballistic missiles. Can you tell me what value you think Aegis Ashore could have for Japan?

Mr. MCKEON. The Aegis Ashore weapon system is currently not available for purchase through the Foreign Military Sales program. Should the U.S. Government decide to make this system available to our allies and partners as an upper-tier capability, it would provide a valuable contribution to a layered ballistic missile defense architecture. In the case of Japan, Aegis Ashore would complement the Japanese Air and Maritime Self-Defense Force's existing PATRIOT and sea-based Aegis ballistic missile defense platforms.

Mr. ROGERS. The intelligence community has remained consistent over the years that the Iranians may have an ICBM capability by 2015. Are we still operating under that threat analyses? What more can we do to be adequately prepared to defend against this threat?

Admiral GORTNEY. Iran may attempt to orbit a satellite this year using the Simorgh space launch vehicle, an intercontinental ballistic missile (ICBM)-class booster. However, we have no evidence to suggest Iran has developed a reentry vehicle or warhead for the Simorgh, and we assess Iran will not be able to deploy an operational ICBM until later this decade at the earliest. Operationally, we are ahead of the threat today, but to remain out in front of 2020 adversaries we need to continue investments which improve our existing capabilities, such as improving our sensor architecture, enhancing the lethality of our kill vehicles, and sustaining/testing the ballistic missile defense system.

Mr. ROGERS. At the SASC hearing last week, you stated: "we want every one of our kill vehicles to be as effective and as lethal as possible, and as well as the means to develop other ways that we can get more kill—kill vehicles into space." It sounds like you're describing the old "Multiple Kill Vehicle" or current "Multiple Object Kill Vehicle." Is that right? Can you please describe how valuable you think this capability could be?

Admiral GORTNEY. I was referring to the need to continue funding high payoff technologies that afford us the opportunity to reduce the cost per engagement. The Multiple Object Kill Vehicle could be one such program; other programs potentially include the rail gun and use of directed energy. In addition, the Redesigned Kill Vehicle will provide improvements in both effectiveness and reliability. Collectively, these systems have the potential to provide a layered defense with more overall lethality than today's ballistic missile defense system.

Mr. ROGERS. Please describe your strategy for procurement of the CE-2 block 1 kill vehicle and planned flight tests of that kill vehicle? Is it low risk? Is it consistent with the "fly before you buy" approach to acquisition?

Admiral SYRING. The Missile Defense Agency's (MDA) strategy for procurement of the CE-II Block 1 kill vehicle is to deliver 11 Ground Based Interceptors (GBIs) (one test article for Flight Test GBI (FTG)-15 and 10 operational GBIs) on the De-

velopment and Sustainment Contract. This acquisition strategy supports the Secretary of Defense mandate to field and emplace 44 GBIs by the end of 2017.

The MDA strategy for flight testing the CE-II Block 1 kill vehicles consists of two flight tests in advance of fielding the remaining interceptors. The initial flight test, Control Test Vehicle (CTV)-02+, scheduled for December 2015, is a non-intercept flight test of a CE-II kill vehicle, using alternate divert thrusters. The CE-II kill vehicle was successfully demonstrated in Flight Test GBI (FTG)-06b. The second event, an intercept test of a fully configured CE-II Block I interceptor (FTG-15), is scheduled in December 2016.

The MDA considers this strategy low risk for several reasons. First, robust ground testing of all new CE-II Block I components will ensure they meet space vehicle specifications. MDA Ground-based Midcourse Defense (GMD) plans to spend \$5.9M for boost vehicle electronics reliability testing in fiscal year (FY) 2016 to support this effort. Second, the commonality between the existing CE-II kill vehicle and the Configuration I Integrated Boost Vehicle lowers risk by utilizing previously qualified flight hardware. GMD plans to spend \$3M in FY 2015 and \$11.7M in FY 2016 for this effort as part of the Stockpile Reliability Program. Third, MDA's incremental approach to flight testing lowers risk by testing the kill vehicle's alternate divert thrusters in an operational environment (CTV-02+) and validating a fully configured CE-II Block 1 (FTG-15) prior to missile field emplacement.

The intercept flight test in FY 2016 (FTG-15) precedes delivery of the GBIs to the warfighter. All components used in the CE-II Block I kill vehicle and boost vehicle will complete space qualification testing prior to procuring the parts used for manufacturing.

