DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2014 AND THE FUTURE YEARS DEFENSE PROGRAM

THURSDAY, MAY 9, 2013

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

BALLISTIC MISSILE DEFENSE POLICIES AND PROGRAMS

The subcommittee met, pursuant to notice, at 2:32 p.m. in room SR–222, Russell Senate Office Building, Senator Mark Udall (chairman of the subcommittee) presiding.

Committee members present: Senators Udall, Donnelly, King, Fischer, and Lee.

Committee staff member present: Peter K. Levine, staff director.

Majority staff member present: Richard W. Fieldhouse, professional staff member.

Minority staff member present: Robert M. Soofer, professional staff member.

Staff assistant present: Lauren M. Gillis.

Committee members' assistants present: Casey Howard, assistant to Senator Udall; Marta McLellan Ross, assistant to Senator Donnelly; Lenwood Landrum, assistant to Senator Sessions; Peter Schirtzinger, assistant to Senator Fischer; and Peter Blair, assistant to Senator Lee.

OPENING STATEMENT OF SENATOR MARK UDALL, CHAIRMAN

Senator UDALL. The Subcommittee on Strategic Forces will come to order. Good afternoon. I will open with a short statement. Senator Fischer is here; we'll turn to her; and then we will look forward to hearing what our witnesses have to say.

We are here today to hear testimony on the ballistic missile defense programs and policies in the President's budget request for fiscal year 2014 and related matters. This has been a busy year for missile defense. On March 15, Defense Secretary Hagel announced a new series of missile defense plans for the Homeland. These included deployment of 14 additional ground-based interceptors (GBIs) in Alaska, deployment of an additional missile defense radar in Japan, and termination of the development program for the Block 2B version of the Standard Missile-3 (SM–3) interceptor.

The Department of Defense (DOD) has also taken a number of prudent and timely missile defense actions in response to the bellicose rhetoric and threats from North Korea, including the deployment of a Terminal High Altitude Area Defense (THAAD) system battery to Guam, the deployment of Aegis missile defense ships off the Korean Peninsula, and deployment of the sea-based X-band missile defense radar into the Pacific Ocean.

We will want to learn today about DOD's programs, policies, requirements, and capabilities to defend the Homeland against current and potential future missile threats from North Korea and Iran, and to defend our forward-deployed forces, our allies and friends against existing and growing regional missile threats from those nations.

Our missile defenses must be operationally effective, cost-effective, and affordable. This latter point is especially important at a time when Congress is imposing harmful funding reductions across government programs, including missile defenses. In this regard, our missile defense testing programs are critical to understanding and demonstrating the capabilities of our systems and giving us confidence that they will work as intended. Many tests are coming up this year and we are keen to learn of the plans and progress in correcting the problems we encountered in earlier flight tests with the kill vehicle for the GBI. We also want to understand if our missile defense acquisition programs and practices can provide improved capability with reduced technical, schedule, and cost risk.

To help us understand these complex issues, we have five expert witnesses with us today. The Honorable Madelyn Creedon is the Assistant Secretary of Defense for Global Strategic Affairs and is responsible for policy and strategy matters relating to ballistic missile defense, among many other issues. Consequently, she is a frequent witness before the committee, and we welcome her back to the subcommittee.

The Honorable Michael Gilmore is the Director of Operational Test and Evaluation at DOD. He plays a crucial role as an independent adviser to DOD and Congress on the adequacy and results of our operational testing and on the performance of our weapons systems, including missile defense systems.

Lieutenant General Richard Formica is the Commander of U.S. Army Space and Missile Defense Command and also the Commander of the Joint Functional Component Command for Integrated Missile Defense under U.S. Strategic Command (STRATCOM). We welcome you back before the subcommittee. I understand you're planning to retire this summer, so I want to offer our special thanks for your many years of dedicated service to the Nation and to the Army.

Vice Admiral Jim Syring is the Director of the Missile Defense Agency (MDA), which is responsible for designing, developing, integrating, and building most of our Nation's missile defense capability, certainly among the most complex weapons systems we have ever developed. This is his first appearance before the subcommittee as the Director.

Ms. Cristina Chaplain is the Director of Acquisition and Sourcing Management at the Government Accountability Office (GAO) and

leads their annual effort to review our missile defense acquisition programs, among others.

We welcome you all to the subcommittee and we welcome you, Ms. Chaplain, back to the subcommittee. In the interest of time, I would ask each of you to make very short opening comments, no more than 2 minutes, before we begin our questions. We'd be happy, of course, to include your prepared statements in the record.

Before turning to you, I did want to ask Senator Fischer, who's serving as our ranking member pro tem today, for any opening comments she may wish to make.

STATEMENT OF SENATOR DEB FISCHER

Senator FISCHER. Thank you, Mr. Chairman. It is a pleasure to be with you once again today. I will forego making any opening statement so that we have more time to hear from our expert witnesses and be able to ask them questions. But I would ask that my opening comments be included in the record.

[The prepared statement of Senator Fischer follows:]

PREPARED STATEMENT BY SENATOR DEB FISCHER

I would like to welcome the witnesses, and especially Admiral James Syring, who is appearing before this subcommittee for the first time since his appointment as Director of the Missile Defense Agency last November.

On March 15, Secretary Hagel announced the deployment of an additional 14 ground-based interceptors at Fort Greely, AK "to stay ahead of the long-range ballistic missile threat posed by North Korea and Iran." This is a prudent step and will provide the President additional flexibility to deal with threats to the United States and its vital interests. As U.S. Northern Command Commander, General Jacoby, told Congress, 'we must not allow regional actors, such as North Korea, to hold U.S. policy hostage by making our citizens vulnerable to a nuclear intercontinental ballistic missile attack.

In fact, Secretary Hagel's announcement is only the latest in a series of actions taken by nations across the globe to counter missile defense threats to their territory and populations: Israel deployed the Iron Dome to counter rockets launched from Gaza; Turkish leaders requested Patriot batteries to protect against Syrian missiles; and we, along with our Japanese and South Korean allies, recently activated ground- and sea-based missile defense systems in response to North Korea. These actions illustrate the important and stabilizing role played by missile defense.

I am, however, concerned by the termination of the SM–3 block IIB missile, which was announced alongside the decision to purchase the 14 additional ground-based interceptors. The SM–3 block IIB was intended to be deployed in Poland for the protection of the United States from Iranian attack. Our current defensive systems, as General Kehler, Commander of U.S. Strategic Command, testified to the committee earlier this year, 'are not in the most optimum posture to do that.' The Missile Defense Agency is evaluating three locations in the continental United States for a future missile defense site to address this need, and is also required by the National Defense Authorization Act for Fiscal Year 2013 to develop a contingency plan for such an additional deployment.

General Jacoby recently testified before the House Armed Services Committee that "a third site, wherever the decision is to build a third site, would give me better weapons access, increased ground-based interceptor inventory and allow us the battlespace to more optimize our defense against future threats from Iran and North Korea." I look forward to hearing Admiral Syring's views on the value of an additional homeland missile defense site, as well as his assessment of its technical feasibility and cost.

To conclude, I would note that while Secretary Hagel's announcement was positive, that good news was mitigated by the president's plan to spend $1.7 billion less on missile defense over the next 5 years. This reduction in funding, which comes on top of previous cut-backs, will make it increasingly difficult for Admiral Syring to carry out the President's new direction while also maintaining ongoing programs to develop and deploy missile defenses for our deployed forces and allies.

I look forward to hearing our witnesses. Thank you, Mr. Chairman.

Senator UDALL. Without objection, that will be done.

Let's go right to the—Madam Secretary, thank you for being here and the floor is yours.

STATEMENT OF HON. MADELYN R. CREEDON, ASSISTANT SECRETARY OF DEFENSE FOR GLOBAL STRATEGIC AFFAIRS, DEPARTMENT OF DEFENSE

Ms. CREEDON. Thank you very much. Senator Udall, Senator Fischer, it's a pleasure to be here today.

I would like to turn to and highlight some of the progress that we have made on some key policy priorities, particularly the recent decisions to strengthen Homeland defense. The U.S. Homeland is currently protected against potential limited intercontinental ballistic missile (ICBM) attacks from North Korea and Iran by the ground-based midcourse defense (GMD) system. As stated in the 2010 ballistic missile defense review, we are committed to maintaining an advantageous position vis-a-vis those and other threats.

To do so requires continued improvement to the GMD system, including performance enhancements to the GBIs and the deployment of new sensors, along with upgrades to the command and control networks. To stay ahead of the threat, as we have said we would do, in this case the growing threat from North Korea, President Obama recently decided to strengthen the U.S. Homeland missile defense posture. The decision was announced by Secretary of Defense Hagel on March 15 and DOD is now in the process of implementing that decision. This decision also recognized the delay to the SM–3 2B program, largely due to the fiscal year 2012 funding cuts and to the fiscal year 2013 continuing resolution.

As Secretary Hagel announced, DOD will add 14 interceptors to the GMD system, for a total of 44 deployed GBIs by 2017, and deploy a second TPY–2 radar to Japan. Deployment of the second radar to Japan will provide improved early warning and tracking of any missile launched from North Korea at the United States or Japan and will improve both homeland and regional defenses.

We had planned to deploy the SM–3 2B interceptor for the defense of the United States from land-based sites in Europe, but the deployment schedule had been delayed to at least 2022 due to cuts to the requested level of funding for the interceptor and the continuing resolution. As a result, we decided to shift resources from this program to the GBI program to cover the cost of the 14 additional GBIs, as well as to the technology development line to develop new advanced kill vehicle and booster technologies. These decisions will allow us to improve our defense against any ICBMs from Iran sooner than we otherwise would have, while also providing additional protection against the North Korean threat.

To be clear, there is no money in the fiscal year 2014 budget request for the SM–3 2B program and we are no longer planning for phase 4 of the European Phased Adaptive Approach (EPAA). As a result of much discussion, our allies understand and accept this SM–3 2B decision, and we have reinforced with them that our commitment to phases 1 through 3 of the EPAA remains ironclad.

We have also worked with other regional allies and partners in the Asia-Pacific and the Middle East to improve cooperation and enhance regional missile defenses. We have deployed a THAAD to

Guam as a precautionary move to strengthen our defense posture against the growing North Korean regional ballistic missile threat, and the deployment strengthens our defense capabilities for American forces and citizens in the U.S. Territory of Guam. This deployment is an example of the benefit derived from our investments in mobile missile defense systems, which can be deployed worldwide as required.

We also continue to work with our Gulf Cooperation Council partners on regional missile defense cooperation, and, of course, we continue to support Israel and its missile defense systems, including the Arrow codevelopment program.

The President's budget request for fiscal year 2014 reflects DOD's goal of retaining the flexibility to adjust and enhance our defenses as the threat and as technologies evolve. Our most vital security commitments, the defense of the United States, and our protection of our allies and partners and our forces around the world, demand nothing less.

Thank you and I look forward to your questions.

[The prepared statement of Ms. Creedon follows:]

PREPARED STATEMENT BY HON. MADELYN R. CREEDON

INTRODUCTION

Chairman Udall, Ranking Member Sessions, and members of the subcommittee, thank you for the opportunity to testify in support of the Department's fiscal year 2014 budget request for missile defense. Ballistic missile defense is a critical capability for the United States with important ramifications for several of the Department's mission areas.

The President's budget requests $9.2 billion in fiscal year 2014 and $45.7 billion over the Future Years Defense Plan to develop and deploy missile defense capabilities that protect the U.S. Homeland and strengthen regional missile defenses. The administration remains committed to developing proven and cost-effective missile defense capabilities through the phased adaptive approach to regional missile defense. This approach puts emphasis on a flexible military toolkit with forces that are mobile and scalable so that they underwrite deterrence in peacetime, but can be surged in crisis to meet defense requirements.

I will begin with a discussion of the ballistic missile threat, and then focus on our progress on three key policy priorities: sustaining a strong homeland defense, strengthening regional missile defense, and fostering increased international cooperation and participation.

BALLISTIC MISSILE THREAT

We continue to see well-established trends associated with ballistic missile development, including larger numbers, greater ranges, and more advanced systems. There is also evidence that such weapons are becoming a convention of contemporary warfare, as evidenced most recently by the use of ballistic missiles in the crisis in Syria.

Iran

The Intelligence Community (IC) assesses that Iran is developing nuclear capabilities to enhance its security, prestige, and regional influence and give it the ability to develop nuclear weapons, should a decision be made to do so. Although we do not know if Iran will eventually decide to build nuclear weapons, Iran has developed technical expertise in a number of areas—including uranium enrichment, nuclear reactors, and ballistic missiles—from which it could draw if it decided to build missile-deliverable nuclear weapons.

The IC assesses that Iran would likely choose a ballistic missile as its preferred method of delivering a nuclear weapon, if one is ever fielded. Iran has demonstrated an ability to launch small satellites, and has worked to develop larger space-launch vehicles and longer-range missiles.

Iran already has the largest inventory of ballistic missiles in the Middle East, and it is expanding the scale, reach, and sophistication of its arsenal. Iran's growing ballistic missile inventory and its domestic production of anti-ship cruise missiles (ASCM) and development of its first long-range, land-attack cruise missile provide capabilities to enhance its power projection.

Syria

While Syria does not pose a ballistic missile threat to the U.S. Homeland, the Asad regime does possess short-range ballistic missiles, and has shown a willingness to use them repeatedly against the Free Syrian Army. Additionally, the IC assesses that Syria has an active chemical warfare (CW) program and maintains a stockpile of sulfur mustard, sarin, and VX nerve agent; along with a stockpile of munitions—including missiles, aerial bombs, and possibly artillery rockets—that can be used to deliver CW agents.

North Korea

North Korea's nuclear weapons and missile programs pose a serious threat to the United States and to the security environment in East Asia, a region with some of the world's largest populations, militaries, and economies.

North Korea's long-range ballistic missile capabilities have advanced rapidly during the last year. The increased pace of this emerging threat required the United States to adapt its homeland defense capabilities. North Korea displayed what appeared to be a road-mobile, intercontinental ballistic missile (ICBM) in April 2012, which it may have taken initial steps to deploy, and announced in February 2013 that it had conducted its third nuclear test. North Korea also used its Unha-3, based on the Taepo Dong-2 ICBM, to put a satellite in orbit in December 2012, thus demonstrating long-range missile technology, and may conduct additional missile tests in the near future.

These programs demonstrate North Korea's commitment to develop long-range missile technology that could pose a direct threat to the United States. 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

HOMELAND DEFENSE

The U.S. Homeland is currently protected against potential limited ICBM attacks from States like North Korea and Iran by the Ground-based Midcourse Defense (GMD) system. This system consists of Ground-Based Interceptors (GBIs), early-warning radars, sea-based radar systems, and a sophisticated command and control architecture.

We are committed to maintaining an advantageous position vis-a-vis the threats from North Korea and Iran. This requires continued improvement to the GMD system, including enhanced performance by the GBIs and the deployment of new sensors.

We have also developed and maintained a hedge strategy within our GMD program to address possible delays in the development of new missile defense systems and the possibility that the projected ICBM threat could begin to emerge faster or in larger numbers. This desire to maintain a hedge led to decisions in previous budgets to complete eight additional silos in Missile Field 2 and maintain six silos originally slated for decommissioning in mothball status in Missile Field 1 at Fort Greely, AK. Additionally, we continued the development of the two-stage GBI.

The steps we have taken in the fiscal year 2014 budget request will help to ensure that the United States possesses the capability to counter the projected threat for the foreseeable future. The budget maintains funding for ongoing efforts to improve the GMD system, such as:

- a GBI reliability improvement program, which includes the rigorous testing of the Capability Enhancement-II version of the GBI kill vehicle;
- upgrades to the Command, Control, Battle Management, and Communications system;
- emplacement of an additional In-Flight Interceptor Communications System Data Terminal on the U.S. east coast by 2015; and
- upgrades to the Early Warning Radars at Clear, AK, by 2017, and Cape Cod, MA, by 2018.

As a result of the increasing threat from North Korea and delays due to funding cuts to the SM–3 IIB program, the President decided to exercise the hedge options described below. DOD is implementing the President's decision to strengthen the U.S. Homeland missile defense posture, as announced by Secretary of Defense Hagel on March 15, 2013.

First, DOD will deploy eight additional GBIs in the existing silos in Missile Field 2 in Fort Greely, AK. Second, DOD will refurbish and harden the six mothballed silos in Missile Field 1 at Fort Greely and then emplace six additional GBIs in the refurbished silos. The combination of these steps will add 14 interceptors to the GMD system for a total of 44 deployed GBIs defending the U.S. Homeland. When these 14 additional GBIs are deployed in 2017, we will have increased the number of GBIs by nearly 50 percent.

Third, DOD will evaluate at least three locations, and prepare environmental impact statements (EIS), for a potential additional GBI site in the continental United States. Although the administration has not decided to proceed with an additional GBI site, if such a decision were made in the future, doing this work now would shorten the timeline for construction.

Fourth, in order to maintain a robust testing program and sufficient operational spares, DOD will procure 14 additional GBIs to replace those test and spare GBIs that will now be deployed in Fort Greely, AK.

Fifth, with the support of the Japanese Government, the United States will deploy an additional AN/TPY–2 radar in Japan. This will provide improved early warning and tracking of any missile launched from North Korea at the United States, and improve regional defenses, including the protection of Japan.

Sixth, DOD is restructuring the Standard Missile (SM)–3 IIB program into a technology development program focusing on common kill vehicle technology for both the GBI and the SM–3 family of interceptors. Focusing on next generation kill vehicle technology development will improve our ability to address emerging threats and thus ensure protection of the United States, our allies and partners, and our deployed forces overseas. By consolidating future kill vehicle technology development efforts, MDA will work with industry primes and suppliers to define the best technical approach for a modular, open architecture that yields improvements for reliability and performance at a lower cost.

We had planned to deploy the SM–3 IIB for the defense of the United States from Aegis Ashore sites in Europe. The timeline for deploying this program, however, had been delayed to at least 2022 due to funding reductions from the requested amount. As a result, we have decided to shift resources from this program to fund the additional GBIs, as well as new advanced kill vehicle technology. This step will allow us to improve our defense against missiles from Iran sooner than we otherwise would have, while also providing additional protection against the North Korean threat. As a result, no money is being requested in fiscal year 2014 for the SM–3 IIB program.

DOD also determined that the continued development of the Precision Tracking Space System (PTSS) was too high-risk in terms of budget and schedule, and is terminating the program. We will continue to evaluate options to determine the most effective way to meet our missile defense sensor requirements.

REGIONAL MISSILE DEFENSE

DOD's budget request for fiscal year 2014 continues to implement regional approaches that are tailored to the unique deterrence and defense requirements of Europe, the Middle East, and Asia-Pacific regions. These regions vary considerably in their geography, history, and character of the threat faced, and in the military-to-military relationships on which we seek to build cooperative missile defenses. Because the demand for missile defense assets within each region over the next decade will exceed supply, the United States is developing and fielding capabilities that are mobile and capable of being redeployed to different locations as necessary.

Missile defense is an integral part of a comprehensive U.S. effort to strengthen regional deterrence architectures, and plays a central role in the strategic guidance DOD released in January 2012.

Phased Adaptive Approach Implementation: Europe

The elements of the first phase of the European Phased Adaptive Approach (EPAA) are in place. We have maintained a sea-based missile defense presence in the region since March 2011. An AN/TPY–2 radar was deployed to the Turkish military base at Kürecik in 2011. Additionally, associated command and control capabilities, such as the U.S. Air Operations Center at Ramstein Air Base, Germany, are now in operation.

In Phase 2, the architecture will be expanded with a land-based SM–3 site in Romania, and with an upgraded Aegis Ballistic Missile Defense (BMD) Weapons System and SM–3 Block IB interceptors that will be deployed on land and at sea. The Ballistic Missile Defense Agreement with Romania entered into force in December 2011, so the groundwork has been set for the site to become operational in the 2015 timeframe. Ground breaking on that site will occur later this year.

We have also taken steps to meet the requirement in the EPAA for sea-based BMD capabilities. In 2011, Spain agreed to host four U.S. Aegis destroyers at the existing naval facility at Rota. These multi-mission ships will support the EPAA, as well as other U.S. European Command and NATO maritime missions. The first two ships are scheduled to arrive in 2014, and the final two ships will arrive in 2015.

In Phase 3, a second land-based SM–3 site will be deployed in Poland in the 2018 timeframe. The more capable SM–3 Block IIA interceptors will be deployed on land and at sea, extending coverage to all NATO allies in Europe. The ballistic missile defense agreement with Poland entered into force in September 2011.

The restructuring of the SM–3 IIB program to focus on the development of common kill vehicle technology means that we are no longer planning for Phase 4 of the EPAA, the primary purpose of which had been to augment missile defense protection of the United States from a site in Europe. As Secretary Hagel emphasized in his announcement in March, our commitment to NATO missile defense "remains ironclad" as demonstrated by our strong support for the BMD capabilities either already deployed, or being developed for Phases 1 through 3 of the EPAA. Phase 3 will still be capable of providing coverage of all European NATO territory. We have discussed this decision with our NATO allies, and the initial reaction has been positive.

NATO Missile Defense Implementation

As we continue to implement the EPAA, we are also supporting the President's commitment to contribute the EPAA capabilities to NATO missile defense. We are working in close collaboration with our NATO allies to develop an advanced network of sensors and interceptors—on land and at sea—to protect NATO territory.

This administration has made the missile defense protection of Europe a central feature of transatlantic security policy. At the 2010 NATO Summit in Lisbon, Portugal, President Obama and his fellow NATO Heads of State and Government approved a new Strategic Concept, which took the historic step of committing to the defense of European NATO populations and territory against the growing threat of ballistic missiles. At the 2012 NATO Summit in Chicago, the assembled leaders announced that the Alliance had achieved an interim BMD capability—in other words, an operationally meaningful ballistic missile defense capability.

The United States and our NATO allies have worked together to make significant progress on the development of collaborative, networked missile defense systems. Vital command-and-control capabilities for missile defense are now operational. The NATO command-and-control backbone, the Active Layered Theater Ballistic Missile Defense System, has reached an interim operational capability, and will evolve toward full capability between 2018 and 2020.

We continue to carry out exercises designed to hone our Alliance missile defense capabilities. A key missile defense exercise involving NATO is Nimble Titan, a biennial, global campaign. The Nimble Titan 12 exercise included 14 participant nations—including the United States, many NATO countries, Japan, Australia, and the Republic of Korea.