Mr. ROGERS. There has been quite a bit of media reporting on the possibility of deploying missile defense assets to South Korea and Japan and China's objections to this. Could you speak to these systems? What kind of protection would they provide our allies in the Asia-Pacific region?

Admiral SYRING. The Missile Defense Agency (MDA) defers questions regarding deployments of missile defense assets in East Asia to the United States Pacific Command. The United States developed the Aegis Ballistic Missile Defense (BMD) system, the Terminal High Altitude Area Defense, and the Phased Array Tracking Radar to Intercept on Target (PATRIOT) missile defense system. These regional systems have demonstrated the ability to provide protection against short-, medium- and intermediate-range ballistic missiles. South Korea and Japan have purchased PATRIOT systems and Japan has Aegis BMD capable ships with Standard Missile (SM)-3 Block IAs in addition to a United States-Japan cooperative effort to develop the Aegis SM-3 Block IIA.

Mr. ROGERS. The intelligence community has remained consistent over the years that the Iranians may have an ICBM capability by 2015. Are we still operating under that threat analyses? What more can we do to be adequately prepared to defend against this threat?

Admiral SYRING. [The information is classified and retained in the committee files.]

Mr. ROGERS. What is the way ahead on M-O-K-V? How important do you think it is and can we move faster on this program?

Admiral SYRING. The Missile Defense Agency plans to award several contracts in fiscal year 2016 to define Multi-Object Kill Vehicle (MOKV). In parallel, we will reduce technical risk in several critical areas. For example, by 2017, we will develop and test command and control strategies in both digital and Hardware-in-the-Loop venues to prove we can manage the engagement of several targets using multiple kill vehicles from a single interceptor.

We will also invest in communication architectures and guidance technology that support this game-changing approach. Ultimately, this capability will revolutionize our missile defense architecture by substantially improving interceptor inventory management in raid scenarios against an evolving and more capable threat to the homeland. We believe MOKV is an essential element in our defense against advanced threats and that it can also decrease cost-per-kill by reducing the number of interceptors required to destroy an incoming reentry vehicle.

Based upon lessons learned from past development efforts, we are employing a disciplined, structured approach to developing this capability. Our plan allows the Agency to first understand the feasibility of potential concepts and ensures we mitigate key technology risks before making a decision to develop the MOKV system.

Mr. ROGERS. Japan already has Aegis ships for the defense of its territory from North Korea ballistic missiles. Can you tell me what value you think Aegis Ashore could have for Japan?

Admiral SYRING. Deployment of Aegis Ashore (AA) provides a dedicated system that would provide a continuous missile defense capability. Any future Japanese

purchase and deployment of AA in Japan could free some Japanese Aegis ships to support other Aegis missions (e.g. air defense, cruise missile defense, surface defense and undersea defense) or provide redundancy and capacity when facing a raid of theater-class missiles.

Mr. ROGERS. Admiral, what role, if any, do you see for Aegis Ashore for Homeland Defense?

Admiral SYRING. [The information is classified and retained in the committee files.]

Mr. ROGERS. There has been quite a bit of media reporting on the possibility of deploying missile defense assets to South Korea and Japan and China's objections to this. Could you speak to these systems? What kind of protection would they provide our allies in the Asia-Pacific region?

General MANN. While no agreement currently exists, deployment of the Terminal High Altitude Area Defense (THAAD) system would increase missile defense coverage of both U.S. and allied forces against North Korean's short- and medium-range ballistic missiles. A potential THAAD in South Korea, in addition to the existing Patriot Advance Capability-3 (PAC-3) systems, the Army Navy/Transportable (AN/TPY-2) Radars, and the THAAD currently deployed to Guam, provides expanded defense in the Asia-Pacific region.

Mr. ROGERS. The intelligence community has remained consistent over the years that the Iranians may have an ICBM capability by 2015. Are we still operating under that threat analyses? What more can we do to be adequately prepared to defend against this threat?

General MANN. The missile defense community concurs with the accuracy of the Intelligence Community assessment regarding the possibility of Iran possessing an ICBM by 2015. We must continue the Department's ballistic missile defense modernization efforts, to include the long range discrimination radar and the enhanced kill vehicle design. Clarifying details can be provided in the appropriate environment.

QUESTIONS SUBMITTED BY MR. COOPER

Mr. COOPER. Where do reliability and improving shot doctrine rank in your priorities? Why?

Mr. MCKEON. Improving Ground-Based Interceptor (GBI) reliability and lethality is a top priority in the Department of Defense. The planned improvements to the Ground-based Midcourse Defense (GMD) system will enable Commander, U.S. Northern Command to consider changing the current shot doctrine to make more efficient use of the limited number of deployed GBIs. The Missile Defense Agency (MDA) is working on GBI reliability and lethality. I defer to MDA to provide the details on how MDA is addressing this challenge.

Mr. COOPER. Where do reliability and improving shot doctrine rank in your priorities? Why?

Admiral GORTNEY. My top three concurrent priorities are: (1) improve our sensors, (2) enhance the lethality of our kill vehicles, and (3) sustain/test the ballistic missile defense system. When realized, these priorities will improve ground-based interceptor reliability and may influence my shot doctrine.

Mr. COOPER. What are the risks of not conducting a flight test before producing the SM3-IB interceptors? How much would a flight test cost, versus a ground test?

Admiral SYRING. While ground testing simulates flight test conditions with high confidence, not all flight vibration and shock environments can be replicated exactly in ground testing. Therefore, the risk of not conducting a flight test before producing the SM-3 Block IB would be not being able to identify a potential unique anomaly, which occurs only in flight. However, MDA considers the risk of such a unique anomaly occurring in flight to be low due to comprehensive ground test parameters that are often more stressing than flight conditions.

The total cost per flight test is estimated to be \$28M. A ground test of a single TSRM motor at simulated altitude costs approximately \$500K.

Mr. COOPER. Where do reliability and improving shot doctrine rank in your priorities? Why?

Admiral SYRING. Ground-Based Interceptor (GBI) reliability is one of the Missile Defense Agency's (MDA's) top priorities. The U.S. Northern Command (USNORTHCOM) commander determines the appropriate shot doctrine for homeland defense based on the fielded Ballistic Missile Defense System's capabilities. USNORTHCOM fires multiple GBIs at each threat to ensure high defense effectiveness. Firing multiple GBIs at each threat ensures defense even if GBIs have lower than expected reliability or target the wrong object.

MDA is improving both the GBI reliability and sensor/kill vehicle discrimination to provide the warfighter with confidence of meeting mission requirements with fewer GBIs allocated to each threat. MDA completed a GBI Fleet Assessment last year that pointed out the need for improvements in reliability of the Exo-atmospheric Kill Vehicle, booster, and ground systems. MDA has introduced an enhanced Stockpile Reliability Program to better understand the service life and reliability of the fielded fleet and is conducting design and reliability analysis on the fielded Capability Enhancement-II GBIs to identify design changes to improve performance. The Redesigned Kill Vehicle program will substantially improve reliability for initial deployment in 2020. The Long Range Discrimination Radar and discrimination improvements for Homeland Defense will provide higher confidence in the GBI selecting the threat warhead. As reliability and discrimination improve, USNORTHCOM can consider changes to shot doctrine which could lead to a lower number of interceptors required to ensure engagement success.

Mr. COOPER. How do you plan beyond 2020?

Admiral SYRING. The Missile Defense Agency (MDA) develops the Ballistic Missile Defense System (BMDS) out-year plan in collaboration with the Warfighters. Out-year plans are informed by BMD-focused reviews and Analysis of Alternative studies.

More specifically, the U.S. Strategic Command leads the Warfighter Involvement Process, which generates the Prioritized Capabilities List (PCL). MDA, in turn, responds with an Achievable Capabilities List (ACL). BMDS system-level technical specifications are derived from this Warfighter-initiated set of requirements.

Mr. COOPER. Are we on track for deployment of the Aegis Ashore site in Poland in 2018? What are the risks of accelerating this deployment to 2017? Are you able to accelerate the schedule for operational availability at this point and would you recommend acceleration? And would you then need additional SM3-IB interceptors? What would the cost be?

Admiral SYRING. The Missile Defense Agency (MDA) is on schedule to deliver Aegis Ashore in Poland in 2018 to support the European Phased Adaptive Approach Phase 3. At this time, no opportunities exist to accelerate the deployment of Aegis Ashore into 2017. The military construction acquisition is progressing, with planned construction to begin in Poland in early 2016 and completion in late 2017. Due to the critical dependency on completion of military construction, the installation and test of the Aegis Ashore system will begin in late 2017 with a planned 2018 completion. Consequently, there are no requirements for additional SM-3 Block IBs in 2017.