As we begin planning for Nible Titan 14, which begins later this year and will carry into 2014, 21 nations have already signed on to participate. Nimble Titan 14 will include tabletop exercises involving threats in Northeast Asia and Southwest Asia, as well as a capstone event involving all participants on a global scale.

Phased Adaptive Approaches in Other Regions

We are also working to implement the principles of the phased adaptive approach in the Asia-Pacific region and the Middle East region, building on the existing foundations of U.S. defense cooperation in these regions. These approaches must be tailored to the unique mix of threat and geography in each region. In the Asia-Pacific region, the security environment is largely maritime in character, with vast distances between some of the states that make up the region, requiring both maritime assets and defenses against longer-range missiles. The Middle East region is far more compact, and the threat comes from missiles of short- and medium-range. The footprint of U.S. military presence is different in each region, and will evolve in different ways over the coming decade. The potential threat to the U.S. Homeland from regional actors varies, and the role that regional defenses plays in protection of the United States and our deployed forces and assets will change as well.

These regional approaches to ballistic missile defense should allow stronger partnerships with our allies and partners in meeting emerging security challenges, and provide opportunities to build partner capacity.

INTERNATIONAL COOPERATION

Europe

The United States encourages continued allied contributions to NATO missile defense. EPAA host nations (Poland, Romania, Spain, and Turkey) will provide the basing rights and external security for the facilities where EPAA assets are located. The Netherlands has committed to spend up to 250 million Euro to upgrade the SMART–L radars on four of their frigates so they can contribute to NATO BMD in the 2018 timeframe. The Netherlands and Germany have also committed Patriot PAC–3 systems to NATO missile defense, including through the ongoing NATO deployment in defense of Turkey. France and Italy intend to contribute the SAMP/T air and missile defense system, scheduled to become operational in 2013, to NATO BMD. France is also planning to provide its Spirale satellite detection system and a long-range radar. Looking to the future, the United States will continue to encourage its NATO allies to do even more to cooperate and invest in missile defense. Several allies have modern surface combatant ships that could be upgraded with a BMD sensor or interceptor capability. A number of NATO allies also have proposed concepts for a multinational interceptor "pool" concept, whereby allies collectively purchase interceptors such as the SM–3 to support NATO missile defense. Additionally, some allies are considering the purchase of Patriot PAC–3.

Asia-Pacific

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

The Republic of Korea obviously has an immediate, proximate stake in preventing missile strikes from the North. We have worked very closely with the ROK to ensure that we maintain the capacity and interoperability to do just that. The United States deploys PAC–3 batteries in South Korea to defend U.S. and South Korean forces.

In addition, the ROK is taking steps to enhance its own air and missile defense systems, which include sea- and land-based sensors and Patriot PAC–2 batteries.

We have been consulting closely with the ROK about how it can upgrade its missile defense capabilities. Enhanced intelligence, surveillance, and reconnaissance through the potential South Korean purchase of Global Hawk would contribute to a more robust posture. We are mutually committed to sustain and strengthen protection against the North Korean missile threat.

Japan has acquired 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. In addition, Japan is a critical international partner for BMD development. One of our most significant cooperative efforts with Japan is the co-development of an advanced version of the SM–3 interceptor, the SM–3 Block IIA. In addition, we have deployed an AN/ TPY–2 radar—which provides early warning and tracking—to Japan, and, as previously mentioned, we plan to deploy a second AN/TPY–2 to Japan.

With regard to Australia, we signed a memorandum of agreement on missile defense cooperation in 2004, and have formed a close partnership on research and development—most notably with regard to sensors. In addition, Australia is involved in one of our two trilateral discussions on missile defense in the Pacific involving the United States, Australia, and Japan; the other is with the United States, the Republic of Korea, and Japan.

These trilateral discussions are part of our efforts to expand international missile defense cooperation, strengthen regional security architectures, and build partner capacity. We have already seen the value of these multilateral approaches. For example, Japan, the Republic of Korea, and the United States successfully tracked two near-simultaneous launches of ballistic-missile targets as part of the multilateral Pacific Dragon exercise last summer. In December 2012, we cooperated very closely in tracking the North Korean Unha-3 space launch.

Going forward, we will continue to emphasize the importance of developing a regional ballistic missile defense system that includes the sharing of sensor data among allies.

Middle East

The United States maintains an exceptionally strong defense relationship with Israel, including on missile defense, which has resulted in one of the most comprehensive missile defense architectures in the world. 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.

The United States is also working with a number of Gulf Cooperation Council (GCC) States on missile defense, including supporting the purchase of missile defense systems through the Foreign Military Sales program. For example, the United Arab Emirates is procuring the Terminal High Altitude Area Defense system. This is in addition to the UAE's earlier purchase of Patriot systems. These capabilities will significantly enhance the UAE's defense against ballistic missile attack.

This past year, U.S. Air Force Central Command initiated 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.

Finally, at the inaugural U.S.-GCC Strategic Cooperation Forum in Riyadh, GCC foreign ministers and then-Secretary of State Clinton highlighted the threat that ballistic missiles pose against critical military and civilian infrastructure. One result of these high-level talks was that the ministers agreed on the need to deepen U.S.-GCC BMD cooperation which they see as an essential element of their effort to promote peace and stability in the region.

Russia

The United States continues to seek cooperation with Russia on missile defense, both bilaterally and with our allies through the NATO-Russia Council. We are pursuing this cooperation because it would be in the security interests of all parties and could strengthen the defensive capabilities of both NATO and Russia. Allies embraced such cooperation with the hope of advancing broader strategic partnership with Russia. The United States has pursued missile defense cooperation with Russia with the clear understanding that we will not accept constraints on our missile defense systems, we will implement the EPAA, and Russia will not have command and control over NATO ballistic missile defense efforts. NATO would be responsible for the defense of NATO, and Russia would be responsible for the defense of Russia.

The United States has kept Congress and our allies informed about our efforts with Russia on missile defense cooperation, which have included the proposal to establish missile defense cooperation centers in Europe. The United States has been open and transparent with Russia about our plans for European missile defenses, and explained in detail why U.S. missile defense systems in Europe will not negate the Russian strategic nuclear deterrent.

Although we have had no breakthroughs, the administration remains committed to pursuing substantive missile defense cooperation with Russia because it remains in our security interests to do so.

CONCLUSION

The ballistic missile threat—to the United States, to our allies and partners, and to our forces overseas—is evolving, and so we must adapt our responses to mitigate this threat.

I have touched upon a number of policies that we and our allies have pursued to address and counter this threat. We have had some very significant successes over the last several years, but this administration has emphasized from the beginning that we cannot afford to stand still. To the contrary, we need to re-evaluate the threat continually and adapt as necessary. The President's budget request for fiscal year 2014 reflects DOD's goals of retaining the flexibility to adjust, and to enhance our defenses as the threat and as technologies evolve. Our most vital security commitments—the defense of the United States and the protection of our allies and partners and our forces around the world—demand nothing less.

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

Senator UDALL. Thank you, Secretary Creedon.
Dr. Gilmore.

STATEMENT OF HON. J. MICHAEL GILMORE, DIRECTOR, OPERATIONAL TEST AND EVALUATION, DEPARTMENT OF DEFENSE

Dr. GILMORE. Mr. Chairman, Senator Fischer, members of the committee, I just want to emphasize briefly that we are incorporating increasing amounts of operational realism and therefore complexity in the missile defense tests that we do. That's important so that everyone involved from the President on down to the combatant commanders and the people who operate the system can understand what it truly can and cannot do.

The most recent example of that was Flight Test Integrated-01, conducted late last year. That involved the simultaneous, nearly simultaneous intercept by Aegis, THAAD, and Patriot of both ballistic missile and air-breathing targets. There was extensive participation by the combatant commands in that test and they used it to develop tactics, techniques, and procedures that are being put into real use in U.S. Central Command today.

We'll follow that up with the first multi-system operational test, Flight Test Operational-01 (FTO–01), later this year, involving both Aegis and THAAD. We're going to do the same thing with the ground-based missile defense system. Given what we learned recently with the successful non-intercept test, we will probably conduct early in fiscal year 2014 an intercept test using the Capability Enhancement II kill vehicle, which is the one that had the failure a couple of years ago to intercept. We're also going to do an intercept test using the Capability Enhancement I kill vehicle, which will comprise the majority of the fleet for some time, within about a month.

Thereafter, in fourth quarter of fiscal year 2015 we will conduct a test in GMD of a true ICBM-class target, and we will follow that up with tests incorporating increasing realism, including realistic countermeasures, salvo engagements, multiple simultaneous engagements.

So I strongly support the deliberate, rigorous test program that Admiral Syring and the MDA are executing. That program allows the time needed to do rigorous pre- and post-test analysis. It enables us to learn and correct problems. In fact, although it may sound somewhat ironic and counterintuitive, to me the value of the test program is demonstrated most by the failures that have occurred, because those failures that have occurred within the last couple of years for both Aegis, Standard Missile, and the GBI, would not have been discovered if not for the test program. Modeling and simulation would not have uncovered those problems.

Thank you and I will be happy to answer your questions.

[The prepared statement of Dr. Gilmore follows:]

PREPARED STATEMENT BY DR. J. MICHAEL GILMORE

Chairman Udall, Senator Sessions, distinguished members of the subcommittee, thank you for the opportunity to discuss missile defense test planning, processes, and programs, including my assessment of the Ballistic Missile Defense System (BMDS).

Over the last year, Aegis Ballistic Missile Defense (BMD), Patriot, and Terminal High-Altitude Area Defense (THAAD) each demonstrated additional progress toward Short-Range Ballistic Missile (SRBM) threat class capability, even though Aegis BMD suffered a Standard Missile-3 Block IA interceptor failure during a flight test late in the year. For the first time, THAAD demonstrated progress toward Medium-Range Ballistic Missile (MRBM) threat class capability when it successfully destroyed a medium-range air-launched target. Ground-based Midcourse Defense (GMD) did not conduct any intercept flight testing during the period and did not demonstrate progress toward Intermediate-Range Ballistic Missile (IRBM) or Intercontinental Ballistic Missile (ICBM) threat class capability. However, GMD did conduct an interceptor only flight test in January 2013 as part of its return to intercept effort. That test demonstrated the potential for selected design changes made to the Capability Enhancement II kill vehicle to correct problems that caused previous test failures. Command, Control, Battle Management, and Communications (C2BMC) demonstrated the capability to control two operationally-deployed AN/TPY–2 radars in Forward-Based Mode (FBM), using operational communications architectures; personnel; and tactics, techniques, and procedures.

The Missile Defense Agency (MDA) element flight testing included three Aegis BMD intercept tests and one THAAD operational flight test. U.S. Army testing of Patriot was more extensive, including an operational test that was conducted from May 2012 to January 2013. Aegis BMD completed the first two successful intercepts of SRBM targets by the new Standard Missile-3 Block IB interceptor using software build 4.0.1. In February 2013, Aegis BMD conducted the first engagement using remote data from the Space Tracking and Surveillance System. THAAD successfully completed its Initial Operational Test and Evaluation (IOT&E) by simultaneously destroying a foreign military acquisition SRBM and an MDA-developed target with MRBM characteristics flying a short-range trajectory. Patriot successfully completed five different intercept flight tests against SRBMs using a variety of Patriot interceptors including the new Missile Segment Enhancement interceptor under development. Patriot also conducted intercept flight testing during the period for a Foreign Military Sales customer. In addition, the MDA continued its ground test program.

Significant to a system-level characterization of the BMDS, the MDA conducted the first flight test of a regional BMD system. This test included Aegis BMD, Patriot, and THAAD, as well as C2BMC and an AN/TPY–2 (FBM), which comprised the most complex BMD flight test ever attempted in the history of the DOD. Conceived as a risk reduction test for future operational tests, Flight Test Integrated-01 (FTI–01) included basic system-level integration, but not true layered defense, as the test was designed such that the weapon elements could only engage their intended targets. Because of this, the weapon elements basically operated independently of one another. Nevertheless, the Space-Based Infrared System/Defense Support Program participated in this test and the elements exchanged track data with each other and received acquisition cues from the AN/TPY–2 (FBM) radar via C2BMC. The test design featured near-simultaneous Aegis BMD and THAAD intercepts, a THAAD first-time engagement of an MRBM, a Patriot engagement of an SRBM in the presence of upper-tier post-intercept debris, and Aegis BMD and Patriot defending against cruise missile attacks. While the Standard Missile-3 Block IA interceptor missed its target, the Standard Missile-2 and the three other interceptors achieved successful intercepts. Soldiers performed command and control functions from the Air and Space Operations Center at Hickam Air Force Base, Hawaii. In FTI–01, for the first time, three missile defense weapon elements and an external sensor operated in the same theater engaging a small raid of ballistic missiles and air-breathing targets.

Since Flight Test Standard Missile (FTM)-15 in April 2011, Aegis BMD has experienced one test anomaly and two flight test failures. During FTM–15, the Standard Missile-3 Block IA Third Stage Rocket Motor experienced a failure in a critical component, leading to unexpected behavior just prior to achieving a successful intercept. The faulty component, common to both the IA and IB interceptors, was subsequently redesigned and flown successfully in FTM–18. During FTM–16 Event 2 in September 2011, a catastrophic failure of the Third Stage Rocket Motor resulted in a failure to intercept. The MDA determined the cause to be an issue with one of the firing parameters and made the necessary software modifications to mitigate the issue. Subsequently, the MDA conducted numerous ground firings of the Third Stage Rocket Motor to verify that it now functions properly and it intends to use the newly-adjusted firing parameter in FTM–19 in May of this year. This was also an issue common to both the IA and IB interceptors. Finally, the MDA is still investigating the cause of the Standard Missile-3 Block IA interceptor failure to intercept during FTI–01.

The test program for fiscal year/calendar year 2012 was adequate to support the development of the regional BMDS. The need to determine root cause of the FTG–06a failure, as well as develop, analyze, and perform ground tests of the means to correct the failure precluded GMD intercept flight testing during 2012. The MDA conducted tests as planned in the IMTP, Versions 11.2, 12.1, and 12.2 approved by the MDA Director and myself in August 2011, March 2012, and June 2012 respectively. However, except for the THAAD IOT&E, all key flight tests scheduled in IMTP 11.2 moved to later calendar quarters in IMTP 12.1, frequently a full year or more later. All of these changes except one were primarily the result of previous flight test failures and the ensuing investigations that required laboratory and ground testing, hardware corrections, and software changes. The exception was the MDA changing the first operational test of the BMDS into FTI–01 as a risk reduction test with the operational test re-inserted in the schedule a year later.

The test frequency across all of the BMDS elements remains consistent in the recently approved IMTP version 13.1 as compared with the earlier 12.2 version. For GMD, the MDA maintained the flight test frequency, averaging one flight test per year, a test pace that allows sufficient time to analyze the terabytes of data generated during GMD flight tests. Flight Test Ground-based Interceptor-07 (FTG–07) is planned for later this year, real-world events permitting, and will be flown using the failed intercept FTG–06a profile and a Capability Enhancement-I Exoatmospheric Kill Vehicle with an Aegis BMD forward sensor providing a tracking cue through C2BMC. This will be the second of three risk reduction flights for the GMD return to intercept. FTG–06b is being planned for late this calendar year and will complete the GMD return to intercept plan. The MDA will conduct their first engagement of an ICBM, with the target flying a range of greater than 5,500 kilometers, in fiscal year 2015. This will also be the first GMD salvo test of two interceptors fired at a single target. The MDA will conduct a multiple simultaneous engagement of two interceptors on two targets in fiscal year 2018.

In the case of Aegis BMD 3.6.1 and THAAD, sufficient data now exist to calculate quantitative estimates of the probability of engagement success for the tested battlespace (which is less than the full intended battlespace) of the two weapon systems. The probability of engagement success estimates for these two weapon systems are included in my classified 2012 Assessment of the BMDS.

Many of the models and simulations used in the ground tests are still not accredited for performance assessment, thereby limiting quantitative assessments based on their results. Some portions of the battlespace where data are lacking cannot be assessed. Examples include high closing velocity associated with longer range targets for Aegis BMD, salvo intercept time spacing for GMD since it has not yet attempted a salvo launch, and launch on remote track for THAAD. My office and MDA are working to assure the Integrated Master Test Plan (IMTP) supports BMDS modeling and simulation by providing the test data required for rigorous verification, validation, and accreditation (VV&A). However, model and simulation VV&A to support comprehensive quantitative performance assessments will, in many instances, require several more years to complete.

My comments to this committee during my testimony of the last 4 years, regarding the IMTP development process, remain accurate. The Director of MDA, Vice Admiral Syring, has continued to pursue a rigorous IMTP development process that has produced a rigorous and well-justified set of tests. My office continues to be involved throughout the semi-annual review and revision process leading to each update of the IMTP. This process has worked well during the preparation of the seven previous plans, including the most recent IMTP (version 13.1), that I approved jointly with Admiral Syring in March. The process has enabled each version of the IMTP to be revised in a timely manner consistent with policy changes, flight test results (including unsuccessful intercepts) such as those I have mentioned previously, or, changes in budgetary resources. The current IMTP is a rigorous plan for obtaining the test information needed to assess BMDS performance quantitatively.

However, as I noted in my previous testimony, the IMTP continues to be success-oriented. The rigorous testing incorporated in the IMTP will inevitably lead to flight test failures. These failures, although often perceived as setbacks, provide information that is absolutely critical to assuring that our ballistic missile defenses will work under realistic and stressing conditions. The IMTP does not, however, include plans for backup or repeat tests that would be needed in the event of flight test mission failures. Therefore, the effects of unsuccessful tests, such as the earlier FTG–06a and FTM–16 Event 2 failures, need to be mitigated through future updates of the IMTP. Thus far, the semi-annual revision process has allowed flexibility in making the necessary adjustments when needed.

CONCLUSION

The ability to conduct comprehensive quantitative assessments of BMDS capability across the full battlespace for each of the elements is still a number of years away. However, BMDS testing has now produced sufficient data to enable a quantitative assessment of capability for both THAAD and the currently fielded Aegis BMD system covering the limited portions of their tested battlespace. Executing the planned testing in the IMTP will enable the collection of data needed to ultimately validate the models and simulations required to perform those assessments and to demonstrate capability across the full battlespace.

Senator UDALL. Thank you, Dr. Gilmore.

Lieutenant General Formica.

STATEMENT OF LTG RICHARD P. FORMICA, USA, COMMANDER, U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/ARMY FORCES STRATEGIC COMMAND, AND COMMANDER, JOINT FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE

General FORMICA. Mr. Chairman, Senator Fischer, members of the committee: First, Mr. Chairman, thank you for your kind words. It's been an honor and a privilege to serve the United States of America in uniform and to have the opportunity to appear before this subcommittee on a couple of occasions. I would like to add my thanks to you and all of the committee for your support of our soldiers, sailors, airmen, marines, civilians, and families.

My intent today is twofold: to highlight the missile defense operations and the force provider role that U.S. Army Space and Missile Defense Command (SMDC), and the role that the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD) plays as an operational integrator of joint missile defense capabilities for STRATCOM.

At SMDC, to accomplish our assigned mission we focus on three core tasks. In operations, we provide trained and ready space and missile defense forces and capabilities to the Nation. Those are capabilities we provide today. In capability development, we build the future space and missile defense forces. Those are the capabilities we'll provide tomorrow. In material development, we research, test, and integrate space, missile defense, and other related technologies. Those are the capabilities we'll provide the day after tomorrow.

As the Operational and Functional Component Command of STRATCOM, at JFCC IMD we perform key mission tasks to facilitate the execution of STRATCOM's missile defense responsibilities. Those tasks include synchronizing operational level planning for missile defense; providing operational support and asset management for missile defense forces; integrate joint ballistic missile defense (BMD) training, exercises, and test activities with the warfighters; and to advocate for future capabilities.

With the combined efforts of DOD and with the support of Congress, progress has been made to evolve global missile defense capabilities, to strengthen the defense of the homeland, and to advance our capability to defend our deployed forces, allies, and friends abroad. During this period of fiscal uncertainty, this committee's continued support of missile defense and the soldiers, sailors, airmen, marines, and civilians who develop, deploy, and operate those missile defense systems remains essential.

I look forward to answering any of your questions. Thank you.
[The prepared statement of General Formica follows:]

PREPARED STATEMENT BY LTG RICHARD P. FORMICA, USA

Mr. Chairman, Ranking Member Sessions, and distinguished members of the subcommittee, thank you for your continued support of our soldiers, civilians, and families. It is an honor and privilege to again testify before this Subcommittee. Today I appear before you, bringing both a joint and Army perspective, for effective missile defense capabilities. We appreciate this subcommittee's continued support of the Army, the U.S. Strategic Command, the Department of Defense, and the missile defense community.

My three responsibilities remain unchanged from my previous appearances before you. 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, I am the Army Service Component Commander (ASCC) to the U.S. Strategic Command (STRATCOM) as the Commander of the Army Forces Strategic Command (ARSTRAT). I am responsible for planning, integrating, and coordinating Army forces and capabilities in support of STRATCOM missions. Third, I serve as the Commander of STRATCOM's Joint Functional Component Command for Integrated Missile Defense (JFCC IMD), synchronizing Joint operational-level planning and global missile defense operations support. It is an honor to testify with these distinguished witnesses who bring missile defense capabilities to our Nation, forward deployed forces, friends, and allies.

During last year's appearance, my intent was threefold: to highlight USASMDC/ARSTRAT's missile defense force provider responsibilities to the Army and the geographic combatant commanders (GCCs); to outline JFCC IMD's role as an operational integrator of joint missile defense for STRATCOM; and to summarize the status and capabilities of the major Army air and missile defense programs of record.

Since last year's hearing, there have been significant changes in both the strategic and fiscal landscapes. Today, I will briefly highlight the ramifications to the missile defense arena resulting from these changes and update the subcommittee on our continuing progress that directly contributes to the Nation's ability to defend against ballistic missiles, both today and tomorrow.

EVOLVING STRATEGIC AND FISCAL ENVIRONMENT

In January 2012, the latest U.S. Defense Strategy, Sustaining U.S. global Leadership: Priorities for 21st Century Defense, was released. Missile defense priorities are identified, within the global security context of the new strategy that, among other objectives, outlines the DOD's rebalancing toward the Asia Pacific region and renews emphasis on building partner capacity. The strategy recognizes that adversaries, using asymmetric capabilities to include ballistic and cruise missiles, "have the potential to pose catastrophic threats that could directly affect our Nation's security and prosperity." The ongoing North Korea ballistic missile situation demonstrates this strategy concern.