Mr. COOPER. Where do reliability and improving shot doctrine rank in your priorities? Why?

General MANN. Operational reliability is my top priority. It provides the Warfighter confidence to execute the mission. We continue to support the Missile Defense Agency's investments to the existing ground-based interceptor (GBI) inventory and the development of new GBI capabilities.

I defer to NORTHCOM regarding the potential impact of improved reliability on any modifications to the current shot doctrine.

QUESTIONS SUBMITTED BY MS. SANCHEZ

Ms. SANCHEZ. Understanding an East Coast missile defense site will cost \$4 billion (not counting manning and other Army costs), should we begin construction on such a site? What are your priorities to strengthen defense of the East Coast?

Mr. MCKEON. The Department of Defense has made no decision to proceed with an additional Continental Interceptor Site (CIS) in the continental United States at this time. The current Ground Based Interceptor (GBI) sites at Fort Greely, Alaska, and Vandenberg Air Force Base, California, provide the capability required to protect the U.S. homeland against current and projected North Korean Intercontinental Ballistic Missile (ICBM) threats, as well as the future Iranian ICBM threat, should it emerge. Upgrading the kill vehicle on the GBI and enhancing the homeland defense sensor network are the priorities for improving protection against limited ICBM attack.

Ms. SANCHEZ. What improvements can and should be made left-of-launch?

Mr. MCKEON. The Department of Defense continues to explore a wide range of technologies to defeat missiles in all phases of flight and "left of launch." Ballistic missile defense systems will remain a vital component of protecting our territory and forces from ballistic missile attack, and we will continue to pursue technologies to enhance our capabilities to defend against such threats.

Ms. SANCHEZ. Can you successfully execute the increase in FY16 funding for GMD?

Mr. MCKEON. The Fiscal Year (FY) 2016 President's Budget request for Ground-Based Mid-Course Defense (GMD) has been carefully prepared to reflect the Administration's priorities for maintaining and improving the nation's homeland Ballistic Missile Defense (BMD) system. I defer to the Missile Defense Agency (MDA) to provide the detailed assessment of how the MDA would execute increased funding.

Ms. SANCHEZ. Are we ahead of the threat now? Will we be ahead of the threat in 2020? And in 2025?

Mr. MCKEON. Yes. The Ballistic Missile Defense System (BMDS) is currently ahead of the assessed Intercontinental Ballistic Missile (ICBM) threat. Planned upgrades to the BMDS, including the Long-Range Discrimination Radar, the Redesignated Exoatmospheric Kill Vehicle, and sensor discrimination enhancements, will enable the BMDS to continue to pace the threat in the 2020 and 2025 timeframe. We regularly receive updated intelligence assessments on the development of the threat, and we make changes in our programs to keep ahead of the threat, as evidence by the changes to the program announced in March 2013.

Ms. SANCHEZ. Understanding an East Coast missile defense site will cost \$4 billion (not counting manning and other Army costs), should we begin construction on such a site? What are your priorities to strengthen defense of the East Coast?

Admiral GORTNEY. I believe that before a decision is made to build a third ground-based interceptor site, we must ensure that our top three concurrent priorities are fully realized: (1) improve our sensors, (2) enhance the lethality of our kill vehicles, and (3) sustain/test the ballistic missile defense system. In addition, I believe that any decision about an East Coast missile defense site should be based upon the threat, which currently does not support the need at this time.

Ms. SANCHEZ. What improvements can and should be made left-of-launch?

Admiral GORTNEY. I believe it is extremely important to invest in left of launch capabilities so that attack operations support the full spectrum of offense/defense integration and remain a vital pillar of Integrated Air and Missile Defense. To this end, these efforts should focus on making our intelligence and warning capabilities more robust against the threat, as well as developing and integrating new technologies into our Integrated Air and Missile Defense portfolio. Finally, these capabilities need to be operationalized across the combatant commands.

Ms. SANCHEZ. Can you successfully execute the increase in FY16 funding for GMD?

Admiral GORTNEY. The Missile Defense Agency (MDA) is responsible for the execution of funding for the ballistic missile defense programs. As the warfighter, I am not the authority on MDA's programmatic planning. I recommend contacting VADM Syring to get the full details on FY16 budget execution.

Ms. SANCHEZ. Are we ahead of the threat now? Will we be ahead of the threat in 2020? And in 2025?

Admiral GORTNEY. We are ahead of the threat today, and to remain out in front of 2020 and 2025 adversaries, we need to continue investments that expand our existing capabilities, such as improving our sensor architecture, enhancing the lethality of our kill vehicles, sustaining/testing of the ballistic missile defense system, investing in advanced technologies to lower the cost per kill, and developing a kill assessment capability.

Ms. SANCHEZ. Understanding an East Coast missile defense site will cost \$4 billion (not counting manning and other Army costs), should we begin construction on such a site? What are your priorities to strengthen defense of the East Coast?

Admiral SYRING. The Department of Defense has made no decision to proceed with an additional CONUS Interceptor Site (CIS) at this time. The current Ground Based Interceptor (GBI) sites at Fort Greely, Alaska and Vandenberg Air Force Base, California, provide the capability necessary to protect the U.S. homeland against present and projected North Korean Intercontinental Ballistic Missile (ICBM) threats as well as the future Iranian ICBM threat, should it emerge. Upgrading the kill vehicle on the GBI and enhancing the homeland defense sensor network are the priorities for improving protection against limited ICBM attack.

Ms. SANCHEZ. What improvements can and should be made left-of-launch?

Admiral SYRING. MDA's current mission focus is right-of-launch (i.e., active missile defense). Potential left-of-launch questions should be addressed to Office of the Secretary of Defense (Acquisition, Technology and Logistics).

Ms. SANCHEZ. Can you successfully execute the increase in FY16 funding for GMD?

Admiral SYRING. Yes. The GMD program supports the President's Budget. The GMD program has an acquisition and contracting strategy to fully execute the increase in FY16 funding. Increased activity began in FY15 with the addition of \$159

million in FY14 Above Threshold Reprogramming funds for work to be performed in FY15.

Ms. SANCHEZ. Are we ahead of the threat now? Will we be ahead of the threat in 2020? And in 2025?

Admiral SYRING. Yes, we are staying ahead of the threat. The Ballistic Missile Defense System (BMDS) is keeping pace with the Intercontinental Ballistic Missile threat. Upgrades to the BMDS include the Long Range Discriminations Radar, the Ground-Based Midcourse Defense Redesigned Kill Vehicle and discrimination improvements that will allow the BMDS to continue to address threat capabilities in the 2020 and 2025 timeframes.

Ms. SANCHEZ. Understanding an East Coast missile defense site will cost \$4 billion (not counting manning and other Army costs), should we begin construction on such a site? What are your priorities to strengthen defense of the East Coast?

General MANN. We support the Missile Defense Agency's ongoing efforts to complete the environmental impact studies. These studies are a work in progress designed to streamline implementation should a decision occur in the future. While an East Coast site may increase capacity, battlespace, and geographic dispersion, the Warfighter's priority remains sensor architecture and ground-based interceptor reliability improvement.

Ms. SANCHEZ. What improvements can and should be made left-of-launch?

General MANN. It is my view that defeating tomorrow's threat will require the ability to combine active, passive, defensive, and offensive capabilities in a coherent strategy. Advancing our ability to strike left-of-launch is essential to outpacing the threat. Engaging the "archer" will require improved and persistent intelligence, surveillance, and reconnaissance (ISR) capabilities. We must also continue to pursue technological development efforts related to non-kinetic defensive capabilities, such as cyber warfare and directed energy.

Ms. SANCHEZ. Can you successfully execute the increase in FY16 funding for GMD?

General MANN. With input from the Warfighter, the Missile Defense Agency is responsible for executing the research, development, procurement, and fielding of the Ground-Based Midcourse Defense System. I defer to the Missile Defense Agency to respond regarding execution of Fiscal Year 2016 funding.

Ms. SANCHEZ. Are we ahead of the threat now? Will we be ahead of the threat in 2020? And in 2025?

General MANN. The Ballistic Missile Defense System is currently ahead of the threat and provides the capability to defend the homeland against a limited ballistic missile attack from either North Korea or Iran. We continue to partner with the Missile Defense Agency, the Combatant Commands, and the Services to ensure we address, in a fiscally responsible manner, future ballistic missile threats.

Ms. SANCHEZ. What studies are underway in response to the General Odierno/Admiral Greenert memo, what do they include, what are the timelines for the studies, do they cover costs and value provided, and do they cover all the questions posed in the memo?