As this subcommittee is well aware, the ballistic missile threat from regional actors, such as North Korea and Iran, is not new. The threat is increasing both quantitatively and qualitatively and is likely to continue to do so over the next decade. In an environment of decreasing resources, we must be prepared to quickly adapt to confront varying threat environments. As we will never have enough resources, neither missile defense system assets nor the force structure, to counter the regional growing threat, our approach has been to take a holistic approach and invest in assets to address the most pressing threat.

> "Potential enemies will increase the range, accuracy, and lethality of direct and indirect fire weapons capabilities . . ."—The Army Capstone Concept, December 2009

In conjunction with the objectives of the current U.S. Defense Strategy and to address present adversary threats, STRATCOM and the Army continue to provide homeland and regional missile defense capabilities. The recent announcement to deploy a Terminal High Altitude Area Defense (THAAD) battery to Guam and the positioning of the Sea-Based X-Band (SBX) Radar within the Pacific region demonstrate our ability to quickly increase the readiness status of GMD forces and deliver capabilities to address the North Korean ballistic missile threat to our deployed forces and regional allies. Within the missile defense community, we continue

to deploy technologically advanced assets to counter the threat of North Korean aggression, promote stability, and support our Nation's security interests. We also continue to assist the regional partners with missile defense capabilities they bring to bear. While retaining our number one priority to defend the homeland against a limited ballistic missile attack, we will continue to deter and defend against the more prevalent regional ballistic missile threats. In summary, the complexity of the strategic environment, the technological advances of the threat, and fiscal realities require cost efficient and operationally effective methods of integrating current and future capabilities.

THE WORKFORCE—OUR GREATEST ASSET

During DOD Space testimony before this subcommittee a few weeks ago, I felt it appropriate to highlight our workforce. I believe it remains appropriate to do so again today. At USASMDC/ARSTRAT, as is the case Army-wide, our people are our most enduring strength. In the missile defense arena, many of our soldiers, civilians, and contractors provide critical support to the warfighter 24/7/365. This support extends to warfighters, both stationed in the Homeland and serving abroad. Within our command, we continuously strive to ensure our entire team remains viable, strong, and capable.

The ongoing fiscal uncertainties and the impacts of sequestration to the USASMDC/ARSTRAT civilian workforce continue to cause concern for me and the workforce. I have four concerns. First, I am concerned about the impact of a potential furlough, which has caused angst, impacted morale, and is expected to place personal hardships on much of the workforce. Second, the civilian hiring freeze is creating vacancies in the workforce. This impacts our ability to build our bench and will have longer-term impacts on the ability to provide space capabilities to the warfighter. Third, the elimination of our temporary and term employees, some of which are our future engineers, is impacting the next generation of civilian professionals. Fourth, we are consuming our future readiness by reducing the professional development opportunities for our civilian workforce. We will work to mitigate these issues and reduce their impact on our ability to provide capabilities to the warfighter.

ACCOMPLISHMENT OF OUR THREE CORE MISSILE DEFENSE TASKS

USASMDC/ARSTRAT, a force provider for missile defense capabilities, is one command that is split-based with dispersed locations around the globe that are manned by multi-component soldiers, civilians, and contractors. I remain very proud of the capabilities they deliver to the warfighter. As our command name implies, USASMDC/ARSTRAT has a vital role in missile defense; JFCC IMD, STRATCOM, and GCCs around the globe, to include U.S. Northern Command (NORTHCOM), leverage the capabilities of our command. Our title 10 responsibilities include operational as well as planning, integration, control, and coordination of Army forces and capabilities in support of STRATCOM'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 has a unique technical center to conduct missile defense related research and development in support of Army title 10 responsibilities.

To accomplish our assigned missions, we remain focused on three core tasks:

- To provide trained and ready space and missile defense forces and capabilities to the warfighter and the Nation—our operations function that addresses today's requirements.
- To build future space and missile defense forces—our capability development function that is responsible for meeting tomorrow's requirements.
- To research, test, and integrate space, missile defense, and related technologies—our materiel development function that aims to advance the Army's and warfighter's missile defense capabilities the day-after-tomorrow.

Three Core Tasks—Addressing Requirements of Today, Tomorrow, and the Day-After-Tomorrow

Today's Operations Task—Provide Trained and Ready Missile Defense Forces and Capabilities:

Our first core task is to provide trained and ready space and missile defense forces and capabilities to the GCCs and the warfighter—our operations function that addresses today's requirements. For missile defense, USASMDC/ARSTRAT Soldiers, serving on the homeland and in forward deployed locations, most remote and austere, operate the Ground-Based Midcourse Defense (GMD) consoles and the Army

Navy/Transportable Radar Surveillance Forward-Based Mode (AN/TPY–2 FBM) radars. A summary of the critical missile defense capabilities provided daily by our missile defense professionals is highlighted below.

Support to Global Ballistic Missile Defense (BMD):

Soldiers from the 100th Missile Defense Brigade, headquartered at Colorado Springs, CO, and the 49th Missile Defense (MD) Battalion, headquartered at Fort Greely, AK, remain ready, 24/7/365, to defend our Nation and its territories from a limited intercontinental ballistic missile attack. Under the operational control of NORTHCOM, Army National Guard and Active component soldiers operate the GMD Fire Control Systems located at the Missile Defense Element in Colorado, the Fire Direction Center in Alaska, and the GMD Command Launch Element at Vandenberg Air Force Base, CA. These soldiers, in conjunction with JFCC IMD and NORTHCOM, also oversee the maintenance of GMD interceptors and ground system components. At the Fort Greely site, 49th MD Battalion military police secure the interceptors and communications capabilities at the Missile Defense Complex from physical threats.

> "Homeland defense and support to civil authorities require strong, steady-state force readiness, to include a robust missile defense capability."—Priorities for 21st Century Defense, January 2012

Support to Regional Capabilities:

The 100th MD Brigade is also a force provider to other GCCs for the AN/TPY–2 Forward-Based Mode (FBM) radar detachments and provides subject matter expertise on training and certification of the radars' operations. Operational capabilities are present today at strategic locations around the globe.

GMD System Test and Development:

Soldiers from the 100th MD Brigade actively participate in GMD test activities and continue to work with Missile Defense Agency (MDA) developers on future improvements to the GMD system.

Ballistic Missile Early Warning:

Critical to 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 operational control of STRATCOM's Joint Functional Component Command for Space, but operated by USASMDC/ARSTRAT space-professional Soldiers, monitor enemy missile launch activity and other infrared events. They provide this essential information to members of the air, missile defense, and operational communities. Our JTAGS Detachments are forward-stationed across critical regions, providing 24/7/365, dedicated, assured missile warning to STRATCOM and other GCCs in support of deployed forces.

Tomorrow's Capability Development Task—Build Future Missile Defense Forces and Capabilities:

Our second core task is to build 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 train Army soldiers on missile defense systems. During the past year, USASMDC/ARSTRAT trained over 1,500 soldiers and was recertified as an institution of excellence for missile defense training.

The Army uses established and emerging processes to document its missile defense needs and pursue Army and Joint validation of its requirements. As a recognized Army Center for Analysis, USASMDC/ARSTRAT conducts studies to determine how best to meet the Army's assigned missile defense responsibilities. With this information, we develop the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) domains to mitigate threats and vulnerabilities for the MDA-developed 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.

The Day-After-Tomorrow's Materiel Development Task—Research, Test, and Integrate Missile Defense related Technologies:

In our third core task, USASDMC/ARSTRAT provides critical technologies to address future needs that will enhance warfighter effectiveness—our materiel development function. These are the capabilities we will provide for the day-after-tomorrow. In USASMDC/ARSTRAT, our technology development function is primarily focused

on space and high altitude. While MDA is the principal materiel developer for ballistic missile defense, USASMDC/ARSTRAT has a number of ongoing missile defense related materiel development efforts, to include ongoing research and development of a conventional offensive strike capability to address ballistic missile threats. A brief summary of two of these research and development efforts as well as an overview of an essential Army testing range follows.

Providing Greater Capability to Future Warfighters

High Energy Laser Mobile Demonstrator:

As we have learned often during the last decade plus of conflict, insurgents pose serious dangers to U.S. forward operating bases by employing quick-attack, low-trajectory, rockets, artillery, and mortar (RAM) strikes. The technology objective of the High Energy Laser Mobile Demonstrator (HEL MD) is to demonstrate a solid state laser weapon system that will serve as a complementary resource to kinetic energy capabilities in countering RAM projectiles. This weapon system will also have a significant capability against unmanned aerial systems. An initial demonstration is planned in the near future against short range mortars and unmanned aerial systems. Once completed, and if successful, the HEL MD will consist of a ruggedized and supportable high energy laser with subsystems installed on a tactical military vehicle that will greatly enhance the safety of deployed forces.

Low-Cost Target Development:

The Army is continuing 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. Each system has unique performance parameters including range, altitude, physical dimensions, and other characteristics tied to the testing requirements. Earlier this month, a Patriot missile defense system successfully intercepted a developmental low-cost target in a test that effectively mimicked an actual threat missile. We will continue to leverage technology advancements in order to realize less expensive targets that are representative of actual threats.

Missile Defense Testing:

USASMDC/ARSTRAT operates the Reagan Test Site at Kwajalein Atoll. Located in the Marshall Islands, the U.S. Army Kwajalein Atoll/Reagan Test Site is critical to testing requirements such as the testing of missile defense capabilities and testing of the U.S. Air Force's strategic ballistic missiles assets. In addition to its testing mission, personnel at the Reagan Test Site conduct continuous operational space surveillance and tracking.

JOINT FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE—SYNCHRONIZING MISSILE DEFENSE OPERATIONAL LEVEL PLANNING AND SUPPORT

JFCC IMD, STRATCOM's missile defense integrating element, has been operational for 8 years. Like the other JFCCs, JFCC IMD was formed to operationalize STRATCOM missions and allow the headquarters to focus on strategic-level integration and advocacy. Headquartered at Schriever Air Force Base in Colorado Springs, CO, the JFCC IMD is manned by capable Army, Navy, Air Force, Marine Corps, and civilian personnel.

As the Secretary of Defense (SECDEF) and various combatant commanders have previously testified, the warfighter remains confident in our ability to protect the Nation against a limited ballistic missile attack, even in the face of the changing strategic and fiscal environment. In March, the SECDEF announced the administration's plan to increase the number of ground-based interceptors (GBIs) at Fort Greely from 26 to 40, bringing the total number of deployed GBIs to 44, and to deploy a second AN/TPY–2 FBM radar to Japan. We are working with MDA as it conducts site selection activities for a possible third site in the continental United States as directed by the National Defense Authorization Act for Fiscal Year 2013. An additional site has the potential to further bolster the Nation's capability to defend against threats from North Korea and Iran.

With Priority on Defense of the Homeland, Execute a Holistic Global Missile Defense Plan

The warfighter is working across the military enterprise to increase the integration of existing capabilities in order to maximize efficiency and effectiveness to protect the homeland, our deployed forces, friends, and allies. The key force multiplier is "integration," which is the key mission area of JFCC IMD and directly supports STRATCOM.

STRATCOM has been assigned seven Unified Command Plan (UCP) responsibilities for missile defense. As the operational and functional component command of STRATCOM, JFCC IMD has derived five key mission tasks from the STRATCOM UCP responsibilities:

- Synchronize operational level planning, integrate security cooperation activities, and recommend allocation of forces via the global force management process.
- Conduct operations support and asset management for missile defense forces and provide alternative execution support.
- Integrate Joint BMD training, exercises, and test activities.
- Advocate for future capabilities, conduct analysis and assessments, and recommend the operational acceptance of missile defense capabilities into the architecture.
- Provide information system security and network support to assure a reliable BMDS communications network.

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, our allies, and our industry partners. Through collaborative processes, we continually add to our deployed capability while gaining operational experience and confidence in our collective ability to defend our Nation, deployed forces, and our friends and allies. Following, 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 a Missile Defense Architecture:

As I mentioned earlier, the SECDEF recently directed us to bolster the homeland defense capability and regional missile defense capabilities in response to the changing strategic environment. Over the past year, warfighters operationally deployed two additional AN/TPY–2 FBM radars, moved a Patriot unit to Turkey to support NATO, deployed a Terminal High Attitude Area Defense (THAAD) unit to Guam, and expanded our missile defense collaboration with allies. We have implemented Phase 1 of the European Phased Adaptive Approach (PAA) and continue to address the unique regional threat environments and partnerships to further homeland defense. Given many of the challenges associated with implementation of these architectures, JFCC IMD, supporting STRATCOM 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 to enhance our global defense capabilities. In support of homeland defense, we have ongoing initiatives to inform and provide the vision to maintain our advantageous position in missile defense.

Global BMD Assessment:

While regional phased adaptive approaches mature, and with homeland defense at the forefront, JFCC IMD collaborates closely with the GCCs to assess the level of operational risk associated with the execution of their operational plans given their allocation of BMD capabilities. The overall assessment serves to shape recommendations for global force management and advocacy efforts for future capability investments. We completed the 2012 Global BMD Assessment and the 2013 assessment is underway. The 2012 assessment identified areas where our capabilities can be improved—we continue to pursue affordable courses of actions to enhance our means to counter the threat. For 2013, we are expanding the previous BMD-only assessment to integrate both air and missile defense assets. The expanded assessment will more accurately reflect the way we will fight and the associated operational risks.

> "The United States will continue to defend the homeland against the threat of limited ballistic missile attack"—Ballistic Missile Defense Review, February 2010

With regard to regional threats, JFCC IMD assessments indicate that addressing missile defense threats will remain a challenge. Our analysis, reinforced by the 2012 Global BMD Assessment, reinforces the fact that GCC demands for missile defense capabilities will always exceed the available BMD inventory. We must be able to address some ballistic missile threats before they are in the air. The shortfall highlights the need for continuing integration of our forces, an offensive/defensive approach to address the growing threat, and utilization of the full range, from strategic to tactical levels, of military options. In the near term, we will continue to address this mismatch through a comprehensive force management process. Over the longer term, we will continue to assess the evolving threat, analyze the offensive-

defensive mix, and look at procurement pathways to meet surging demand while emphasizing deterrence alternatives, to include diplomatic, information, and economic strategies.

Global Force Management:

The increasing demand of BMD assets is managed by the Joint Staff and the Services; JFCC IMD, serving as the Joint functional manager, evaluates and recommends sourcing of BMD requirements based on risk to the GCCs, the Services, and the global BMD construct. 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' 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:

While maintaining a holistic, multi-regional perspective, but with priority on defense of the homeland, JFCC IMD, in coordination with NORTHCOM, STRATCOM, and the GCCs, manages the availability of missile defense assets to balance operational readiness conditions, scheduled and unscheduled maintenance activities, and MDA and Services' test requirements. This important process allows us to assess, at all times, our readiness to defend against a ballistic missile attack.

> "The United States will seek to lead expanded international efforts for missile defense."—Ballistic Missile Defense Review Report, February 2010

Training, Exercises, and Wargames:

JFCC IMD continues to focus on the integration of allies into regional missile defense architectures; we leverage training, exercises, and wargames to increase dialogue and partnership. We are underway with Nimble Titan 14, our biannual multinational BMD wargame. While budget constraints have caused us to reduce the scale for regional exercise from interactive wargames to table-top exercises, we are still able to accomplish many of the same objectives. For the first time, Nimble Titan 14 will include the participation of the Kingdom of Saudi Arabia, the United Arab Emirates, and Turkey. In addition to NATO, we anticipate over 20 participating nations and a large number of international observers. Our campaign goals for this iteration of Nimble Titan will advance national policy objectives by helping mature NATO's new missile defense mission area, strengthen Japanese, South Korean, and Australian engagement, and openly work coalition BMD issues with Middle East nations. We will specifically focus on sensor integration, offense/defense force integration, and multinational BMD planning solutions. The Nimble Titan wargame is an invaluable BMD engagement tool to advance U.S. missile defense policy. The wargame allows us to mature cooperative relationships with our allies as well as advance our Nation's and combatant command's regional security objectives. This event is critical to developing our combined BMD architectures. Conclusions derived from training, exercises, and wargames will continue to shape our recommendations on asset allocation, resources, and operational planning through the existing DOD and missile defense community management structures.

Joint BMD Training:

During this past year, DOD designated STRATCOM as the lead for integrating and synchronizing joint BMD training. The designation mandated the transfer of missile defense training resources and responsibilities from MDA to STRATCOM by the conclusion of this fiscal year. On behalf of STRATCOM, JFCC IMD will execute this new responsibility. In preparation, JFCC IMD recently completed a Training Needs Assessment to define joint missile defense gaps and to identify corrective courses of action. The assessment findings and recommendations are currently being coordinated with the BMD community to include the Joint Staff, GCCs, and the Services. In the near future, we will implement a Joint BMD training curriculum. At the tactical level, the curriculum will focus on those skills and tasks required of the joint capability provider—the operator. Comprehensive training will also be provided to planners and senior leaders in joint BMD positions.

Warfighter Acceptance and Integrated Master Test Plan:

As the missile defense architectures mature, operators call for a credible, comprehensive assessment of new capabilities to inform warfighter operational acceptance. The MDA, in coordination with the Office of the Director, Operational Test and Evaluation, executes a robust, developmental and operational Integrated Master Test Plan. A rigorous test program builds the confidence of stakeholders and strengthens deterrence. As part of the Warfighters' Operational Readiness and Ac-

ceptance process, JFCC IMD works closely with MDA and the GCCs to ensure our warfighters take full advantage of these tests to better understand the capabilities and limitations of the emerging systems, rapidly integrate new capabilities into the operational architecture, and provide improvement recommendations and new capability requirements back to the developer.

In summary, JFCC IMD serves an integrating role for missile defense across multiple regions as we operationalize new capabilities, evolve 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 posture our forces to meet the ballistic missile threat. Our missile defense capability continues to strengthen as warfighters gain increased competence and confidence in the BMD System. While work remains to be done, we have made significant progress in evolving the 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

In addition to the MDA's materiel development efforts, the Army continues to develop and field systems that are integral contributors to our Nation's air and missile defense capabilities. A summary follows of the Army's major air and missile defense systems, aligned within the assistant Secretary of the Army for Acquisition, Logistics, and Technology organizational structure.

Army Integrated Air and Missile Defense (AIAMD):

Within the air and missile defense arena (AMD), the AIAMD program is the Army's highest priority effort. The program will field a common mission command system to all echelons of Army AMD forces to defend against rockets, artillery, and mortars; cruise missiles; manned and unmanned aircraft; air-to-ground missiles; and tactical ballistic missiles. The AIAMD capability integrates Army AMD sensors and shooters on a high-band width, low-latency, warfighter information network to provide the means to protect larger geographical areas. Fully implemented, AIAMD will also result in increased integrated fire control and reduced the risk of fratricide.

Medium Extended Air Defense System (MEADS):

As Congress is aware, the DOD decided to complete only the design and development phase of the MEADS program. Fiscal year 2013 was the final year for which the Army sought MEADS funding. The Army will continue to support data archival and evaluate opportunities to harvest technology from our MEADS investments.

Patriot/Patriot Advanced Capability-3 (PAC–3):

Patriot/PAC–3 is the Army's premier weapon system against air, cruise missile, and tactical ballistic missile threats. With the DOD decision to end U.S. participation in the MEADS program at completion of the design and development phase, the Army is investing in improvements to the Patriot system to support the AMD strategy, increase reliability, drive down operational and sustainment costs, and remain viable well into the future. Also, the Army continues to improve Patriot's capability to counter the evolving tactical ballistic missile, cruise missile, and air threats. The Army is integrating Patriot and other air defense capabilities into the AIAMD architecture. PAC–3 interceptors continue to expand the battlespace allowing operational flexibility to our Army, GCCs, and international partners. The next generation PAC–3 missile, the Missile Segment Enhancement, is on track for a 2015 delivery to the force.

Indirect Fire Protection Capability (IFPC) Increment 2 Intercept:

This program will provide an additional layer of short range air defense capability to address the threat from unmanned aerial systems, cruise missiles, rockets, artillery, and mortars. The IFPC, using existing radar assets, will be integrated with the AIAMD capability to provide 360 degree, multiple azimuth protection to deployed forces supporting stability and counterinsurgency operations.

Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS):

The JLENS system provides long-range, persistent, and elevated surveillance, detection, classification, identification, and fire control quality tracking for airborne objects such as cruise missiles, manned and unmanned aircraft, and large caliber rockets. The system has also shown the capability to track surface moving targets. In accordance with direction from OSD and the Joint Staff, the Army is completing development and testing of the JLENS capability and will soon begin support of a 3-year operational exercise within the NORTHCOM area of operations.

Terminal High Attitude Area Defense System:

Developed by the MDA, THAAD is a long-range, land-based, theater defense weapon designed to intercept threat missiles during late mid-course or final stage flight. THAAD capability for our GCCs recently became available as the MDA-designed system transfers capability to the Army. Just last month, THAAD Batteries 1 and 2 were granted conditional materiel release. Each of the batteries, consisting of 95 soldiers, an AN/TPY–2 FBM radar, a fire control and communications element, a battery support center, and an interim contractor support element, has completed equipment and unit collective training. The two batteries currently have three THAAD launching systems each but will soon have their full complement of six systems. Equipment fielding is also underway for THAAD Battery 3 and production has begun on Battery 4 equipment. THAAD is a high demand, low density asset as demonstrated by the recent deployment of a battery to Guam. 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, friends, and allies.

CONCLUSION

Mr. Chairman and Ranking Member Sessions, as a member of the joint missile defense community, the Army will continue to pursue operational, capability, and materiel enhancements to the Nation's BMDS. As a Service, the Army has lead responsibility for GMD, AN/TPY–2 FBM, Patriot, and THAAD. Our trained and ready soldiers operating the 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 ensure essential regional sensor capabilities and ballistic missile early warning. STRATCOM, through the JFCC IMD, will continue to integrate BMDS capabilities to counter global asymmetric threats and protect our Nation, deployed forces, friends, 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, and civilians who develop, deploy, and operate our missile defense system. The fiscal year 2014 budget proposal supports these essential personnel by advancing the modernization and improvements of the Army's missile defense systems to support the Nation's global BMDS. I appreciate having the opportunity to address missile defense matters and look forward to addressing any of your questions. Secure the High Ground and Army Strong!