General MANN. Late last year, the Chief of Staff Army and the Chief of Naval Operations sent a memorandum to the Secretary of Defense (SECDEF) suggesting a more holistic approach to the nation's Ballistic Missile Defense (BMD) strategy. In his response, the SECDEF outlined several ongoing studies, to include the Strategic Portfolio and the Patriot Global Posture Reviews, which will shape future requirements and inform out-year budget submissions. In addition to these reviews, an update to the Joint Capability Mix (JCM) Study is currently underway. Led by the Joint Staff, JCM IV will update previous capacity and capability missile defense balance assessments within the various combatant command theaters. JCM IV is scheduled to conclude later this year. These studies, along with continuous collaboration amongst the Joint Staff and the Services, will outline a refined approach that is operationally more effective than the current method of matching specific active defense platforms against the various ballistic missile threats. They will address cost aspects, outline enhanced capabilities, and set the Department and the Services on a joint path to achieve the most efficient and effective mix of homeland and regional missile defense priorities.

QUESTIONS SUBMITTED BY MR. COFFMAN

Mr. COFFMAN. Please provide your vision or road map of what enhancements/improvements you believe need to be made to the Ground based Missile Defense (GMD) system, including the ground based Interceptors, the sensors, the battle

management and the ground support systems, to meet future threats and also insure that the GMD system is reliable and viable into the 2030 time frame?

Admiral SYRING. [The information is classified and retained in the committee files.]

Mr. COFFMAN. How has GMD's changing funding and support over the years affected the program? In what ways would it help to have your general plan for the future of the GMD program formally endorsed by the Congress?

Admiral SYRING. GMD's changing funding and support over the years, especially the increase from fiscal year (FY) 2015 to FY 2016, has allowed the Missile Defense Agency (MDA) to meet its program objectives. Approval of MDA's President's Budget 2016 request is sufficient to improve our ability to provide additional capabilities to the warfighter for homeland defense.

The MDA's FY 2016 budget request will allow us to grow the number of currently deployed Ground Based Interceptor (GBI) fleet to 44 by the end of 2017, continue flight and system ground testing, and continue Redesigned Kill Vehicle (RKV) development. We will enhance the Stockpile Reliability Program, modify the current booster to increase survivability and hardness to support RKV integration, and expand the battle space to enable later GBI engagements. Additionally, MDA will upgrade the GMD ground system, and deploy upgraded GMD fire control software to enhance our ability to use land-based sensor discrimination data.

Mr. COFFMAN. Currently MDA is on a path towards the emplacement of 44 Ground Based Interceptors (GBIs) by the end of 2017 to fulfill current OSD policy to meet the growing threat from ballistic missile attack against the Homeland. Could you provide an update on where your agency is on meeting this requirement? Would additional funding be helpful to meeting this deadline?

Admiral SYRING. The Missile Defense Agency is on schedule to fulfill the requirement of 44 GBIs by 2017. Full support of the MDA's Fiscal Year 2016 Budget Request in 2016 and 2017 is required to meet the 44 GBIs by the 2017 timeframe.

Mr. COFFMAN. How would an East Coast based sensor enhance the capabilities of the GMD system?

Admiral SYRING. [The information is classified and retained in the committee files.]

Mr. COFFMAN. Currently the majority of the sensors that support the Ground based Missile Defense (GMD) system are ground based radars with the addition of the Sea Based X-Band Radar (SBX). What are the natural limitations of sea and ground-based sensors? What kinds of tracking and discrimination benefits would a space based sensor provide GMD?

Admiral SYRING. The range of surface-based microwave radars is limited by the curvature of the Earth to approximately 800 km for launch warning. The range of surface-based optical sensors is determined by the presence or absence of clouds.

Surface-based radars provide timely and accurate tracks of threat missiles when they have a direct line of sight to the objects they are tracking. A more distant target must be further above the Earth for a fixed surface sensor to maintain its track. Therefore, surface sensors (either maritime or terrestrial) must be within approximately 800 km of a threat launch to track a substantial portion of its boost phase (needed for warning), and within 1500–2500 km of the launch to provide weapon guidance for timely intercepts. Access to neutral or friendly bases within detection range of potential launch locations may not always be possible, and even where available will always be subject to host nation basing restrictions. Ship-based radars may require advance notice for pre-positioning.

Optical sensors offer greatly improved precision and accuracy relative to microwave radars. Unfortunately, optical sensors cannot see through clouds, which makes them impractical for viewing long range targets from surface locations in most parts of the world.

Space-based sensors can cover much more of the Earth's surface than terrestrial or maritime sensors. Operating above the weather also allows them to use optical sensors that expand the set of measurements available, increasing the reliability of threat warhead identification.

As potential adversaries develop increasingly complex threats it becomes necessary to view the target throughout its flight. The elevation of space platforms enables on-demand global coverage. Obtaining equivalent coverage of the U.S. from surface sensors would require substantially more sensors.

The assessment of space-based sensors to provide tracking and discrimination benefits to the Ballistic Missile Defense System, as well as a broad range of other alternatives, is being considered in the ongoing Ballistic Missile Defense Sensor Architecture Analysis of Alternatives.

Mr. COFFMAN. The committee understands that your agency has conducted some early work on lasers and airborne platforms for them. Can you share your general approach on such a system?

Admiral SYRING.

- Our vision is to shift the calculus of our potential adversaries by introducing directed energy into the BMDS architecture.
- Our long term goal is to use megawatt-class lasers on high altitude, long endurance UAV platforms to destroy ICBMs in the boost phase at long standoff ranges. To achieve this vision we must prove three key elements: laser power scaling to megawatt-class with high efficiency and excellent beam quality; demonstrating laser beam pointing stabilization much better than previous airborne lasers; and demonstration of a high altitude, long endurance aircraft to carry the laser and its beam pointing and control system.
- Our PB16 budget funds a structured plan that includes laser power scaling in the laboratory in parallel with reducing the risk of integrating a laser system onto an airborne platform and testing it in the field.
- In the 2025 time frame, our goal is to integrate a compact, efficient, high power laser into an unmanned aircraft capable of carrying that laser and destroying targets in the boost phase.

Mr. COFFMAN. What would be the benefits of such a system to our overall Homeland Defense system?

Admiral SYRING. The benefit of the additional layer of a Directed Energy system would potentially reduce the number of threat missiles in a raid from a known launch point.

Mr. COFFMAN. How quickly do you think that such a system could be ready for fielding?

Admiral SYRING. Fielding of an operational system depends on the combination of laser scaling success and availability of a sensible operational platform. MDA is pursuing the laser scaling effort which could produce an initial viable capability in the 2025 time frame. MDA will work with the Services to identify a suitable operational platform.

Mr. COFFMAN. Do you need additional funds to accomplish the implementation of such a system?

Admiral SYRING. MDA's PB16 request is adequate for the next phase of Directed Energy development. Funding for an operational system would be beyond the current FYDP.

Mr. COFFMAN. I am especially concerned about North Korea's progress on long-range missile development. Today, do you see any realistic alternative to fully leveraging and improving the GMD system for homeland defense against ICBM threats? Are you comfortable with the pace of GMD's improvements given the real threat to the U.S. homeland?

Admiral SYRING. Improving the Ground-based Midcourse Defense (GMD) system remains the most feasible, near-term alternative for defending the homeland against threats from North Korea. With the President's Budget (PB) for fiscal year 2016, we maintain our commitment to expand our inventory to 44 Ground Based Interceptors (GBI) by the end of 2017, continue flight and system ground testing, develop the Redesigned Kill Vehicle (RKV), enhance the Stockpile Reliability Program, modify the current booster to increase survivability and hardness, expand the battle space to enable later engagements, upgrade the ground system, and deploy fire control software that enhances our ability to use discrimination data.

Our overall vision is to shift the calculus of our potential adversaries by introducing directed energy into the Ballistic Missile Defense System architecture for boost phase defense, while also increasing GBI capability, capacity and ability to defeat advanced countermeasures using Multi-object Kill Vehicles. The agency is investing in laser and kill vehicle technologies to achieve this vision.

Our PB 2016 GMD programs and initiatives enable us to keep pace against the North Korean threat to the U.S. homeland.

Mr. COFFMAN. MDA's budget justification material regarding the Redesigned Kill Vehicle (RKV) program states that, in FY16, MDA will expend funds to "Initiate robust subsystem Design Verification Testing to include Electromagnetic Environmental Effects (E3), temperature, vibration and shock environments and Highly Accelerated Lifecycle testing to ensure increased reliability and producibility". Does MDA plan to use current year (FY15) funds to initiate these activities during FY15 or instead wait until FY16 to begin these activities? By beginning these activities in FY15, would MDA have greater overall confidence in the RKV design and reliability? Does MDA itself plan to conduct these subsystem Design Verification Testing measures or will MDA issue guidance to its suppliers requiring the implementation of such rigorous testing methodologies?