Senator UDALL. Thank you. Thank you, General.

Admiral Syring.

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

Admiral SYRING. Good afternoon. Chairman Udall, Senator Fischer, distinguished members of the subcommittee: I appreciate the opportunity to testify before the subcommittee for the first time as the Director of the MDA.

My priorities are to continue strong support of the warfighter, support what we have deployed, and deliver more capability to the combatant commanders. We are taking several steps over the next few years to implement Secretary Hagel's March 15 guidance to strengthen our Homeland defenses. First among those steps is returning the redesigned GBI to flight testing later this year. The successful controlled test flight of the GBI earlier this year gives us confidence that we have addressed the causes of the end game failure in the December 2010 test. Later this month we will demonstrate the improvements made to the GBI fleet in an intercept test of the first generation operational exoatmospheric kill vehicle, the first such test since December 2008.

We are increasing the operational fleet of GBIs from 30 to 44 by 2017. This will involve the reallocation of GBIs and the refurbishment and reactivation of Missile Field 1 in Alaska. We have al-

ready begun to evaluate locations in the continental United States to determine a site suitable for possible future deployment of Homeland defense interceptors. Also, in order to provide more robust sensor coverage for our Homeland defense, this year we are working with our Japanese partners to deploy a second TPY–2 radar to Japan.

We will continue to strengthen our regional defenses with funding to operate and sustain, command, control, battle management, and communications, and TPY–2 radars at fielded sites, and we will deliver more interceptors for THAAD, Aegis BMD, and others. MDA will continue to fund upgrades to the phase 1 of the EPAA and proceed on our schedule to complete the Aegis Ashore sites in Romania by 2015 and Poland by 2018.

Mr. Chairman, when I arrived at the MDA last November, I was impressed with the organization and professionalism of the workforce. They are highly motivated, they're the best at what they do. It's an honor to serve with them every day.

I ask that my written statement be accepted for the record.

Senator UDALL. Without objection.

Admiral SYRING. I look forward to answering your questions, sir.

[The prepared statement of Admiral Syring follows:]

PREPARED STATEMENT BY VADM JAMES D. SYRING, USN

Good afternoon, Chairman Udall, Ranking Member Sessions, distinguished members of the subcommittee. I appreciate this opportunity to testify before you for the first time as the Director of the Missile Defense Agency (MDA). Our current budget request of $7.684 billion for fiscal year 2014 will continue the development of defenses for our Nation, deployed forces, allies, and international partners against increasingly capable ballistic missiles. Since the previous Director testified before you last year, we have made good progress in the development and deployment of the Ballistic Missile Defense System (BMDS) and we continue to build capabilities to defeat more complex threats. My priorities in fiscal year 2014 are to continue our strong support of the warfighter, fix what needs to be fixed, support what we have deployed, and deliver more capability to the combatant commanders (COCOMs).

BALLISTIC MISSILE THREAT

The threat continues to grow as our potential adversaries are acquiring a greater number of ballistic missiles, increasing their range and making them more complex, survivable, reliable, and accurate. The missile defense mission is becoming more challenging as potential adversaries incorporate BMD countermeasures. Space-launch activities in Iran and North Korea involve multistage systems that serve to further the development of ballistic missile technology for longer-range systems including intercontinental ballistic missile (ICBM) technologies and systems. As the Director for National Intelligence recently stated, "Iran has demonstrated an ability to launch small satellites, and we grow increasingly concerned that these technical steps . . . provide Tehran with the means and motivation to develop larger space-launch vehicles and longer-range missiles, including an ICBM." In addition to the Taepo Dong 2 SLV/ICBM, North Korea is developing a road-mobile ICBM and an intermediate-range ballistic missile (IRBM) capable of reaching Guam, the Aleutian Islands, and potentially Hawaii. 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. Iran has publicly demonstrated the ability to launch simultaneous salvos of multiple rockets and missiles and openly discussed tests of an anti-ship ballistic missile.

SUPPORT FOR THE WARFIGHTER

Our overriding goal is to provide support to the warfighter. To this end we will increase system reliability, focusing especially on improving the performance of the Ground Based Interceptors (GBIs) and the Aegis Weapons System, including the Standard Missile (SM–3) interceptors and continuing our support for operational systems like the AN/TPY–2 radar and the Command, Control, Battle Management

and Communications (C2BMC) at fielded sites. We will also deliver more interceptors for Terminal High Altitude Area Defense (THAAD), Aegis Ballistic Missile Defense (BMD), and, pending a successful return to intercept, Ground-based Midcourse Defense (GMD) as we look for ways to make it more operationally effective and cost-effective.

We remain committed to conducting developmental and operationally realistic tests and use a "fly-before-you-buy" approach. MDA continues to work closely with the Director, Operational Test & Evaluation (DOT&E) and collaboratively with independent testers and the Services. We follow an Integrated Master Test Plan (IMTP), a comprehensive, integrated, and cost-effective flight and ground test program that blends developmental testing with tests that employ operationally realistic conditions to demonstrate BMD capabilities against current and projected threats. I have reviewed the DOT&E 2012 Assessment of the BMDS, which identified areas that need improvement, specifically in the areas of BMDS system-level testing and the accreditation of BMDS element models. The report's findings acknowledged our integration accomplishments. We must still work to improve battle management for a fully integrated BMDS. We also agree that we need improved GMD performance models to fully characterize system performance. Similarly, although the report did note our progress in testing against targets with certain SRBM and MRBM characteristics, the acquisition of additional accredited target models will help evaluate the performance of all phases of regional defense, specifically for the European Phased Adaptive Approach (EPAA).

In order to provide the warfighters confidence in the execution of their integrated air and missile defense plans and the opportunity to refine operational doctrine and tactics, this year we plan to demonstrate the ability of the integrated BMDS to defeat up to three near-simultaneous air and ballistic threats. In the integrated BMDS flight test (FTI–01) this past October, the largest, most complex ballistic missile defense test ever attempted, we demonstrated the capability of the BMDS to engage upon a raid of five near-simultaneous representative threats, air-breathing and ballistic missiles, hitting four out of five targets. In this year's operational BMDS flight test we will use an operationally relevant scenario to demonstrate the integration of regional defense systems. In FTO–01 we will engage two medium-range ballistic missile targets launched within minutes of one another with Aegis BMD and THAAD using Forward Based Mode (FBM) AN/TPY–2 radar and the C2BMC system operated by soldiers, sailors, and airmen. In fiscal year 2014 President's Budget Submission (April 2013) we have added 12 more flight tests to the IMTP, going from 37 tests in IMTP version 12.2 to 49 tests in IMTP version 13.1. As the BMDS matures we need to increase complexity in our flight tests by doing the following: adding system-level operational tests; increasing the number of BMDS assets in those tests; increasing the numbers, types (ballistic and air-breathing) and ranges of the threat representative targets we use and conducting more simultaneous launches; and adding the entire warfighting chain of command to evaluate concepts of operation and tactics, techniques and procedures. We have also increased the number of ground-tests in those planning periods from 88 to 106.

HOMELAND DEFENSE

MDA's highest near-term priority remains the successful GMD intercept flight test of the newest GBI Exo-atmospheric Kill Vehicle (EKV)—the Capability Enhancement (CE)-II EKV. The successful non-intercept controlled flight test of the CE–II GBI earlier this year (CTV–01) gives us confidence and cautious optimism we have addressed the causes of the FTG–06a endgame failure in December 2010 and are on the right track for a successful return to intercept using the redesigned EKV. Based on our analysis of the data from CTV–01, we currently plan to conduct FTG–06b in early fiscal year 2014 to demonstrate the ability of the CE II EKV to discriminate and intercept a lethal object from a representative ICBM target scene. We plan to conduct another intercept test using a two- or three-stage GBI and the CE II EKV by the end of fiscal year 2014 (FTG–09).

With DOT&E concurrence, we plan to accelerate the next intercept test of the CE–I EKV (FTG–07) to take place this May or June in order to increase warfighter confidence and maintain a testing cadence. We have made numerous improvements to the CE–I fleet through refurbishments since the last successful CE–I flight test in 2008, and this test will demonstrate the reliability of those refurbished GBIs. I am committed to flight testing the GMD system, at a minimum, once per year; however, I can assure the committee that I will not approve the execution of a flight test unless I believe we are ready. We will work closely with DOT&E to develop scenarios and targets for all of our tests.

We share the Government Accountability Office concern about concurrency in the GMD program and have restructured our GMD return to intercept (RTI) plan and schedule to design and qualify EKV fixes that address root cause of the FTG–06a failure, and confirm the fixes through rigorous ground and flight testing. The original RTI plan accepted significant and excessive concurrency (parallel development, testing and production activities) and the result has been continued slips in the RTI plan. The current baseline RTI plan reduces this concurrency using systems engineering "gated" events that confirm critical components are ready to proceed to testing and production while leaving options open to integrate lower risk components.

Today, 30 operational GBIs protect the United States against a limited ICBM attack from current regional threats, such as North Korea and Iran. Over the past year we have achieved higher operational availability rates with the GMD system, mainly through high levels of redundancy in the GMD Fire Control and communications systems. The currently operational hardened Fort Greely, AK, (FGA) power plant distributes commercial power and provides generator power during outages. We continued to maintain and improve the GMD guidance system and engagement performance through software upgrades of the CE–I and CE–II EKVs. Last year we completed construction of the 14-silo Missile Field-2 at FGA and emplaced the first GBI in that field in March 2012. We also relocated the last interceptors from Missile Field-1. This year we will continue with our Enhanced Reliability and Stockpile Reliability Programs to track performance, aging, and reliability metrics, software updates, and technology enhancements for all GMD ground systems.

MDA requests $1,033.9 million in fiscal year 2014 in Research, Development, Test, and Evaluation (RDT&E) funding for GMD to sustain the current system and take steps to address the continued development of ICBMs by countries such as North Korea. In addition to our flight testing activities, we will continue our GMD reliability activities and fleet upgrade program. We are also increasing the number of GBIs we plan to produce and deploy. As announced on March 15 by Secretary Hagel, consistent with the February 2010 Ballistic Missile Defense Review (BMDR), and assuming a successful return to intercept, we plan to increase our operational GBI fleet from 30 to 44 in 2017 by re-allocating GBIs from the spares and stockpile reliability program. We will reset this program with the procurement of 14 additional GBIs, 2 per year, starting in fiscal year 2016. We also request $135 million in fiscal year 2014 to rebuild a hardened Missile Field 1 critical to achieving the 44-operational-GBI capability.

In fiscal year 2014 we will continue work on the GBI In-Flight Interceptor Communication System (IFCS) Data Terminal (IDT) at Fort Drum, NY, which we will deliver in early fiscal year 2015 and is planned to be operational in 2015. The East Coast IDT will enable communication with GBIs launched from Fort Greely, AK, and Vandenberg Air Force Base in California over longer distances and improve defenses for the eastern United States by increasing system performance in specific engagement scenarios.

Pursuant to the National Defense Authorization Act for Fiscal Year 2013, this year we will begin a siting study for a potential Missile Field in the continental United States (CONUS). MDA has initiated a CONUS Interceptor Site (CIS) study to evaluate several sites for the potential future deployment of additional GBIs capable of protecting the homeland against threats from nations such as North Korea and Iran. MDA will conduct a siting study this year to inform the President's Budget submission for fiscal year 2015. The Environmental Impact Statement will be completed by the first quarter of fiscal year 2016. These efforts would shorten the time to deploy additional GBIs if a future decision to do so were taken.

We are also improving our homeland defense options with the continued development of the two-stage GBI. The two-stage GBI has less burn time than the three-stage version, which allows it to operate within shorter engagement timelines, and will preserve future deployment options.

To maintain readiness in our network of strategic radars, last year MDA worked with the Air Force to begin upgrading the Early Warning Radar (EWR) at Clear, AK, to give it a missile defense capability, providing improved ballistic missile defense sensor coverage over the continental United States and reducing sustainment and operating costs. For fiscal year 2014 we are requesting $51 million to continue this work. Along with the Clear EWR contract award, we also exercised a contract option in fiscal year 2013 to upgrade the Cape Cod EWR. The upgraded Clear EWR will be added to the BMDS operational baseline in fiscal year 2017, with the upgraded Cape Cod EWR added in fiscal year 2018. MDA plans to transfer the Beale (California), Fylingdales (United Kingdom), and Thule (Greenland) Upgraded Early Warning Radars to the Air Force in the later part of fiscal year 2013 once all three radars are operating with the same software configuration.

This year we are also working with our Japanese partners to deploy a second AN/TPY–2 radar to the U.S. Pacific Command (PACOM) Area of Responsibility to enhance regional defenses and provide more robust sensor coverage for homeland defense.

We are requesting $44.5 million in fiscal year 2014 for continued Sea Based X-band (SBX) radar operations. For affordability reasons, MDA transferred the SBX to Limited Test Support Status, where the radar continues to support the BMDS test program and remains available for contingency deployment under the operational command of PACOM. We completed the transfer of the SBX vessel to the U.S. Navy Military Sealift Command in fiscal year 2012. New SBX operational software with improved discrimination and debris mitigation was delivered and completed in January 2013. The new SBX configuration will complete integration fielding and testing with GMD in the third quarter of fiscal year 2014.

REGIONAL DEFENSES

Deployment of regional defenses to protect our deployed forces, allies and international partners remains one of our top priorities. Our fiscal year 2014 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.

Terminal High Altitude Area Defense

MDA delivered the 50th THAAD interceptor last year, completing the initial interceptor load for the two fielded batteries. With the conclusion of unit collective training, MDA also completed fielding of the second THAAD battery. The U.S. Army's granting of Conditional Materiel Release for the THAAD weapon system made THAAD available for worldwide operational employment. In recent tests we demonstrated THAAD's ability to intercept an MRBM as part of an integrated operational test with PAC–3 and Aegis BMD (FTI–01) and its ability to detect, track, and engage multiple simultaneous targets (FTT–12).

In fiscal year 2013 we are delivering the third THAAD battery to the U.S. Army and initiating soldier new equipment training, which will be completed in fiscal year 2014. MDA will continue to deliver THAAD interceptors to inventory, achieving 82 interceptors by the end of this fiscal year and 98 interceptors by the end of fiscal year 2014. For fiscal year 2014, MDA is requesting $581 million for THAAD procurement, which includes the purchase of 36 THAAD interceptors and 6 launchers, and 2 THAAD Tactical Station Groups for the sixth THAAD Battery. In fiscal year 2014 we expect to deliver the fourth THAAD Battery. Our current plans are to deliver six batteries and, based on combatant commanders' desires, we are working with the Army to analyze a requirement for a seventh THAAD Battery within the Future Years Defense Program. We also are requesting $269 million in RDT&E funding in fiscal year 2014 and $92 million for THAAD operations and maintenance. We will continue to enhance THAAD's ability to operate through post-intercept debris, enable launch of THAAD's interceptors using sensor data provided by other BMDS sensors, and maintain capability against current and evolving threats.

Aegis Ballistic Missile Defense

Last year we installed the Aegis BMD 3.6 weapon system on 3 Aegis ships, for a total of 24 Aegis BMD 3.6 ships, and completed 2 Aegis BMD 4.0 installations. We also commenced two more Aegis BMD 4.0 installs and initiated BMD 5.0 install on the Aegis BMD test ship, the USS *John Paul Jones*, which will replace USS *Lake Erie* in that role. This approach supports Navy and MDA testing of the Integrated Air and Missile Defense combat system. We now have a total of 27 certified Aegis BMD ships. This past year we delivered 11 SM–3 Block IAs and 2 SM–3 Block IBs, both of which were expended in tests. By the end of 2014, up to 39 SM–3 Block IBs will be delivered. With the Japan Ministry of Defense, we continued SM–3 Block IIA system and component Preliminary Design Reviews and awarded a contract to complete SM–3 IIA development.

In May 2012, we conducted a lethal engagement resulting in the successful intercept of a unitary separating target with the second-generation Aegis BMD 4.0 combat weapon system onboard the USS *Lake Erie* and an SM–3 IB guided missile (FTM–16 Event 2a). This test also validated the resolution of the previous flight test issue. In June 2012, we demonstrated again the ability of the SM–3 IB and the Aegis BMD 4.0 combat system to intercept of a separating ballistic missile target (FTM–18). Both intercept tests represented significant accomplishments for the next generation Aegis Weapon System and SM–3 for regional defense and specifically in support of EPAA Phase II. In the integrated FTI–01 BMDS flight test this past October, the USS *Fitzgerald* successfully engaged a low flying cruise missile over

water. The Aegis combat system also tracked an SRBM and launched an SM–3 IA against that threat space. Despite indication of a nominal flight of the SM–3 IA, we did not achieve an intercept. We have a Failure Review Board currently investigating why this occurred. We have combed through ground test data from all fleet rounds and have not found any rounds with the same ground test results as the SM–3 IA used in FTI–01, which gives us confidence in all deployed SM–3 IAs. This past February, in FTM–20, we successfully intercepted a unitary MRBM target using the SM–3 IA and the Aegis BMD 4.0 weapon system in a remote engagement using data from the Space Tracking and Surveillance System demonstration (STSS–D) satellites. We passed very high quality fire control quality data provided from STSS–D satellites through C2BMC. This was a highly complex test, and it proved the value of an integrated C2 and sensor network and the use of space-based sensors.

This year and next will be busy years for Aegis BMD flight testing as we continue to demonstrate capability of the Aegis BMD 4.0 Weapons System with the Standard Missile Block IB in a series of intercept flight tests—FTM–19, FTM–21 and FTM–22. We have postponed FTM–19 to improve manufacturing processes and procedures due to previous subcomponent reliability issues. We are now confident we understand these issues to continue with the test program and initial production decisions. FTM–19 is an important step for an All Up Round production decision of the SM–3 IB. Later this fall, in FTM–21, an Aegis BMD ship will demonstrate a salvo fire capability. FTM–22 will demonstrate the IOT&E of the SM–3 IB against a complex MRBM target. These two tests will support a full-rate production decision. Tests of the SM–3 IB against various targets from both ships and our first flight testing from Aegis Ashore continue in fiscal year 2014.

In response to the combatant commanders' demand signal for more BMD ships with the latest tested capability, Navy and MDA are jointly executing efforts to upgrade Aegis Destroyers with BMD capability, incorporating Aegis BMD into the Navy's Aegis DDG Modernization Program and new construction of Aegis BMD DDGs. In 2014, two previously installed Aegis BMD ships will be upgraded with the 4.0 weapons system configuration. In addition to the ship upgrades, one non-BMD capable ship is programmed to start the Aegis Modernization Program. Construction of DDG 113, the first Aegis Destroyer built from the keel up with the BMD capability, is well underway. Ships identified for homeport transfer to Rota, Spain, will have been upgraded or programmed to receive the BMD installation.

We also continue development of a Sea-Based Terminal capability to provide protection of maritime forces against 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 SM–6 guided missile and the BMD 5.0 weapon system. We expect to test and certify the first increment of Sea-Based Terminal capability in 2015 and 2016.

We are requesting $937 million in RDT&E funding in fiscal year 2014 to continue the development, testing and, installation of Aegis BMD capabilities to defeat longer range and more sophisticated ballistic missiles launched in larger raid sizes. We also request $581 million in fiscal year 2014 for the procurement of 52 SM–3 IB guided missiles and $18 million for operations and maintenance of SM–3 IAs. By the end of fiscal year 2014, we plan to deliver a total of 180 SM–3s, including IA and IB variants.

European Phased Adaptive Approach

We will continue to support the EPAA to provide coverage of European NATO territory from Iranian ballistic missile threats. In 2011 MDA completed Phase 1 of the EPAA to provide coverage of NATO territory in Europe with the deployment of Aegis BMD 3.6 ships with SM–3 IAs and a SPY–1 radar in the Mediterranean, the AN/TPY–2 radar (FBM) to U.S. European Command (EUCOM) in Turkey, and the C2BMC Spiral 6.4 system at Ramstein AFB in Germany. We will continue to invest resources for EPAA development, testing, and deployment.

Our goal in EPAA Phase 2 is to provide a robust capability against SRBMs and MRBMs by ensuring the system provides multiple opportunities to engage each threat missile in flight. The architecture includes the deployment of the Aegis BMD 4.0 and 5.0 weapon systems with SM–3 IBs at sea and at an Aegis Ashore site in Romania. In fiscal year 2012 MDA conducted Romania Aegis Ashore planning and environmental studies and began component production necessary for early integration and testing of the Aegis Ashore system by 2015. Aegis Ashore began construction activities in 2012 in Moorestown, New Jersey and construction of a test site in Kauai, Hawaii. We signed an overarching Memorandum of Agreement with the U.S. Navy regarding Operations and Sustainment of the European Aegis Ashore sites. The Aegis Ashore Missile Defense Test Complex at the Pacific Missile Range

Facility (PMRF) will support flight testing of Aegis Ashore capabilities in an operational configuration. The complex will be available to conduct the first Aegis Ashore test firing in fiscal year 2014. MDA will initiate construction of the Aegis Ashore site in Deveselu, Romania with the delivery of the deckhouse in fiscal year 2014. The site will be operational by December 2015. MDA requests $85 million in fiscal year 2014 to continue construction of the Aegis Ashore site in Romania.

In support of EPAA Phase 3, the SM–3 Block IIA, which we are co-developing with the Japanese Government and an upgraded version of the Aegis Weapons System are on schedule to be available for deployment in 2018 at Aegis Ashore sites in Romania and Poland and at sea. Deployment of Phase 3 will enhance and expand protection for European NATO countries and U.S. forces through the region from MRBMs and IRBMs from the Middle East. The upgraded Aegis Weapons System combined with the faster, longer reaching SM–3 IIA will provide capability to counter more sophisticated threats when compared to the SM–3 IA and IB and will extend coverage to NATO allies in Europe threatened by longer range ballistic missiles. With the completion of Phase 3, EPAA will provide upper-tier coverage of NATO Europe. As we work closely with Navy in modernization, we will also install the 5.1 Aegis Weapons System on ships for deployment worldwide in support of the Combatant Commanders. We will also install and deploy the 5.1 system in the two Aegis Ashore batteries. This past year we continued development of the Aegis BMD 5.1 fire control system and awarded the SM–3 IIA contract to complete missile development. In fiscal year 2014 we will conduct the first fly-out test of the SM–3 IIA propulsion stack to measure its performance. MDA requests $308.5 million in RDT&E funding in fiscal year 2014 to continue the bilateral, cooperative effort.

Command, Control, Battle Management, and Communications and Sensors

We successfully demonstrated this past year our ability to interoperate between NATO's Active Layered Theater Ballistic Missile Defense system and C2BMC. The NATO BMD Operations Center (BMDOC) at Ramstein Air Base is NATO's 24/7 command and control center for missile defense. Today, the NATO BMDOC participates in joint exercises with the EUCOM missile and air defense architecture and is responsible for command and control of the multi-national Patriot units currently deployed in Turkey.

In 2012 we continued to support warfighter operations of the EUCOM BMDS capability for regional defense and executed key warfighter events to demonstrate readiness for defense of Israel by linking the AN/TPY–2 and C2BMC ballistic missile threat tracks to Aegis BMD, THAAD, and Patriot shooters in a distributed environment using operational communications and crews. In partnership with the Combatant Commands, we maintain the capability to engage multiple simultaneous threat attacks in the region. Last year we completed the AN/TPY–2 radar deployment to U.S. Central Command (CENTCOM), where we deployed a C2BMC suite ahead of schedule as well as the Global Engagement Manager (GEM) for control of the AN/TPY–2 radar to enhance regional missile defense.

We request $300 million in fiscal year 2014 to develop and deploy BMDS sensors, and $145.8 million to operate and sustain the nine AN/TPY–2 radars and support the UEWRs and Cobra Dane EWR.

We request $418.4 million in fiscal year 2014 to operate and sustain C2BMC at fielded sites and continue C2BMC program spiral development of software and engineering to incorporate enhanced C2BMC capability into the battle management architecture and promote further interoperability among the BMDS elements, incorporate boost phase tracking, and improve system-level correlation and tracking. We will also continue communications support for the AN/TPY–2 radars and C2BMC upgrades.

We request $44.9 million for continued operation of the Space Tracking and Surveillance System in fiscal year 2014. In fiscal year 2012, MDA operated STSS demonstration satellites (STSS–D) around the clock with availability exceeding 95 percent as well as the Near Field Infrared Experiment satellite to collect Earth limb phenomenology. We continue to operate the two STSS–D satellites to conduct cooperative tests with other BMDS elements and demonstrate the capability of the satellites against targets of opportunity to provide high precision, real-time tracking of missiles and midcourse objects that enable closing the fire control loops with BMDS interceptors. We conducted a successful intercept of a threat MRBM last February by Aegis BMD system using only STSS–D data to provide launch data for the SM–3 IA guided missile (FTM–20).

The Department of Defense has terminated the Precision Tracking Space System (PTSS). Concurrency in the development schedule and uncertainty in the cost estimates put in doubt long-term fiscal sustainability. Moreover, the PTSS acquisition strategy was high risk. We believe we need to be in space for infrared (IR) discrimi-

nation capability, but for now we can address the threat with other land-based sensors in key locations, which will allow us to provide support to the warfighter in the near term and assume less acquisition risk. A study has been initiated to determine how best to support future sensor requirements and we are exploring technologies to improve the capabilities of ground, air, and space sensors.

DEVELOPING NEW CAPABILITIES

We are developing fiscally sustainable advanced BMD technologies that can be integrated into the BMDS to adapt as threats change. Our investments are focused on technology that brings upgradeable capability to the warfighter. For sensors, in the near-term we will integrate and demonstrate electro-optical and infrared sensors using available airborne UAV platforms to create a precision track our shooters can use. . . For interceptors, our overall strategy includes making near-term investments in interceptor technology that accelerate our ability to use a kill vehicle singularly or in combination in a way that balances our overall approach to solving the very difficult problems of lethal object discrimination, limited inventory and cost per kill. We will also explore other ways to improve the exchange ratio in the missile defense battle.

Last year, we restructured our high power directed energy program and began building the foundation for the next-generation laser system by competing two promising lightweight, highly efficient solid state lasers, one at Lawrence Livermore National Laboratory and the other at MIT Lincoln Laboratory. At MIT Lincoln Laboratory, we built a small-scale prototype of a laser device that exploits a novel technique for combining the output of individual fiber lasers. This year, for the fiber laser, we will team with the Defense Advanced Research Projects Agency to determine the most efficient method of combining laser beams. We will improve the performance of the competing Diode Pumped Alkali Laser System at Lawrence Livermore National Laboratory through a series of laser system upgrades. MDA is requesting $43.5 million in fiscal year 2014 to demonstrate the efficiency, producibility, and scaling potential of the two candidate lasers.

MDA requests $77.3 million in fiscal year 2014 to evaluate and research component and sensor technology requirements. Incorporating promising hardware and software from prior programs into our advanced sensor test bed, we will prove the value of emerging discrimination concepts.

Despite the commonality of their mission and functions, components on the current midcourse phase interceptors, the GBI and SM–3 kill vehicles, were developed independently at a substantial cost over the past decade. We are looking at the benefits of developing common kill vehicle technology for the GBI and SM–3 variants, focusing in particular on the ability to address future technology advancements through the development of a similar set of components, subsystems, and software. This common kill vehicle technology effort initially will perform risk reduction and examine other technologies that may improve future interceptor capabilities. This effort is in keeping with the plan for the next generation exo-atmospheric kill vehicle, as directed by section 225 of the National Defense Authorization Act for Fiscal Year 2013.

Given changes in the assessment of the threat from North Korea to the U.S. Homeland, as well as delays in the potential deployment of any SM–3 IIB interceptor resulting from delayed technology development due to budget reductions, the Department is evaluating alternatives to hedge against future threat technology advancements. The Department is no longer planning for the SM–3 IIB program and does not request funding for the program in fiscal year 2014. In addition to the cuts imposed in the fiscal year 2012 Appropriation and fiscal year 2013 funding, analyses show a larger missile would be required to achieve the necessary burn out velocity, and a larger missile design would have taken additional time and resources, pushing the initial operational capability out past 2022. Our near- to mid-term focus for homeland defense will be to increase GMD capability, to include increasing deployed GBIs from 30 to 44, investing in Common Kill Vehicle technology, and conducting siting and EIS studies for a new U.S. GBI missile field.

MDA requests $19.2 million in fiscal year 2014 to continue partnerships with industry and universities to seek innovative concepts in sensors, weapons, and advanced algorithms. We will leverage University-to-University International Research opportunities with allied nations to enhance Advanced Technology initiatives and build stronger relationships with our international partners and NATO allies.

INTERNATIONAL COOPERATION

MDA is engaged either bilaterally or multilaterally with nearly two dozen countries and international organizations, such as NATO and the Gulf Cooperation Council.

In Asia-Pacific, the United States and Japan are working together to support the deployment of the second U.S. forward-based AN/TPY–2 radar. In addition, we continue to develop collaboratively the SM–3 IIA to enable U.S. and Japanese Aegis BMD ships to engage MRBMs and IRBMs and, when coupled with the upgraded Aegis BMD weapon system, more sophisticated ballistic missile threats. This year we signed a Second Amendment to the formal joint agreement with Japan administering the SM–3 Block IIA Cooperative Development (SCD) effort. The amendment will reduce risk in the SCD program by adding flight tests and sufficient time in the schedule for additional engineering analysis between flight tests.

This budget continues MDA's longstanding commitment in support of Israeli defensive efforts. MDA is working with the Israel Missile Defense Organization (IMDO) to deliver Iron Dome batteries and interceptors. Iron Dome has had significant success protecting the Israeli population against short-range rockets and large artillery shells. MDA has been working closely with U.S. Department of Defense leadership to ensure U.S. funding for Iron Dome is being used effectively to produce additional Iron Dome batteries and interceptors. Any further U.S. contributions on Iron Dome will be governed by a formal international agreement. MDA is actively seeking Iron Dome co-production opportunities for U.S. defense industry. We are negotiating to obtain available technical data packages and data rights should there be a future U.S. defense requirement for this weapon system.

We are also developing missile defense systems with Israel to address regional ballistic missile threats. The David's Sling Weapon System is designed to defeat SRBM threats. IMDO and MDA completed the first phase of the development of David's Sling last November with a successful intercept test. MDA and Israel also are co-developing the Arrow-3 Upper Tier interceptor. The advanced design of this interceptor was successfully tested this past February in a non-intercept test; a second fly-out test is scheduled for fiscal year 2014. MDA also participated in Austere Challenge 2012 exercises, which successfully demonstrated the concept of operations for the U.S.-Israel BMD architecture and future interoperability.

Elsewhere in the Middle East, U.S. BMD capabilities continue to expand in defense of forward-deployed U.S. armed forces, allies, and partners. Major MDA activities in the Middle East involve relationships with regional partners expressing interest in procuring U.S. systems. Last year, MDA was officially designated as a Foreign Military Sales (FMS) Implementing Agency for THAAD and the AN/TPY–2 radar. In addition to our current $3.5 billion FMS case with the United Arab Emirates, we are engaged with several other potential FMS customers for these very capable systems.

In Europe, aside from EPAA planning and fielding, MDA maintains active bilateral relationships with our close allies in that region.

CONCLUSION

Mr. Chairman, when I arrived at the Missile Defense Agency last November, I was impressed with the organization and the dedication and professionalism of the government and contractor workforce. The Agency is settling into the post-base realignment and closure configuration, which we completed in fiscal year 2011. This has been a challenging period for our personnel, but we have stayed focused on our core mission. I am proud to lead the people behind today's missile defense program. They are highly motivated and the very best in the world at what they do.

The impact of the sequestration on the program and workforce is significant. We will see limitations in our ability to deliver future homeland defense capabilities. To mitigate some of the effects of sequestration cuts, I will be working with the Department to submit an Above Threshold Reprogramming request as part of the Department's larger request this year.

Whatever happens, I am dedicated to executing successful GMD intercept flight tests over the coming year and will continue to strive to ensure reliability in our operational homeland defenses. We have made good progress in our work with our international partners, and I want to continue those important efforts. We will continue our work with the warfighter to develop, test, and field a networked, global BMD system that is flexible, survivable, and affordable. We will work on ways to cut sustainment costs, reduce high-risk acquisition concurrency, improve system reliability, and deliver capabilities as promised. Mindful that today's security environment is unlikely to mirror that of tomorrow, we will continue to invest in promising

and potentially game-changing technology programs to ensure the BMDS will be capable of defeating the complex threats we expect to face in the future.

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

Senator UDALL. Thank you, Admiral.

Ms. Chaplain.

STATEMENT OF MS. CRISTINA T. CHAPLAIN, DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, GOVERNMENT ACCOUNTABILITY OFFICE

Ms. CHAPLAIN. Chairman Udall, Senator Fischer, and members of the subcommittee: Thank you for inviting me here today. I'd like to make a couple of brief points about MDA's acquisition progress.

In addition to the successful test events just mentioned, MDA has reduced acquisition risk in some key programs, such as the SM–3 2A interceptor, where MDA postponed the start of product development until it addressed several critical technical challenges. That's a good step because you're going to prevent problems that could cost a lot later on in a program.

MDA has also taken important steps to clarify the baselines it reports to Congress, for example by defining more clearly what costs are presented and what costs are not being presented and why. But more needs to be done to put acquisitions on a sounder footing and to help Congress prioritize limited resources.

For example, at this time costs for programs still cannot be compared over time. Some programs are still following high-risk strategies. For example, MDA is using new targets for the first time in major operational tests, rather than demonstrating them in a less complex and expensive scenario.

Moreover, as we pointed out in our report, in light of budget constraints we believe MDA should more rigorously analyze alternatives before committing to new investments. We reported that two programs recently proposed for cancellation did not have robust analyses of alternatives.

Finally, I'd just like to recognize Admiral Syring's commitment to improving acquisition and reducing risk for MDA. We look forward to working with him and the agency in the future on doing so.

So thank you. I'm happy to answer any questions.

[The prepared statement of Ms. Chaplain follows:]

PREPARED STATEMENT BY MS. CRISTINA T. CHAPLAIN

Chairman Udall, Ranking Member Sessions, and members of the subcommittee: I am pleased to be here today to discuss the progress made and challenges that remain for the Department of Defense's (DOD) Missile Defense Agency (MDA) in developing and fielding the Ballistic Missile Defense System (BMDS). Since MDA was established in 2002, it has spent over $90 billion to provide protection from enemy ballistic missiles by developing battle management systems, sensors that identify incoming threats, and missiles to intercept them. MDA plans to spend about $7.5 billion per year through 2018. Since its inception, MDA has been operating in an environment of tight timeframes for delivering capabilities—first with a presidential directive in 2002 and then with a presidential announcement in 2009 on U.S. missile defense in Europe. It is now also operating in an environment of growing budgetary constraints, which have already necessitated tough trade-off decisions and will require additional steps to reduce acquisition risk. At the same time, MDA is undergoing significant transition. In addition to a recent change in the agency's leadership, MDA is responding to the Secretary of Defense's March 2013 announcement to increase the planned numbers of ground-based interceptors designed to protect the United States as well as to changes in plans for U.S. missile defense in Europe.

Since the 2002 National Defense Authorization Act, we have been mandated to prepare annual assessments of MDA's progress toward its acquisition goals.[1] The National Defense Authorization Act for Fiscal Year 2012 required us to report on our assessment of the extent to which MDA has achieved its stated acquisition goals and objectives, as reported through their acquisition baselines, and also to include any other findings and recommendations on MDA acquisition programs and accountability as appropriate.[2] We recently issued our report responding to this mandate.[3] This testimony highlights our findings from that report as well as relevant findings from several of our prior reports on missile defense issued from September 2008 through July 2012, particularly as they relate to the progress MDA made this year in reducing acqusiition risks and the challenges that still face MDA.[4]

To assess MDA's progress and related challenges, we examined the acquisition accomplishments of individual missile defense programs and supporting efforts that MDA is currently developing and fielding. We conducted this work in accordance with generally accepted government auditing standards. Additional information on our scope and methodology is available in our April 2013 and prior issued reports.

BACKGROUND

MDA's BMDS is being designed to counter ballistic missiles of all ranges—short, medium, intermediate, and intercontinental. Because ballistic missiles have different ranges, speeds, sizes, and performance characteristics, MDA is developing multiple systems that, when integrated, provide multiple opportunities to destroy ballistic missiles before they can reach their targets. The BMDS architecture includes space-based sensors, ground- and sea-based radars, ground- and sea-based interceptor missiles, and a command and control, battle management, and communications system to provide the warfighter with the necessary communication links to the sensors and interceptor missiles.

Table 1 provides a brief description of individual BMDS systems, which MDA refers to as elements of the BMDS. As noted in the table, two programs were proposed for cancellation in April 2013 as part of DOD's fiscal year 2014 President's budget submission.

TABLE 1: DESCRIPTION OF SELECTED BALLISTIC MISSILE DEFENSE SYSTEM (BMDS) ELEMENTS AND SUPPORTING EFFORTS

BMDS element/supporting effort	Description and key components
Aegis Ballistic Missile Defense (BMD) with Standard Missile-3 (SM–3) Block IA and Block IBa.	Aegis BMD is a sea-based system developed for ballistic missile defense and other missions. MDA is developing several versions of SM–3 and associated ship-based software and processors. The first two variants of SM–3 missiles are referred to as Block IA and Block IB. The SM–3 Block IB features additional capabilities over the Block IA to identify, discriminate, and track objects during flight.
Aegis Ashore	A land-based, or ashore, version of Aegis BMD initially using SM–3 Block IB missiles, with plans to use various versions of SM–3 missiles and Aegis weapon system software as they become available.

[1] National Defense Authorization Act for Fiscal Year 2002, Pub. L. No. 107–107, § 232(g) (2001); Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, Pub. L. No. 108–375, § 233 (2004); National Defense Authorization Act for Fiscal Year 2006, Pub. L. No. 109–163, § 232; John Warner National Defense Authorization Act for Fiscal Year 2007, Pub. L. No. 109–364, § 224 (2006); and National Defense Authorization Act for Fiscal Year 2008, Pub. L. No. 110–181, § 225.

[2] Pub. L. No. 112–81, § 232 (2011).

[3] GAO, Missile Defense: Opportunity to Refocus on Strengthening Acquisition Management, GAO–13–432 (Washington, DC: Apr. 26, 2013).

[4] GAO–13–432; GAO, Missile Defense: Opportunity Exists to Strengthen Acquisitions by Reducing Concurrency, GAO–12–486 (Washington, DC: Apr. 20, 2012); Schedule Best Practices Provide Opportunity to Enhance Missile Defense Agency Accountability and Program Execution, GAO–12–720R (Washington, DC: July 19, 2012); Space and Missile Defense Acquisitions: Periodic Assessment Needed to Correct Parts Quality Problems in Major Programs, GAO–11–404 (Washington, DC: June 24, 2011); Missile Defense: Actions Needed to Improve Transparency and Accountability, GAO–11–372 (Washington, DC: Mar. 24, 2011); Defense Acquisitions: Many Analyses of Alternatives Have Not Provided a Robust Assessment of Weapon System Options, GAO–09–665 (Washington, DC: Sept. 24, 2009); Defense Acquisitions: Sound Business Case Needed to Implement Missile Defense Agency's Targets Program, GAO–08–1113 (Washington, DC: Sept. 26, 2008).

TABLE 1: DESCRIPTION OF SELECTED BALLISTIC MISSILE DEFENSE SYSTEM (BMDS) ELEMENTS AND SUPPORTING EFFORTS—Continued

BMDS element/supporting effort	Description and key components
Aegis BMD SM–3 Block IIA	The SM–3 Block IIA is planned to be larger than the SM–3 Block IB and is planned to have increased velocity, range, and discrimination capabilities.
Aegis BMD SM–3 Block IIB	The SM–3 Block IIB was planned to address different threats and have more advanced capabilities than earlier SM–3 versions. Key components had not yet been finalized before DOD proposed canceling the program in April 2013 as part of its fiscal year 2014 President's budget submission.
BMDS Sensors	MDA has fielded and/or upgraded a variety of sensors that support various elements of the BMDS including: the Army Navy/Transportable Radar Surveillance and Control Model 2 (AN/TPY–2) radar; the Sea-Based X-Band radar; upgraded early warning radars; and the Cobra Dane radar.
Command, Control, Battle Management, and Communications (C2BMC) [1].	A global network that links and integrates individual missile defense elements. It also allows users to plan ballistic missile defense operations, see the battle develop, and manage networked sensors and weapon systems.
Ground-based Midcourse Defense (GMD)	A ground-based missile defense system with interceptors located at Fort Greely, AK, and Vandenberg, CA. The interceptor consists of a three-stage booster with a kill vehicle on top that can steer itself into the threat missile to destroy it. There are currently two versions of the kill vehicle: the Capability Enhancement-I (CE–I) and the upgraded design known as the Capability Enhancement-II (CE–II).
Precision Tracking Space System (PTSS)	A new constellation of nine satellites planned to provide high-quality track information on threat missiles to other ballistic missile defense systems, DOD proposed canceling the program in April 2013 as part of its fiscal year 2014 President's budget submission.
Targets and Countermeasures	MDA develops and manufactures highly complex targets to present realistic threat scenarios during BMDS flight tests. Our testimony focuses on medium-range air-launched targets being flown for the first time in fiscal year 2013.
Terminal High Altitude Area Defense (THAAD)	A mobile, ground-based missile defense system organized as a battery which includes interceptors, launchers, an AN/TPY–2 radar, a fire control and communications system, and other support equipment.

Source: Missile Defense Agency (data); GAO (presentation).

[1] Details on the acquisition progress of the Aegis BMD SM–3 Block IA and C2BMC elements were not covered in our April 2013 report.

When MDA was established in 2002, the Secretary of Defense granted it exceptional flexibility to set requirements and manage the acquisition of the BMDS in order to quickly deliver protection against ballistic missiles. This decision enabled MDA to rapidly deliver assets but we have reported that it has come at the expense of transparency and accountability.[5] Moreover, to meet tight deadlines, MDA has employed high-risk acquisition strategies that have resulted in significant cost growth, schedule delays, and in some cases, performance shortfalls. Examples of key problems we have cited in reports in recent years are highlighted below.

- In recent years, MDA has experienced several test failures. These, as well as a test anomaly and delays, disrupted MDA's flight test plan and the acquisition strategies of several components.[6] Overall, these issues forced MDA to suspend or slow production of three out of four interceptors being manufactured. The GMD program in particular has been disrupted in its attempts to demonstrate the CE–II interceptors by two test failures. As a result of a failed flight test in January 2010 due to an assembly process quality issue, MDA added a retest designated as Flight Test GMD–06a (FTG–06a). However, this retest also failed in December 2010 due to the effects of vibration on the kill vehicle's guidance system. As a result of these failures, MDA decided to halt GMD flight testing and restructure its multiyear flight test program, halt production of the GMD interceptors, and redirect resources to return-to-flight testing activities. Additionally, as we reported in April 2013, the costs to demonstrate and fix CE–II capability

[5] GAO–11–372 and GAO–12–486.
[6] GAO–12–486.

have grown from $236 million to over $1.2 billion and are continuing to grow.[7]

- MDA acquisitions have faced significant cost growth, schedule delays, and/or performance shortfalls due to a highly concurrent acquisition approach.[8] Concurrency is broadly defined as the overlap between technology development and product development or between product development and production. While some concurrency is understandable, committing to product development before requirements are understood and technologies are mature or committing to production and fielding before development is complete is a high-risk strategy that often results in performance shortfalls, unexpected cost increases, schedule delays, and test problems. High levels of concurrency were present in MDA's initial efforts and remain present in current efforts.
- There has been limited visibility into cost and schedule progress associated with the BMDS. We have reported on the limited usefulness of MDA's acquisition baselines for oversight due to: (1) a lack of clarity, consistency, and completeness; (2) a lack of high-quality supporting cost estimates and schedules; and (3) instability in the content of the baselines.[9]
- MDA has made limited progress in developing the individual system models it uses to assess performance of the BMDS elements and linking those models.[10] Models and simulations are critical to understanding BMDS capabilities. The complex nature of the BMDS, with its wide range of connected elements, requires integrated system-level models and simulations to assess its performance in a range of system configurations and engagement conditions.
- Quality issues have also impeded missile defense development in recent years.[11] These were due to workmanship issues, the use of undocumented and untested manufacturing processes and poor control of manufacturing materials, among other factors.