Admiral SYRING. Yes, MDA is using current year (FY15) funds to initiate RKV development and to purchase critical components to support design verification testing. These critical components will be delivered in FY16, and will include E3, temperature, vibration and shock environment testing. We will use FY16 funding to conduct highly accelerated lifecycle testing.

Beginning these activities in FY15, with the purchase of critical components, increases the overall confidence in RKV design and reliability. These activities are required to maintain the program's schedule.

While some unique government facilities will be used to conduct specialized sub-assembly and payload testing, the majority of our verification activities will be conducted by the Contractor in contractor owned and operated facilities. MDA will issue guidance to the suppliers requiring them to implement rigorous testing methodologies.

Mr. COFFMAN. The MDA Report to Congress entitled "HALT/HASS Testing of Ballistic Missile Defense Systems and Components", dated March 24, 2014, asserted that several on-going or planned missile defense programs, to include the AN/TPY-2 radar CUE CCA redesign, the Long-Range Discrimination Radar, and the GMD GBI EKV, would benefit from additional HALT/HASS work if funds were made available to do so. What is the status of MDA's plans to incorporate HALT and/or HASS testing on these programs? Does MDA plan to expend funds in FY15 or FY16 for these activities? If so, please provide a detailed breakout of where and how such funds will be allocated for this purpose (by year and by PE). If MDA has no such plans, please explain why this is the case in light of the statements included in the March 24, 2014 report regarding the potential value of implementing HALT/HASS on these programs.

Admiral SYRING. In November 2014, the Missile Defense Agency (MDA) implemented a highly accelerated life test (HALT) and highly accelerated stress screen (HASS) policy for all MDA programs. The policy applies to qualification of all new development efforts and to redesign efforts that require a delta qualification for an existing product baseline.

MDA will initiate HALT testing in the GMD program in FY15, using FY15 funds. GMD plans to spend \$5.9 million (M) for Configuration 2 (C2) Boost Vehicle Electronics Reliability Demonstration testing in FY16, which includes the purchase of hardware and test planning activities. After the reliability demonstration, MDA can reuse the C2 components for HALT activities in FY17.

In addition, as part of the Stockpile Reliability Program, MDA is pulling a Capability Enhancement-II (CE-II)/Configuration-I GBI from the fleet in FY15. GMD plans to spend \$3M in FY15 and \$11.7M in FY16 to support this effort, which includes reverse flow testing, reliability demonstration and HALT activities on the vehicle's electronic components. The table below provides the funds allocation breakout (by year and program element) for MDA's efforts to incorporate HALT/HASS testing.

Also, HALT is included as a requirement in the statement of work for the GMD RKV, the Long Range Discrimination Radar, and the AN/TPY-2 radar AEU T1 Transformer contract request for proposal packages. HALT will be assessed for appropriateness as part of their contract negotiations.

Mr. COFFMAN. Has MDA considered the potential benefits of implementing HALT and/or HASS on possible future MDA programs, for example, the Space-based Kill Assessment project or the THAAD Follow-on Program?

Admiral SYRING. Yes, the Missile Defense Agency (MDA) considered the potential benefits of implementing the highly accelerated life test and highly accelerated stress screen (HALT/HASS) on possible future MDA programs. MDA Policy Memorandum #77, (November 12, 2014), requires evaluation of HALT/HASS for new development and redesign efforts. For potential new programs such as a Terminal High Altitude Area Defense (THAAD) follow-on effort, a cost/benefit effort will be performed for the implementation of HALT. It will be assessed for appropriateness as part of contract negotiations. The Space-based Kill Assessment (SKA) project started six months before MDA's HALT/HASS policy was established, so contractual documentation did not specifically include HALT/HASS. However, vigorous screening and testing similar to the objectives of HALT/HASS were conducted on SKA as part of the space flight qualification requirements. SKA is hosted on a commercial spacecraft and was qualified against European Space Agency and National Aeronautics and Space Administration stress and parts screening standards.

QUESTIONS SUBMITTED BY MR. GARAMENDI

Mr. GARAMENDI. What is the reliability of the GBIs now? And projected for 2020 and 2025?

Admiral SYRING. [The information is classified and retained in the committee files.]

Mr. GARAMENDI. How confident are you in the reliability of the CE-I? And in the CE-II?

Admiral SYRING. [The information is classified and retained in the committee files.]