Congress and DOD have taken steps in recent years to address concerns over MDA's acquisition management strategy, accountability, and oversight. These include efforts to provide more information on cost, schedule, and other baselines; efforts to prevent quality problems; and efforts to begin obtaining independent cost estimates.

MDA HAS MADE PROGRESS ON TESTING, REDUCING SOME ACQUISITION RISKS, AND IMPROVING THE CLARITY OF THE BASELINES

In April 2013, we reported that in the past year MDA gained important knowledge through its test program, including successfully conducting its most complex integrated air and missile defense flight test to date, and it took some positive steps to reduce acquisition risks for two of its programs. It has also improved the clarity of baseline information it reports to Congress.[12]

Specifically, in April 2013 we reported that in October 2012, MDA conducted the largest integrated air and missile defense flight test to date, achieving near simultaneous intercepts of multiple targets by various BMDS interceptors. This test was a combined developmental and operational flight test that for the first time used warfighters from multiple combatant commands and employed multiple missile defense systems. All five targets—three ballistic and two cruise missiles—were launched and performed as expected. In this test, THAAD also intercepted a medium-range target for the first time and an Aegis ship conducted successfully a standard missile-2 Block IIIA engagement against a cruise missile. This test also provided valuable data to evaluate interoperability between several systems during a live engagement.

In April 2013, we reported that in fiscal year 2012, the Aegis BMD SM–3 Block IB and THAAD programs also attained important knowledge in their flight test programs. In May 2012, the Aegis BMD SM–3 Block IB system intercepted a short-range target for the first time. In June 2012, the system completed another successful intercept which provided more insight into the missile's enhanced ability to discriminate the target from other objects during an engagement. In October 2011, THAAD successfully conducted its first operational flight test prior to entering full-

[7] GAO–13–432.
[8] GAO–12–486 and GAO–13–432.
[9] GAO–11–372, GAO–12–720R, and GAO–13–432.
[10] GAO–13–432, GAO–12–486, and GAO–11–372.
[11] GAO–11–404.
[12] GAO–13–432.

rate production.[13] During the test, THAAD fired two missiles that intercepted two short-range targets, demonstrating that the system can perform under operationally realistic conditions from mission planning through the end of the engagement. Additionally, this test supported the resumption of interceptor manufacturing, and was used by the Army as support for accepting the first two THAAD batteries. This also marked the first time Army and DOD test and evaluation organizations confirmed that the test and its results resembled the fielded system.

We also reported in April 2013 that MDA took steps to reduce acquisition risk by decreasing the overlap between technology and product development for two of its programs—the Aegis BMD SM–3 Block IIA and Block IIB programs.[14] By taking steps to reconcile gaps between requirements and available resources before product development begins, MDA makes it more likely that programs can meet cost, schedule, and performance targets. The Aegis BMD SM–3 Block IIA program added time and money to extend development following significant problems with four components. MDA reduced its acquisition risk by delaying the program's system preliminary design review for more than 1 year and, as a result, in March 2012, the program successfully completed the review because it allowed additional development of the components. We also reported in April 2013 that the Aegis BMD SM–3 Block IIB program had taken important steps to reduce concurrency and increase the technical knowledge it planned to achieve before development by delaying product development until after its preliminary design review was completed.

Lastly, in April 2013 we reported that MDA has taken steps to improve the clarity of its acquisition baselines since we reported on these issues in March 2011. Although MDA is not yet required to establish an acquisition program baseline pursuant to 10 U.S.C. § 2435 and related DOD policy because of the acquisition flexibilities it has been granted, Congress has enacted legislation requiring MDA to establish some baselines. MDA reported baselines for several BMDS programs to Congress for the first time in its June 2010 BMDS Accountability Report (BAR) to respond to statutory requirements in the National Defense Authorization Act for Fiscal Year 2008.[15] MDA's baselines, including resource and schedule baselines, are reported in the BAR and are updated annually. MDA's 2012 resource baselines report costs for all the categories of the life cycle—research and development, procurement, military construction, operations and support, and disposal costs.[16] Schedule baselines include key milestones and tasks, such as important decision points, significant increases in performance knowledge, modeling and simulation events, and development efforts. Some also show timeframes for fight and ground tests, fielding, and events to support fielding.

In its 2012 BAR, MDA made several useful changes to its reported resource and schedule baselines in response to our concerns and congressional direction. For example, MDA:

- reported the full range of life cycle costs borne by MDA;
- defined and explained more clearly what costs are in the resource baselines or were excluded from the estimates;
- included costs already incurred in the unit cost for Targets and Countermeasures so they were more complete;
- added a separate delivery table that provided more detailed information on deliveries and inventories; and
- added a list of significant decisions made or events that occurred in the past year—either internal or external to the program—that affected program progress or baseline reporting.

MDA CONTINUES TO FACE A VARIETY OF ACQUISITION CHALLENGES

Although the MDA has made some progress, the new MDA Director faces considerable challenges in executing acquisition programs; strengthening accountability;

[13] Pursuant to MDA's acquisition flexibilities, once an element enters the production and deployment phase, the element enters the formal DOD acquisition system. Consequently, 10 U.S.C.§ 2366 requires completion of realistic survivability testing of a weapon system before a program can begin full-rate production.

[14] GAO–13–432.

[15] Pub. L. No. 110–181, § 223(g), repealed by Pub. L. No. 112–81, § 231(b) (2011).

[16] Research and development costs include development and design costs for system engineering and design, test and evaluation, and other costs for system design features. Procurement costs include total production and deployment costs (e.g., site activation, training) of the prime system and its related support equipment and facilities. Military construction costs include costs for major construction such as bases and buildings. Operations and support costs include costs of operating and supporting the fielded system, including all direct and indirect costs incurred in using the system (e.g., personnel, maintenance, and sustaining investment). Disposal, or inactivation, costs include the costs of disposing of the prime equipment after its useful life.

assessing alternatives before making new investment commitments; developing and deploying U.S. missile defense in Europe and using modeling and simulations to understand capabilities and limitations of the BMDS.

Challenge: Executing Acquisition Programs

In April 2013 we reported that though MDA has gained important insights through testing and taken some steps to reduce acquisition risk and increase transparency, it still faces challenges stemming from high-risk acquisition strategies. As noted earlier, MDA has undertaken and continues to undertake highly concurrent acquisitions. While some concurrency is understandable, committing to product development before requirements are understood and technologies are mature or committing to production and fielding before development is complete is a high-risk strategy that often results in performance shortfalls, unexpected cost increases, schedule delays, and test problems. It can also create pressure to keep producing to avoid work stoppages.

Our April 2012 report detailed how the Aegis BMD SM–3 Block IB, GMD, and THAAD programs undertook highly concurrent acquisition strategies.[17] For example, to meet the presidential directive to deploy an initial set of missile defense capabilities by 2004, the GMD program concurrently matured technology, designed the system, tested the design, and produced and deployed an initial set of missile defense capabilities. CE–I interceptors were rapidly delivered to the warfighter but they required an expensive retrofit and refurbishment program that is still ongoing. Similarly, MDA proceeded to concurrently develop, manufacture, and deliver 12 of the next generation of interceptors, the CE–IIs. They were also delivered prematurely to the warfighter and will require an extensive and expensive retrofit.

In April 2012, we also reported that the Aegis Ashore and PTSS programs were adopting acquisition strategies with high levels of concurrency. The Aegis Ashore program, for instance, began product development on two systems—one designated for testing and the other operational—and set the acquisition baseline before completing the preliminary design review. Best practices, by contrast, call for such baselines to be set after this review because the review process is designed to ensure the program has sufficient knowledge about resources and requirements before engaging in large-scale acquisition activities. Similarly, for its new PTSS, MDA planned to develop and produce two industry-built satellites while a laboratory-led contractor team was still in the development phase of building two lab development satellites. Such an approach would not enable decisionmakers to fully benefit from the knowledge about the design to be gained from on-orbit testing of the laboratory-built satellites before committing to the next industry-built satellites.

In our April 2013 report, we noted that the concurrent high risk approaches for the GMD and Aegis BMD SM–3 Block IB programs were continuing to have negative effects, while the THAAD program was able to overcome most of its issues.[18] For instance, discovery of the CE–II design problem while production was already under way increased MDA costs to demonstrate and fix CE–II capability from approximately $236 million to over $1.2 billion, due to the costs of additional flight tests including the target and test-range, investigating the failure, developing failure resolutions, and fixing the already delivered missiles. Costs continue growing because MDA further delayed the next intercept test planned for fiscal year 2012. At this time, the next intercept test date is not yet determined as MDA is considering various options. While the Aegis BMD SM–3 Block IB program slowed production to address developmental issues that arose when the program experienced a failure and a flight anomaly in early flight tests, it experienced further difficulties completing testing of a new maneuvering component—contributing to delays for a third flight test needed to validate the interceptor's capability.

We also reported in April 2013 that MDA was continuing to follow high risk acquisition strategies for its Aegis Ashore, PTSS, and Targets and Countermeasures programs. For example, this year we reported that the Targets and Countermeasures acquisition strategy is adding risk to an upcoming complex, costly operational flight test involving multiple MDA systems because it plans to use unproven targets. Using these new targets puts this major test at risk of not being able to obtain key information should the targets not perform as expected. Developmental issues with this new medium-range target as well as identification of new software requirements have already contributed to delaying the test, which was originally planned for the fourth quarter of fiscal year 2012 and is now planned for the fourth quarter of fiscal year 2013.

[17] GAO–12–486.
[18] GAO–13–432.

In 2012, we recommended MDA make adjustments to the acquisition schedules to reduce concurrency.[19] DOD agreed and partially addressed the recommendation. Specifically, MDA reduced concurrency in the Aegis BMD SM–3 Block IIA and Block IIB programs, but continues to include high levels of concurrency in other programs as discussed above. We also recommended in 2013 that the Secretary of Defense direct MDA's new Director to add non-intercept flight tests for each new type of target missile developed to reduce risk.[20] DOD partially concurred, stating that the decision to perform a non-intercept target test must be balanced against cost, schedule, and programmatic impacts. While there may be exceptions that need to occur when there is a critical warfighter need, we believe, whenever possible, that MDA should avoid using undemonstrated targets, particularly for costly and complex major operational tests.

Challenge: Strengthening Accountability by Ensuring Program Baselines Support Oversight

In April 2013, we reported that while MDA made substantial improvements to the clarity of its reported resource and schedule baselines in fiscal year 2012, it has made little progress improving the quality of its cost estimates that support its resource baseline since we made a recommendation to improve these estimates in our March 2011 report.[21] In particular, MDA's resource baselines are not yet sufficiently reliable, in part because they do not include costs from military services in reported life cycle costs for its programs. Instability due to MDA's frequent adjustments to its acquisition baselines also makes assessing progress over time extremely difficult and, in many cases, impossible. Despite some positive steps forward since 2004, the baselines are of limited use for meaningfully assessing BMDS cost and schedule progress.

In our March 2011 report, we assessed MDA life cycle cost estimates using the GAO Cost Estimating and Assessment Guide.[22] We found that the cost estimates we assessed, that were used to support MDA's resource baselines, were not comprehensive, lacked documentation, were not completely accurate, or were not sufficiently credible. In April 2013 we reported that, in June 2012, MDA completed an internal Cost Estimating Handbook, largely based on our guide which, if implemented, could help address nearly all of the shortfalls we identified. Because the Handbook was only recently completed, it is too early to assess whether the quality of MDA's cost estimates have improved. In our April 2013 report, we found that while the agency made improvements to its reported resource baselines to include all of the life cycle costs funded by MDA from development through retirement of the program, the baselines do not include operation and support costs funded by the individual military services.[23] According to our guide, cost estimates should be comprehensive. Comprehensive estimates include both the government and contractor costs of the program over its full life cycle, from inception of the program through design, development, deployment, and operation and support to retirement. MDA officials told us in 2011 that MDA does not consider military service operation and support funds to be part of the baselines because the services execute the funds. It is unclear what percentage operation and support costs are in the case of MDA programs because they have not been reported. For programs outside of MDA these costs can be significant, and as a result the reported life cycle costs for some MDA programs could be significantly understated.

In our April 2013 report, we recommended that the Secretary of Defense direct MDA's new Director to include in its resource baseline cost estimates all life cycle costs, specifically the operations and support costs from the military services in order to provide decisionmakers with the full costs of ballistic missile defense systems. DOD partially concurred with this recommendation, agreeing that decisionmakers should have insight into the full life cycle costs of DOD programs, but disagreeing that they should be reported in MDA's BAR. DOD did not identify how the full life cycle costs should be reported. We continue to believe that these costs should be reported because good budgeting requires that the full costs of a project be considered when making decisions to provide resources. In addition, DOD has reported full operation and support costs to Congress for major defense acquisition programs where one military service is leading the development of an acquisition planned to be operated by many Military Services. We also believe that MDA's BAR

[19] GAO–12–486.
[20] GAO–13–432.
[21] GAO–11–372.
[22] GAO–11–372 and GAO, GAO Cost Estimating and Assessment Guide, GAO–09–3SP (Washington, DC: March 2009).
[23] GAO–13–432.

is the most appropriate way to report the full costs to Congress because it already includes the acquisition costs and the MDA funded operation and support costs.

In July 2012, we also used our Schedule Assessment Guide to assess five MDA program schedules that support the baselines and found that none fully met the best practices identified in the guide.[24] For example, three programs took steps to ensure resources were assigned to their schedule activities, but one program did not do so and the other only partially did so. Moreover, none of the five programs we reviewed had an integrated master schedule for the entire length of acquisition as called for by the first best practice, meaning the programs are at risk for unreliable completion estimates and delays. DOD concurred with our recommendations to ensure that best practices are applied to those schedules as outlined in our guide, and MDA programs have taken some actions to improve their schedules, though they have not yet had time to fully address our recommendations. We plan to continue to monitor their progress because establishing sound and reliable schedules is fundamental to creating realistic schedule and cost baselines.

Lastly, as we reported in March 2009, in order for baselines to be useful, they need to be stable over time so progress can be measured and so that decisionmakers can determine how to best allocate limited resources.[25] In April 2013, we reported that most major defense acquisition programs are required to establish baselines prior to beginning product development.[26] These baselines, as implemented by DOD, include key performance, cost, and schedule goals. Decisionmakers can compare the current estimates for performance, cost, and schedule goals against a baseline in order to measure and monitor progress. Identifying and reporting deviations from the baseline in cost, schedule, or performance as a program proceeds provides valuable information for oversight by identifying areas of program risk and its causes.

However, as we reported in April 2013, MDA only reports annual progress by comparing its current estimates for unit cost and scheduled activities against the prior year's estimates. As a result, MDA's baseline reports are not useful for tracking longer term progress. When we sought to compare the latest 2012 unit cost and schedule estimates with the original baselines set in 2010, we found that because the baseline content had been adjusted from year to year, in many instances the baselines were no longer comparable. I would like to highlight the problems we identified in Aegis Ashore to illustrate how these adjustments limited visibility into cost or schedule progress. MDA prematurely set the Aegis Ashore baseline before program requirements were understood and before the acquisition strategy was firm. The program has subsequently added significant content to the resource baseline to respond to acquisition strategy changes and requirements that were added after the baseline was set. In addition, activities from Aegis Ashore's 2010 BAR schedule baseline were split into multiple events, renamed, or eliminated altogether in the program's 2012 BAR schedule baseline. MDA also redistributed planned activities from the Aegis Ashore schedule baselines into several other Aegis BMD schedule baselines. These major adjustments in program content made it impossible to understand annual or longer-term program cost progress. Rearranging content to other baselines also made tracking the progress of these activities very difficult and in some cases impossible.

We recommended in our April 2013 report that the Secretary of Defense direct MDA's new Director to stabilize the acquisition baselines so that meaningful comparisons can be made over time that support oversight of those acquisitions. DOD concurred with this recommendation.

Other Challenges Reported by GAO

Our April 2013 report discussed a variety of other challenges facing MDA that I would like to highlight today. First, in light of growing fiscal pressures, it is becoming increasingly important that MDA have a sound basis before investing in new efforts. But MDA has not analyzed alternatives in a robust manner before making recent commitments. Second, during the past several years, MDA has been responding to a mandate from the President to develop and deploy new missile defense systems in Europe for defense of Europe and the United States. Our work continues to find that a key challenge facing DOD is to keep individual system acquisitions synchronized with the planned timeframes of the overall U.S. missile defense capability planned in Europe. Third, MDA also is challenged by the need to develop the

[24] GAO–12–720R.

[25] GAO–09–3SP.

[26] A baseline description for a major defense acquisition program or any designated major subprogram under the program shall be prepared . . . before the program or subprogram enters system development and demonstration; before the program or subprogram enters production and deployment, and before the program or subprogram enters full rate production. 10 U.S.C. § 2435.

tools—the models and simulations—to understand the capabilities and limitations of the individual systems before they are deployed, which will require the agency to overcome technical limitations in the current approach to modeling missile defense performance. While MDA recently committed to a new approach in modeling and simulation that could enable them to credibly model individual programs and system-level BMDS performance, warfighters will not benefit from this effort until two of the currently planned three phases for U.S. missile defense in Europe have already been deployed in 2011 and 2015 respectively.

Analyses of Alternatives Could Help MDA Balance and Prioritize Its Portfolio of Investments

Because MDA faces growing fiscal pressure as it develops new programs at the same time as it supports and upgrades existing ones, DOD and MDA face key challenges getting the best value for its missile defense investments. We have frequently reported on the importance of establishing a sound basis before committing resources to developing a new product.[27] We have also reported that part of a sound basis is a full analysis of alternatives (AOA).[28] The AOA is an analytical study that is intended to compare the operational effectiveness, cost, and risks of a number of alternative potential solutions to address valid needs and shortfalls in operational capability. A robust AOA can provide decisionmakers with the information they need by helping establish whether a concept can be developed and produced within existing resources and whether it is the best solution to meet the warfighter's needs. Major defense acquisition programs are generally required by law and DOD's acquisition policy to conduct an AOA before they are approved to enter the technology development phase. Because of the flexibilities that have been granted to MDA, its programs are not required to complete an AOA before starting technology development. Nevertheless, MDA's acquisition directive requires programs to show they have identified competitive alternative materiel solutions before they can proceed to MDA's technology development phase. However, this directive provides no specific guidance on how this alternatives analysis should be conducted or what criteria should be used to identify and assess alternatives, such as risks and costs.

We reported in February 2013 that the Aegis BMD SM–3 Block IIB had not conducted a robust alternatives analysis and also reported in April 2013 that MDA did not conduct robust alternatives analyses for the PTSS program. Both of these programs were recently proposed for cancellation in the fiscal year 2014 President's budget submission. In our April 2013 report, we recommended that the Secretary of Defense direct the new MDA Director to undertake robust alternatives analyses for new major missile defense efforts currently underway and before embarking on other new missile defense programs. Doing so can help provide a foundation for developing and refining new program requirements, understanding the technical feasibility and costs of alternatives and help decisionmakers determine how to balance and prioritize MDA's portfolio of BMDS investments. DOD concurred with our recommendation but asserted MDA already performs studies and reviews that function as analyses of alternatives. We have found, however, that these studies are not sufficiently robust.

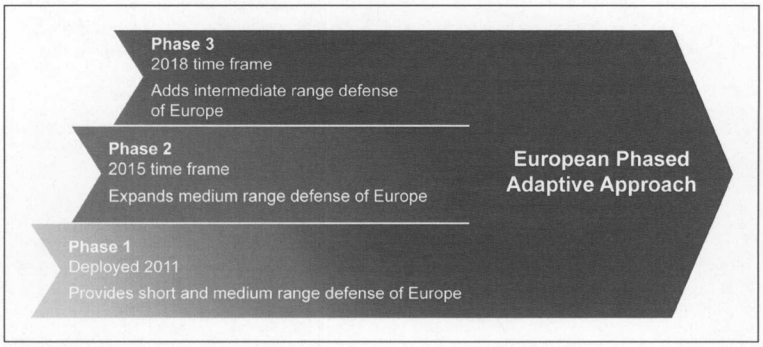
Developing and Deploying U.S. Missile Defense in Europe

In September 2009, the President announced a new approach to provide U.S. missile defense in Europe. This four-phase effort was designed to rely on increasingly capable missiles, sensors, and command and control systems to defend Europe and the United States. In March 2013, the Secretary of Defense canceled Phase 4, which called for Aegis BMD SM–3 Block IIB interceptors, and announced several other plans, including deploying additional ground based interceptors in Fort Greely, AK, and deploying a second AN/TPY–2 radar in Japan. DOD declared the first phase of U.S. missile defense in Europe operational in December 2011. The current three-phase effort is shown in figure

[27] GAO–08–1113; Defense Acquisitions: Improved Business Case Is Needed for Future Combat System's Successful Outcome, GAO–06–367 (Washington, DC: Mar. 14, 2006); and Tactical Aircraft: Air Force Still Needs Business Case to Support F/A–22 Quantities and Increased Capabilities, GAO–05–304 (Washington, DC: Mar. 15, 2005).

[28] GAO–09–665 and Homeland Security: DHS Requires More Disciplined Investment Management to Help Meet Mission Needs, GAO–12–833 (Washington, DC: Sept. 18, 2012).

Figure 1: Three-Phase U.S. Approach to Missile Defense in Europe



Source: GAO analysis of President's September 17, 2009, policy announcement, Secretary of Defense briefing on Missile Defense on March 15, 2013, and MDA and DOD data.

We reported in April 2012 that in order to meet the 2009 presidential announcement to deploy missile defenses in Europe, MDA has undertaken and continues to undertake highly concurrent acquisitions. We reported in April 2013 that, according to MDA documentation, system capabilities originally planned for the first three phases are facing delays, either in development or in integration and testing.

- The systems delivered for Phase 1 do not yet provide the full capability planned for the phase. Phase 1 was largely defined by existing systems that could be quickly deployed because of the limited time between the September 2009 announcement and the planned deployment of the first phase in 2011. MDA planned to deploy the first phase in two stages—the systems needed for the phase and then upgrades to those systems in 2014. However, an MDA official told us that MDA now considers the system upgrades stage to be part of the second phase, which may not be available until the 2015 timeframe.
- For Phase 2, some capabilities, such as an Aegis weapon system software upgrade, may not yet be available. MDA officials stated they are working to resolve this issue.
- For Phase 3, some battle management and Aegis capabilities are currently projected to be delayed.
- We recommended in our April 2012 report that DOD review the extent to which capability delivery dates announced by the President in 2009 were contributing to concurrency in missile defense acquisitions and identify schedule adjustments where significant benefits could be obtained by reducing concurrency. DOD concurred with this recommendation.

Modeling and Simulation Limitations

We reported in April 2013 that a key challenge for both the Director of MDA and the warfighter is understanding the capabilities and limitations of the systems MDA is going to deploy, particularly given the rapid pace of development. According to MDA's fiscal year 2012 President's budget submission, models and simulations are critical to understanding BMDS operational performance because assessing performance through flight tests alone is prohibitively expensive and can be affected by safety and test range constraints.[29] In August 2009, U.S. Strategic Command and the BMDS Operational Test Agency jointly informed MDA of a number of system-level limitations in MDA's modeling and simulation program that adversely affected their ability to assess BMDS performance. Since then, we reported in March 2011 and again in April 2012 that MDA has had difficulty developing its models and sim-

[29] A model is a representation of an actual system that involves computer simulations that can be used to predict how the system might perform or survive under various conditions or in a range of hostile environments. A simulation is a method for implementing a model. It is the process of conducting experiments with a model for the purpose of understanding the behavior of the system modeled under selected conditions or of evaluating various strategies for the operation of the system within the limits imposed by developmental or operational criteria. Simulation may include the use of digital devices, laboratory models, or "test bed" sites.

ulations to the point where it can assess operational performance. In April 2013, we reported that MDA recently committed to a new approach in modeling and simulation that officials stated could enable them to credibly model individual programs and system-level BMDS performance by 2017.[30] To accomplish this, MDA will use only one simulation framework, not two, to do ground testing and performance assessments. With one framework, the agency anticipates data quality improvements through consistent representations of the threat, the environment, and communications at the system level. Without implementing these changes, MDA officials told us it would not be possible to credibly model BMDS performance by 2017, in time to assess the third phase of U.S. missile defense in Europe.

MDA program officials told us that the next major assessment of U.S. missile defense in Europe for the 2015 deployment will continue to have many of the existing shortfalls. As a result, MDA is pursuing initiatives to improve confidence in the realism of its models in the near term, one of which involves identifying more areas in the models where credibility can be certified by the BMDS Operational Test Agency. Another focuses on resolving the limitations identified jointly by the Operational Test Agency and U.S. Strategic Command. Lastly, MDA officials told us they are refining the process used to digitally recreate system-level flight tests in order to increase confidence in the models.

Because MDA recently committed to a new approach for modeling and simulation, we did not make recommendations in our 2013 report. However, it is important that this effort receive sufficient management attention and resources, given past challenges and the criticality of modeling and simulation.

In conclusion, many of the challenges I have highlighted today are rooted in both the schedule pressures that were placed on MDA when the agency was directed in 2002 to rapidly field an initial missile defense capability and the flexibilities that were granted MDA so that it could do so. Today, however, initial capability is in place; MDA has begun to transition more mature systems to the military services; it has had to propose canceling two major efforts in the face of budget reductions, concerns about affordability, and technical challenges; and the employment of BMDS systems is becoming increasingly interdependent, thereby increasing the potential consequences of problems discovered late in the development cycle. In recent years, both Congress and MDA have recognized that conditions have changed and steps need to be taken that reduce acquisition risk, while increasing transparency and accountability. However, especially in light of growing budget pressures, additional actions are needed, including

- sufficiently analyzing alternatives before making major new investment commitments;
- stabilizing acquisition baselines and ensuring they are comprehensive and reliable;
- ensuring acquisition strategies allow for the right technical and programmatic knowledge to be in place before moving into more complex and costly phases of development; and
- demonstrating new types of targets in less critical tests before they are used in a major test in order to lower testing risks

The appointment of a new Director provides an opportunity to address these challenges, but doing so will not be easy as MDA is still under significant schedule pressures and the agency is undergoing a transition to respond to new Secretary of Defense direction to expand the GMD capabilities. As such, we look forward to continuing to work with MDA to identify and implement actions that can reduce acquisition risk and facilitate oversight and better position MDA to respond to today's demands.

Chairman Udall, Ranking Member Sessions, and members of the subcommittee, this concludes my statement. I am happy to answer any questions you have.

GAO CONTACT AND STAFF ACKNOWLEDGMENTS

For future questions about this statement, please contact me at (202) 512–4841 or chaplainc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this statement include David B. Best, Assistant Director; Aryn Ehlow; Ivy Hübler; Meredith Allen Kimmett; Wiktor Niewiadomski; Kenneth E. Patton; John H. Pendleton; Karen Richey; Brian T. Smith; Steven Stern; Robert Swierczek; Brian Tittle; and Hai V. Tran.

[30] GAO–13–432.

Senator UDALL. Thank you, Ms. Chaplain.

Let's do 7-minute rounds. I'll start.

Admiral, I'd like to start with you. We here in Congress imposed an indiscriminate budget reduction process called sequestration for the fiscal year 2013. We hear it's caused real problems across DOD as well as every other government agency. Unless we act to change it or end it, it will happen again in fiscal year 2014.

You manage a lot of complex acquisition programs. I think your budget's $7 to $8 billion a year, in that neighborhood. Could you tell us the following information about the impact of sequestration. I have the three questions I'll pose and then you can have at them: What's been the impact of sequester in this year, fiscal year 2013? What would be the importance of approving the planned reprogramming request and the effect of not doing so relative to sequestration? What would be the effect on MDA if the sequester were to continue in fiscal year 2014?

Admiral SYRING. Thank you, Mr. Chairman. I'll address three, in this order. There is impact to the MDA and our programs due to sequester. The budget reduction was approximately $683 million that was flowed down from the fiscal year 2013 appropriation. That was taken in a nondiscriminate way and it is not the best way in my opinion to have levied those budget reductions.

We have proposed through the reprogramming action to DOD, which will come over together, a better way to take those cuts to sustain what I believe to be the agency's highest priorities. The importance of that support is critical.

Finally, on the potential impact of 2014 sequestration and those reductions, I would say, sir, that those would be as cumbersome or maybe more cumbersome given the cuts in 2013 coupled with the cuts in 2014.

Senator UDALL. Thank you for that illumination. I know all of you in your statements have further elaborated on this. The committee would welcome all the details, all the numbers, because this is something that's very important facing us.

General Formica, Secretary of Defense Hagel, Admiral Winnefeld, and General Jacoby have all said recently that the current ground-based midcourse defense system defends all of the United States, including the east coast, against missile threats from both North Korea and Iran. In your capacity as commander within STRATCOM, you represent the warfighter perspective on our missile defense capabilities and requirements. Do you have confidence in our current GMD system to defend all of the United States, including the east coast, against current and near-term ballistic missile threats from both North Korea and Iran?

General FORMICA. Yes, Mr. Chairman. Thank you for the question. We do have confidence in the ability of the ballistic missile defense system to defend the United States against a limited attack from both North Korea and Iran today and in the near future. I'm confident in the systems that have been provided to us and I'm confident in the ability and training of the soldiers, sailors, airmen, marines, and civilians that operate those systems.

Senator UDALL. Let me turn to Secretary Creedon with a question tied to the question I just posed to the General. Some have suggested there may be a gap in our Homeland defense coverage,

particularly the east coast, against a possible future Iranian ICBM threat if we do not move now to build a missile defense site on the east coast. This view seems to completely overlook the fact that we do already have a missile defense system in place that protects all the United States, including the east coast, against a potential Iranian ICBM, and that Iran does not yet have an ICBM or nuclear weapons.

It also seems to overlook the fact that we're planning to increase our missile defense interceptor inventory by nearly 50 percent in the next few years and that we're making numerous and significant improvements to our Homeland defense system that will provide even better protection against a future Iranian ICBM threat.

Do I have the basic facts right, and what would you say in response to the suggestion of an imminent gap against possible future Iranian ICBMs and the need now—the need, I should say, to decide now to deploy an east coast site to fill that gap?

Ms. CREEDON. Yes, sir, you do in fact have that string of facts accurate. The east coast is well protected as a result of—it was protected before the additional 14, and this additional 14 provides additional protection both for anything from North Korea as well as anything from Iran should that threat develop. Again, you want to stay ahead of the threat.

There are many options that would be available to us depending on the rapidity with which a threat in your hypothetical from Iran would emerge, not the least of which is, frankly, the ability to look at additional interceptors at Fort Greely, which could also provide some additional threats.

One of the longer-term issues, though, is what are the numbers and what are the capabilities. That's very much in the realm of the unknown and very much out in the future. So right now, just to be clear, DOD is, in fact, carrying through with the direction from the fiscal year 2013 statute. The MDA is currently in the process of developing criteria to identify a candidate list of sites. From that candidate list of sites, there will be a narrowing down to three, maybe more, but at least three, which is what the direction was under the statute. Then environmental impact statements (EIS) will be completed for all of those, and this will allow us, should there be a decision at some point that we do need an east coast missile defense site, this will allow an acceleration of the time that we would need one.

But there are other options and we are well protected with the existing site.

Senator UDALL. Admiral, is there anything you'd want to add about our ongoing and planned improvements to our missile defense capability that would enhance our defenses against a threat that Iran, thankfully, does not yet have?

Admiral SYRING. No, sir. I believe that the first step in the strategy, as Ms. Creedon articulated, is on track and is the best use of resources today to match the threat that we see, to keep ahead of the threat that we see from North Korea, with the second step being what do we need to do to keep ahead of the threat from Iran, and those analyses and studies are ongoing this year to coincide with the completion of the interceptor siting studies that we're doing this year.

Senator UDALL. Let me fit in one short question. This again to you, Admiral: Turning to your authorities for classification for missile defense information in the MDA, with respect to Russia, have you declassified any missile defense information and have you been asked to declassify any missile defense information for Russia?

Admiral SYRING. I have not declassified any information to give to Russia and I have not been asked to declassify any information to give to Russia.

Senator UDALL. Thank you for clarifying the record.

Let me recognize Senator Fischer for 7 minutes.

Senator FISCHER. Thank you, Mr. Chairman.

Senator Lee had asked me if I would defer my question time to him and I will do so.

Senator UDALL. I'm happy to recognize my cousin from the great State of Utah.

Senator LEE. Thank you very much. As one of four or five Senators born in Arizona, I appreciate that.

Thank you, Senator Fischer, for willing to accommodate me. I'll be shuttling back and forth between here and the Judiciary Committee. I appreciate your patience with me.

Thanks to all of you for joining us today. Admiral Syring, I especially appreciated your willingness to visit with me the other day on some of these issues.

The recent aggressive behavior of North Korea and the continued belligerence of Iran's pursuit of a nuclear weapons program tend to show the need for an effective and robust missile defense system is as great as it ever has been before. In light of our country's fiscal situation, we have to ensure that all the missile defense programs are both cost effective and likely to be able to achieve their objectives.

We must also base these decisions, any decision pertaining to U.S. missile defense, solely, exclusively, on the need of the United States to defend the Nation against ballistic missile attacks. It's no secret that the Russian government continues to demand concessions and assurances on our missile defense programs.

Admiral Syring, I was a little alarmed yesterday to hear you suggest that this administration had perhaps discussed or considered declassifying information on our missile defense program in order to ease concerns of the Russian government.

It's also been reported in recent weeks that Under Secretary of Defense for Policy James Miller held consultations with Russian Deputy Defense Minister Anatoly Antonov in Brussels concerning U.S. missile defense. Russian media reported that National Security Adviser Tom Donilon had delivered a message from President Obama to President Putin in April that included proposals on missile defense. This follows reports in March that Russian Defense Minister Sergei Shoigu asked Secretary Hagel for regular talks on missile defense with the United States.

On this topic, I asked Secretary Hagel in the DOD posture hearing just a few weeks ago if these talks with the Russian Government would be taking place and who would be involved. I'm still waiting for a response from Secretary Hagel on that important question.

Why don't we start with you, Admiral Syring. Following up on Senator Udall's question a minute ago, I'd like to discuss what it was that you did say yesterday in the House Armed Services Strategic Forces Subcommittee regarding the declassification of missile defense data. Specifically, what's the nature of the data that is being considered at least for possible declassification, and what can you tell me about the purposes for which this might be up for consideration for declassification?

Admiral SYRING. Yes, sir. The questions that I get asked as the classification authority across the stakeholder spectrum of the Ballistic Missile Defense System (BMDS) from people that care about and work with the BMDS and the MDA in particular come to me every day in terms of classification authority. My staff and the agency and eventually to me are asked consistently is a piece of information classified or not, and we rule on that.

I have been asked many times since I've been the Director to rule on a piece of information in a briefing or a slide. I have been asked by the Office of the Secretary of Defense for Policy on one occasion to rule on a piece of information, missile parameter information, of which I said the information's classified and it will remain classified.

I will turn over to Secretary Creedon for further discussion on the policy issues and discussions that Dr. Miller has had. I want to just finish by saying I did talk to Dr. Miller last night, sir, and he offered to come over and talk to any Senator or any committee member on his specific policy discussions in this area and he just wanted me to tell you that directly, sir.

Senator LEE. Okay. We'll turn to Secretary Creedon in a minute. Just so I understand you, if I'm understanding you correctly you seem to be telling me that we do have a significant national security interest in maintaining the classified status of this data?

Admiral SYRING. Yes, sir, absolutely, and I'm not anxious and I will not cede the advantage of the United States to anybody.

Senator LEE. Okay, thank you.

Secretary Creedon, do you want to follow up on that? Anything to add to that?

Ms. CREEDON. Yes, sir. I just wanted to reemphasize that we have no ability to share any classified information with Russia, nor any intent to share any classified information with Russia. But as Admiral Syring said, in the preparations for some of these meetings that you referenced we wanted to be very clear and very careful about what were the sorts of things that we would begin conversations on missile defense with the Russians, because we wanted to be very clear that we were not getting into any areas that were classified. So we've had multiple discussions about is this classified, is this classified, is this thing classified, to make sure that we're very clear on where we stand.

Senator LEE. Okay. Now, can you confirm that Mr. Donilon, in fact, delivered a message to President Putin regarding missile defense?

Ms. CREEDON. Mr. Donilon had a range of meetings when he was in Moscow, including with President Putin. What he was talking about was expanding and making sure that we have a good relationship with Russia. One of the issues that obviously we all know

has been a burr, frankly, in the relationship is missile defense. So we were looking at ways to reinvigorate some of the discussions with respect to missile defense, because we really haven't had anything of substance in about a year and a half, because it is in the way of talking about other things as well—trade, all sorts of things in the broader relationship.

Senator LEE. So I understand you perhaps wanted to reinitiate some sort of dialogue. Can you tell me anything about the substance of any such communications?

Ms. CREEDON. My understanding, because I wasn't there, but my understanding of that, as well as the subsequent meeting with the Under Secretary of Defense for Policy with Mr. Antonov, the Deputy Minister of Defense, was that a lot of this really was both explaining the decisions that we had made with respect to the hedge, the implementation of the additional 14 GBIs, as well as the decisions with respect to the EPAA, and then also put on the table some things that had been put on the table before, frankly, that could ultimately lead to discussions with respect to both transparency and cooperation with the Russians on missile defense.

But we were also very clear—and I just really want to reemphasize this—that we are not, will not, cannot, agree to anything that restricts either the performance or the geographic locations of our systems.

Senator LEE. Or that would involve handing over classified information?

Ms. CREEDON. Or that would involve handing over classified information.

Senator LEE. Information that Admiral Syring has no intent, desire, willingness to declassify.

Ms. CREEDON. As I said, we have no mechanism to provide them classified information in any event.

Senator LEE. Okay. Thank you.

I see my time has expired. I thank the chairman and thank you, Senator Fischer.

Senator UDALL. Thank you, Senator Lee.

Senator Donnelly.

Senator DONNELLY. Thank you, Mr. Chairman.

This would be for any of you. From a missile defense perspective, what is your greatest concern with North Korea at this time? [Pause.]

You go first, General Formica.

General FORMICA. Senator, I pressed the button, so I'll speak first.

Thank you for asking the question. You know we're still at the middle of the period of provocation with the North Koreans.

Senator DONNELLY. Yes, we are.

General FORMICA. We're concerned about what North Korea will do. We're obviously concerned about the degree of predictability that the leader from North Korea has demonstrated or lack of predictability. So it's important to us that we maintain a posture so that we can defend the United States of America both at home and abroad against the threats that North Korea would pose.

Senator DONNELLY. In terms of engagement if a missile is sent by North Korea, obviously we have protective systems in Guam in

place and others in place. Do we feel confident that all of our friends and allies will be protected as well by the missile defense shield that we've put in place?

General FORMICA. Senator, we're confident that we have the posture in place to defend the United States against the threat and to defend our forces forward deployed and our friends and allies in the region. There is no 100 percent missile shield, so there's no guarantees. But we have an appropriate posture in place for the threat that we face.

Senator DONNELLY. With U.N. sanctions that have been in place on North Korea, do you see that North Korea continues to make gains in their missile systems, improvements in the systems they're developing? With the sanctions in place, how are those improvements able to occur? That would be for Secretary Creedon.

Ms. CREEDON. I'll jump into this fray. What do we worry about most? I think from a policy perspective most we worry about just the unknowns and the uncertainty. I think, as you've heard others say, our lack of intelligence with respect to activities, plans, intents for North Korea is just about as poor as it exists for anywhere else in the world. We are very much looking at ways to improve this intelligence, but it's a very difficult environment. So that's probably the thing that makes for a significant amount of worry, is we just don't know what they're going to do next. It's just that uncertainty.

Senator DONNELLY. This is something that has just come up in the last day or so, but it has been talked about that Russia may send S–300 missile systems to Syria. What do you know about those systems? How effective are they? Because we are in a process of trying to come up with appropriate decisions regarding Syria and this certainly only complicates things even further.

Vice Admiral, I would like to thank you also for coming by the other day. We appreciate it very much.

Admiral SYRING. Thank you, sir.

I would recommend, sir, that on that subject that we go to a closed session.

Senator DONNELLY. Okay, very good.

Ms. CREEDON. There's a context for that that really needs to be talked about in a different setting.

Senator DONNELLY. Understood.

With the east coast ballistic missile defense system, can you give us an update on the status of site selection for that, and what are the factors that are being considered in regards to that?

Admiral SYRING. Yes, sir, I'd be happy to take that. The effort has started in terms of defining criteria and evaluating potential sites. There's literally hundreds of sites that are under consideration. Some of the criteria that will be finalized and approved in terms of the final selection criteria will include booster drop zones, proximity to population centers. A big part of it is going to be the operational efficacy of the site and how that plays into where the geographic location is.

But I would say that there are 10 or 12 major factors, sir, that will play into that. The process has started. It will go through a weaning process, an approval process, through the summer to come out with a briefing to the leadership and recommendation on what the few sites are for possible inclusion.

Senator DONNELLY. Is there going to be one site or will there be multiple sites that we're choosing?

Admiral SYRING. There'll be a few. I say three today, sir. Then as you know, the EIS after that forces us to look at several sites, not just one. There have to be other sites that are looked at for environmental impact as well.

Senator DONNELLY. Okay. With the MDA, how are things going in developing research relationships with various universities? I know in my home State, Purdue is looking to develop a relationship and I was just wondering where we are in that process and how that moves forward.

Admiral SYRING. We're doing very well with our relationships with the universities, and I see that continuing in this budget request, sir. I've actually met with Governor Daniels once already and received a series of briefings for a day at Purdue University, and I would say those discussions and future teaming opportunities continue.

Senator DONNELLY. I would like to close by saying, Vice Admiral and Secretary Creedon, we are very proud that you call Indiana your home State. Thank you very much.

Thank you, Mr. Chairman.

Senator UDALL. Thank you, Senator Donnelly.

Senator Fischer.

Senator FISCHER. Thank you, Mr. Chairman. I would once again like to thank the panel for being here today.

Admiral, I have a few questions for you. General Jacoby has stated that the third missile defense site would provide better weapons access, increased GBI inventory, and additional battlespace, in his words, to more optimize our defense against future threats from Iran and North Korea. Could you elaborate on this? Tell me why it's a good thing and what are we talking about when we talk about weapons access and battlespace?

Admiral SYRING. Senator, I'll keep it very short and simple, and my colleague to my right may wish to jump in from a warfighter's standpoint. Battlespace, obviously capacity is known in terms of more interceptors, is capacity. Battlespace means reaction time in terms of the amount of time that we have and the proximity that we have of putting an interceptor in flight to intercepting a threat missile.

General FORMICA. Senator, that's exactly the same answer that I would give. Battlespace is the increased decision time because you'd have a shorter time of flight for your interceptors from a site further to the east than you would from Fort Greely.

Senator FISCHER. Would you then agree with the General's assessment on that third site, that it would provide better weapons access, increased GBI inventory, and additional battlespace?

Admiral SYRING. Yes, ma'am.

General FORMICA. Yes, Senator. Certainly it brings increased capacity and increased capability than we have at Fort Greely. The tradeoff, of course, is going to be the investment in infrastructure facilities, force structure, and manpower.

Senator FISCHER. In last year's defense authorization bill, Congress required DOD to conduct the EIS to evaluate three sites in

the United States. Can you tell me what the status of that is and when it will be complete?

Admiral SYRING. Yes, ma'am. The siting studies have started and we will meet the deadline of December 31 of this calendar year with recommendations.

General FORMICA. Senator, if I may just add, the process that MDA is going through is inclusive and that the warfighting community is part of that process, and operational considerations will be factored into their site selection recommendations.

Senator FISCHER. Is part of that process to provide an additional missile defense site?

Admiral SYRING. Part of the process will be the evaluation of a potential site, and then in conjunction with that, the development of a contingency plan on what a third site would bring to the defense of the United States.

I would just add, Senator, if I can, that there will be other factors that I look at with the combatant commanders in terms of formulation of my recommendation to them for a requirement for the east coast site or a continental United States site. There'll be other factors that I look at, along with the warfighter, in terms of other parts of what I call the kill chain that are equally important to interceptors and not just interceptors, in terms of us staying ahead of the threat.

Senator FISCHER. Can you share with us what some of those other factors would be?

Admiral SYRING. Yes, ma'am. The assessment capability in terms of discrimination and the warfighter being able to do a proper kill assessment once interceptors are shot is critically important today and in the future as we deal with more complex debris scenes with the more complex threat missiles that we envision coming. This sensor capability and discrimination capability cannot be understated in terms of the benefit that it will bring the warfighter, in my mind as the material developer the absolutely needed capabilities. But again, that requirement will be set by the combatant commanders, informed by our analysis.

Senator FISCHER. General, did you have anything to add on that?

General FORMICA. No, Senator. I think he covered it very well.

Senator FISCHER. Is there funding in this year's budget for this and for the out years for this third site?

Admiral SYRING. No, ma'am. There's funding that I've taken out of the MDA budget to do the current study work that's ongoing and that will cover within the MDA budget the EIS work that needs to start next year if so directed. But there is no funding for anything beyond that.

Senator FISCHER. If funding were available, how long would it take to build the site?

Admiral SYRING. Ma'am, depending on the assumptions and how fast the EIS goes, 5 to 7 years.

Senator FISCHER. What's the average length of time for an EIS?

Admiral SYRING. The metric I use is 18 to 24 months.

Senator FISCHER. Would such a site benefit from the deployment of an X-band radar on the east coast?

Admiral SYRING. Yes, ma'am. Back to my point on sensoring and assessment and discrimination capability, an X-band radar, frank-

ly, anywhere east would greatly benefit the threat that I, and we in the agency, see coming, and certainly that would be part of it.

Senator FISCHER. How long do you anticipate that we have to address the threat that you see coming?

Admiral SYRING. I'll just repeat the intelligence assessment. Iran may be able to flight test an ICBM by 2015, and then anything beyond that I would like to keep into a closed session.

Senator FISCHER. Thank you, sir.

Also, the MDA is now focusing on that common kill vehicle, the technology for that; is that correct?

Admiral SYRING. Yes, ma'am. It's a technology program in this year's budget.

Senator FISCHER. That's for GBI?

Admiral SYRING. Yes, ma'am, for the exoatmospheric kill vehicle (EKV).

Senator FISCHER. What's your timeline for providing that?

Admiral SYRING. With this year's budget we will start that concept in terms of what components of the current EKV potentially need to be upgraded now. It's 1990s technology and certainly there's components in there that, given the opportunity to redesign or replace, we would do now in terms of future procurement of GBIs. Then look for commonality and goodness between that kill vehicle and the Aegis kinetic warhead, which has performed just magnificently in the past few tests.

Senator FISCHER. As we look at these timelines that we've been talking about, does that keep us ahead of the growing threat?

Admiral SYRING. Yes, ma'am.

Senator FISCHER. Thank you, sir.

Senator UDALL. Thank you, Senator Fischer.

Senator King.

Senator KING. Thank you, Mr. Chairman.

I'm the newest member of this subcommittee, so I'm going to ask some very basic questions. If a missile was fired from North Korea tomorrow to Hawaii, assuming they had the capability to do that, could we knock it down?

General FORMICA. We maintain a posture to defend the continental United States and Hawaii. We have the capabilities in place to do that. But the degree of assurance varies depending on how our posture is actually situated.

Senator KING. The reason I ask that question is that we hear about tests that don't work, and yet on the other hand I hear we can protect the Homeland, and I'm trying to square those two things. Do we have tests of the facilities that are deployed now that indicate there's a high probability? Is it 60, 70, 80, 90, 99 percent? How good is this system?

Admiral SYRING. Let me take that and then maybe, sir, I'll cede some time to Dr. Gilmore. The systems we have today work, and I'll keep it that simple. The older systems, which we call the CE–1 interceptors, have been successfully flight tested three out of three times.

The problem that we've had recently is with the newer interceptor and those failures, both occurring in 2010. That's the flight test that I spoke about in terms of the January fix was flown in

a non-intercept flight and then we'll fly later this year in an intercept flight to validate the performance of the new kill vehicle.

But all of those missiles remain at the ready for the warfighter. So, coupled with the available inventory and the warfighter shot doctrine, we are protected today, sir.

Senator KING. Can you put a percentage on it?

Admiral SYRING. No, sir, not in this forum.

Senator KING. I understand the President's budget includes an increase for the Aegis program. How does Aegis fit into the strategy?

Admiral SYRING. Sir, Aegis is a big part of our regional defense posture today in Europe and over near Japan in terms of ships that are either forward deployed or will be forward deployed in terms of us taking ships to Rota. There's a very methodical EPAA that has been in large part based on Aegis capability improvements over the next 5 years between now and 2018. We've fielded the first phase already in 2011, and then there'll be incremental improvements to the Aegis fleet and missiles that come between now and 2018, first to Romania and then to Poland.

Senator KING. Aegis is part of the long-term strategy, I presume?

Admiral SYRING. Absolutely, sir.

Senator KING. By the way, on the question of percentages, you said it would be not in this forum. I would like to get that answer in a forum that's appropriate.

Admiral SYRING. Yes, sir, we will do that.

Senator KING. Thank you.

Madam Secretary, on the east coast site just a couple of questions. You mentioned that there are—I think both you and the Admiral mentioned there are going to be three sites, EISs. When are we likely to get those designations? When will there be an announcement on those three?

Admiral SYRING. Sir, once we have approval from DOD, towards the end of the year, to meet the December 31 deadline.

Senator KING. So that won't be until much later?

Admiral SYRING. Yes, sir.

Senator KING. Tell me what would one of those facilities entail if fully built? What does it look like? How many people are there and what's the magnitude of the installation?

General FORMICA. Sir, probably the best way to answer that question is to describe what we have at Fort Greely, AK, which was at the time that it was designated an existing Army facility that as a result of base realignment and closure had been essentially in a reduced operational status. So today you have a missile defense complex that's got three missile defense fields, essentially with the silos built and the GBIs provided by the MDA. You have the infrastructure on that installation to provide for the housing and work areas for the organization, the unit that is there to provide the operational capability that would actually release the interceptors should a decision be made to do so.

So you have many of the standard things that you'd find on an installation. You have barracks, you have the unit office space. This is outside the missile defense complex. You have the soldiers that not only man the fire direction crews that would release the

interceptors, but you have a company that provides security to the missile defense complex.

Then the kinds of support infrastructure that you would have, anything in running a typical garrison, from PXs and commissaries to other garrison facilities.

Senator KING. So based on Fort Greely, can you give me a ball park figure of this total, the total population of this facility, including the support and infrastructure and guards and all of that?

General FORMICA. We maintain—the battalion that's there is about 240, 250 Army National Guard soldiers, and I don't know the exact number of civilians, but I would guess it's at least that many. So I would say somewhere around 400 or 500. I'll get the exact number for you, Senator, and provide it to you for the record. But it's probably about 500 or so total, soldiers and civilians and contractors, that are involved in providing the capability at the missile defense complex and the infrastructure that supports it.

[The information referred to follows:]

There are approximately 1,000 personnel on Fort Greely, AK. Of this number, about 200 are military, 400 are civilians, and the remaining 400 personnel are contractors supporting the Fort Greely Garrison and the missile defense mission.

Senator KING. One of the issues that I've been concerned about as I've been in these hearings is a growing submarine capability. It seems like everybody wants to have a submarine and a lot of countries do. I take it that this shield that we are constructing and have constructed would be effective against a submarine-launched missile, which could be much closer. How do we deal with a submarine-launched missile that would be a couple of hundred miles offshore? Is that a different issue? Again, it gets back to this east coast issue. I can't see how we could get a shield missile, an interceptor, from Colorado or Alaska to protect the east coast against a missile that's launched from within 500 miles of the coast.

Talk to me about submarines.

General FORMICA. Actually, Senator, my assessment is that the ballistic missile defense system that's in place is designed against an ICBM, a limited ICBM threat from North Korea and Iran.

Senator KING. Not submarine-launched missiles?

General FORMICA. Not submarine-launched.

Senator KING. What is our strategy with regard to submarine-launched missiles?

General FORMICA. I'd have to take that for the record. We don't have a strategy. The NORTHCOM commander has obviously identified that kind of threat as a concern and that is an area that he is concerned about.

[The information referred to follows:]

The Department—to include Office of the Secretary of Defense for Policy, the Missile Defense Agency, and me—will provide you a classified Missile Defense briefing on June 3, 2013. In it, we will provide you additional information regarding the ballistic missile defense system and submarine capability.

Senator KING. Madam Secretary?

Ms. CREEDON. I just want to jump in for a minute. I think we probably should get you—this is a very complicated topic, to say the least.

Senator KING. I'm figuring that out.

Ms. CREEDON. It isn't just ICBMs. It's also cruise missiles. But why don't we make the offer to get you a briefing on some of the issues and complexities associated with a submarine threat off the coast, either coast of the United States.

Senator KING. Absolutely. I'm just trying to think like the enemy here. If you guys can stop intercontinentals, then I'm going to bring them in in another way. Of course we can have a whole different discussion about one that comes in in a suitcase into New York harbor.

Okay. I think that's it, Mr. Chairman. Thank you.

Senator UDALL. Thank you, Senator King.

Let me turn to the entire panel. I will recognize myself for the second round here. We've talked about this. In December 2010, the ground-based midcourse defense system had a failed flight test, and MDA has been working ever since to fix the problem with the Capability Enhancement-2 kill vehicle, known as the CE–2. On March 15 when the Secretary of Defense announced plans to deploy 14 additional GBIs in Alaska, he said that before deploying those 14 additional GBIs we would test and demonstrate the system and have confidence that it will work as intended.

Do you all agree that it's essential that before we deploy these 14 additional GBIs that we need to test the system with the corrected CE–2 kill vehicle in a realistic intercept test and demonstrate that it will work as intended?

Why don't I just go across and ask each one of you to weigh in. If it's a yes or no, that's fine, or if you want to elaborate. Madam Secretary?

Ms. CREEDON. Given the nature of the relationship between the testing and the adequacy of testing, I think this is really one for Dr. Gilmore.

Senator UDALL. Okay. Dr. Gilmore?

Dr. GILMORE. My understanding of the Secretary's statement is that he wanted confidence that the problem that had caused the interceptor failure in December 2010, the root cause of that problem had been identified and we have demonstrated, we will have demonstrated, that it's been fixed. The root cause has been identified. The flight test that was the non-intercept flight test that was done not too long ago demonstrated that some design changes to the kill vehicle certainly have the potential to correct that problem.

The reason I say that—and I choose my words carefully—is that as the operational test fellow I don't—I won't say that we've successfully demonstrated the problem is fixed until we've actually done an intercept test flying under the same conditions that were flown in December 2010. My understanding is that, although it's not in the integrated master test plan that was submitted earlier this year, that we will do that intercept test in all likelihood in early fiscal year 2014.

So at that point, if that intercept test is successful, a repeat of the previous failed intercept, then in my view we would have confidence that the problem has actually been successfully fixed.

Senator UDALL. If others have comments, I'd love to hear them. Let me just remind the witnesses that the question is whether they agree we need to test it. We can talk about the other questions that would arise, but that was really what I was trying to get at.

Ms. CREEDON. Sir, on that point, I would say absolutely. In fact, we stated in the context of the announcement on March 15, and the Secretary has reiterated, that DOD is very much in the fly-before-you-buy construct.

Senator UDALL. Fly-before-you-buy.

Ms. CREEDON. Exactly. We're going to fly-before-we-buy.

Senator UDALL. Okay.

Ms. CREEDON. So we are not going to buy these missiles until we've demonstrated that they are, in fact, fixed and have had, as Dr. Gilmore said, a successful intercept test.

Senator UDALL. Thank you.

General?

General FORMICA. Mr. Chairman, I would just add from an operator's perspective that we want to retain the confidence in the CE–1s and we want to gain confidence in the CE–2s, so that we can continue to have confidence in the overall GBI fleet and the ballistic missile defense system. To that end, we support the MDA's intercept plan to test the GBI, CE–1, with an intercept later this month, so that we can retain confidence in it, and to test the CE–2s with an intercept so that we can gain confidence in that system.

Senator UDALL. Admiral Syring?

Admiral SYRING. The direct answer, sir, is yes, I agree.

Senator UDALL. Ms. Chaplain?

Ms. CHAPLAIN. Absolutely necessary in our opinion.

Senator UDALL. It's good to have the GAO in the house.

Let me turn to General Formica. At our space hearing in April, you testified that expert participants at a recent missile defense symposium agreed widely on the need for improved offense-defense integration. I believe that's also one of the conclusions of the 2012 global ballistic missile defense assessment that you led.

I gather that means we should not think about our missile defense capabilities only in terms of what our missile defenses can defend against, but also what our offensive military capabilities can provide to both deter and defeat missile threats. Can you explain the importance of offense-defense integration in terms of how we think about missile defense? For example, would offensive capabilities mean we don't rely only on defensive systems, which would reduce our need for defensive interceptors?

General FORMICA. Thank you, Chairman Udall. We believe and would advocate strongly for offense-defense integration for missile defense. We'll never have sufficient capacity in our missile defenses alone to meet all of the threats or potential threats that are out there. So offense-defense integration is important. Attack operations by our doctrine is an integral part of missile defense. While it won't enable us to reduce the missile defense capabilities that we have, it will augment it and help make up for the capability gap that we have, the overmatch, by not having the capacity to respond to all of the threats that are out there.

I think we saw even just most recently in this recent provocation by the North Koreans that the non-lethal application of offensive capability, in conjunction with missile defense, demonstrates the ability of the United States to both deter a threat and assure our allies, and to me validated the importance of both offensive and defensive integration.

Senator UDALL. We're going to follow up more on that, obviously. Let me ask a question of all of you. You know better than most that missile defenses are highly complex and expensive, and we want to ensure that they're going to work as they're intended to do so if we ever need to defeat a missile threat. You also know we need to improve them over time.

In your view, what would be the most cost-effective step we should be taking under current fiscal conditions to make sure that our missile defense systems will work as intended and to improve those systems over time? Secretary Creedon, maybe I could start with you.

Ms. CREEDON. I would say initially we need to carry on with the test program to ensure that the improvements to the CE–2 work, that we need to verify that the CE–1 continues to work, and that we begin to look at how we can improve the capabilities of the system for the challenges that we know are coming in the future, so how we address larger raid size, how we address discrimination capabilities. Those would be the categories of work that I think we really need to rely on, because if we can improve some of those then we can also improve the capability of an individual missile, so we can get more with less if we can do some of that work.

Senator UDALL. Dr. Gilmore?

Dr. GILMORE. I'll give you a not surprising answer, given my responsibilities. We need to continue to test. Now, we are never going to with live flight tests obtain a statistically significant set of data on performance, from just live flight tests. But those live flight tests are critical because they provide the data that we can use, that we must use, to rigorously accredit our modeling and simulation capabilities.

So if you have rigorously accredited modeling and simulation capabilities that you can run and they replicate the results that you get in live fire testing, then those modeling and simulation capabilities are what give you the statistically significant set of data on performance of the system.

So if you're asking me what I think is important, it's continue to test, but also allocate the resources needed to develop and put in place the modeling and simulation capability so that it can be rigorously accredited. Then I would also agree with Secretary Creedon regarding discrimination. If we can't discriminate what the real threatening objects are, it doesn't matter how many GBIs we have; we won't be able to hit what needs to be hit. As the National Research Council and many others have pointed out, discrimination is a tough problem. I know that Admiral Syring is working very hard on it and agrees with that view. So I would emphasize working on better ways to discriminate.

Senator UDALL. General Formica?

General FORMICA. Senator, Mr. Chairman, I would reiterate much of what has already been said. We certainly support not only a rigorous test program to retain and regain confidence in the system, but also an exercise program, because in the conduct of tests we have the opportunity as warfighters to validate our concepts of operations and for the users to actually get confident in the systems that have been developed for them and to practice tactics, techniques, and procedures.

To continue to improve the capabilities of the GBIs and to improve and increase our interceptor capacity, as was already said, we would invest, want to invest in sensor capability to get after early tracking and improved discrimination, and to continue the investment in the command and control structures that knit that architecture together, so that we can take better advantage of the various sensors that are already out there and use them for missile defense capability.

Senator UDALL. Admiral Syring?

Admiral SYRING. Mr. Chairman, I'll just summarize three areas that I see. One, our steadfast commitment to the test program. I come from a test background. Since I've been the Director, in calendar year 2013 we'll have conducted three GBI flight tests: a control test, vehicle flight test in January, with two intercept tests this year. I have in the budget another intercept test next year, in fiscal year 2014. I think the drumbeat specifically on GBI testing is vitally important and I intend to continue that, in addition to testing THAAD and Aegis systems regularly, as we do.

Second, to execute the new strategy, because the new strategy is critical to the capacity for the warfighter. Underpinning that is the successful execution of the test program.

So those two are at the top, and then also equally important would be sensors and discrimination. When I say sensors and discrimination, sir, I mean not just radars; I mean radar and infrared and lasers and the important work that we're doing in directed energy at the technology level and the importance of that to keep ahead of the threat. I see that as vitally important.

All three together are my focus as the Director.

Senator UDALL. Ms. Chaplain?

Ms. CHAPLAIN. From a "work as intended" perspective, we would agree with everything that's been said. The modeling and simulation issue in particular doesn't get enough attention that it deserves. The progress there has not been as good as we would like it, and MDA is renewing its efforts into restructuring or redoing that program and we're hopeful that will work out better.

But I would add in terms of that perspective the need to really fly before you buy. Really, you follow approaches that aren't really overlapping production and testing, because that's been at the root of a lot of problems that we see today.

From a cost-effective perspective, I would emphasize two sides: before you buy, really analyzing all the alternatives before you and what is the most cost-effective way to pursue a capability; and then on the back end, the reporting about costs so that Congress can prioritize continually. The reporting on costs right now is not where it needs to be. It's not complete. You can't compare from year to year, and that's very important just from a cost-effective perspective.

Senator UDALL. Thank you.

Thanks for the committee's indulgence. I took a few more minutes, but this was, I think, a question worth hearing.

Senator Fischer.

Senator FISCHER. Thank you, Mr. Chairman.

Admiral, if we could just follow up with one last question on that common kill vehicle. Are you thinking of placing more than one kill vehicle atop the GBI?

Admiral SYRING. Ma'am, that would be down the road once we have flushed out the potential for scaling the technologies that we're going to work on as part of the advanced technology effort this year. But certainly it would be a consideration down the road.

Senator FISCHER. Thank you.

Madam Secretary, moving on to precision tracking space system. Why did DOD terminate that system?

Ms. CREEDON. I have to say this was a very difficult decision for a number of reasons, not the least of which is the issue of dealing with larger raid sizes. Part of the problem was there is a recognition that we need something. At the end of the day, the Department concluded that this particular something was probably not the right thing, that it was probably too high risk and it was probably not quite the right approach.

So, given where we were in the program, the decision was made to terminate that program. Again, part of the work that needs to be done over the course of the next couple years is really to look at what a sensor architecture looks like, both ground- and space-based sensors, and really come to grips with what is the right architecture for that. So it was a very difficult decision because we know we need something along those lines, but Precision Tracking Space System probably wasn't the right thing.

Senator FISCHER. But it was put in place for a reason, correct? To identify those decoys. So what are we looking at to be able to accomplish that mission now?

Ms. CREEDON. That's actually one of the things that has to go over the course of the next year or so, is really look at what does a reasonable sensor architecture look like. So part of the issue is having some more radars on the ground. We'll continue to look at the space-based. But frankly, I think that one of the things the GAO has recently raised in some of its reports is this whole idea of doing sufficient analysis of alternatives. This is probably one of those areas where we could have benefited from a little bit more on the analysis of alternative work.

Senator FISCHER. Do we need to have a space-based sensor system out there?

Ms. CREEDON. My understanding is yes, we do, and I will turn it over to Admiral Syring to add some more. But based on some of his recent tests, I think the answer is yes.

Senator FISCHER. Admiral?

Admiral SYRING. Yes, ma'am, absolutely. I've been clear that we need that capability. We need to have that capability in space, as I see the threat in terms of the required discrimination capability for the future. It doesn't have to be an MDA-developed system and I think that you'll see us explore those alternatives and those partnerships with other organizations, like the Air Force Space Command.

Senator FISCHER. So your recommendation is we don't just rely on a ground-based? We also need the space-based, correct?

Admiral SYRING. Ma'am, we need ground-based for radar and we need infrared capability above the clouds, yes, ma'am.

Senator FISCHER. Thank you.

Also, Admiral, now that we're seeing the termination of the 2B program, do you know what the plans are for the future SM–3 missile deployment?

Admiral SYRING. Yes, ma'am——

Senator FISCHER. After 2018?

Admiral SYRING. Ma'am, the 2A missile will be fielded in 2018. I think what I view will happen as part of the common kill vehicle program is us looking at technologies across the kill vehicle for Aegis, the SM–3, and the kill vehicle for the GBI, in addition to other improvements that could be made in, for example, propulsion stacks or attitude control systems, in terms of proving that we can and we have in the past upgraded the SM–3 from the 1A to the 1B, and I would imagine that as the threat continues to evolve that we'll look at upgrades to the 2A as required.

Senator FISCHER. Do you think it's possible for the Standard Missile to play a role in homeland defense, then?

Admiral SYRING. Ma'am, as you saw with the—and I'll let General Formica jump in here—I'm bordering on classification, so I need to be very careful. Maybe that would be a subject in a closed forum in terms of what it can and can't do.

Senator FISCHER. Thank you. Thank you very much.

Thank you, Mr. Chairman.

Senator UDALL. Thank you, Senator Fischer. It sounds like we will arrange for a classified briefing, I think, per Senator King's interest.

Senator King, you're recognized.

Senator KING. I just want to follow up on a question the chairman asked about sequester. We all know the effects of the sequester in 2013. It's important to realize, however, that the sequester is a 10-year deal. It's in the law, and if nothing happens, which seems to be the case around here, it will continue.

A year ago, everybody said it was impossible, it would never be allowed to come into effect, and now here we are. So I don't think we can discount the likelihood that it won't continue.

My question is very clear. General, I'll start with you. Would a continuation of the sequester for 1, 2, 3, or 4 more years compromise, significantly compromise, your ability through this program to defend the Homeland?

General FORMICA. Senator, obviously we're all concerned about the impacts of sequestration on the ability to provide capabilities. My biggest concern at this point is the impact it will have on future training and readiness as we balance training and readiness against modernization. So, left unchecked and without the appropriate prioritization, then it will have an effect on our ability to provide missile defense.

As I testified to this committee a couple of weeks ago, the other impact, both more immediate and into next year and beyond, I'm also concerned at the impact that sequestration is having on our professional civilian workforce. The threat of a furlough and the impact that a furlough might have not only on them, personal hardships that they would endure, but on our ability to do the mission; the hiring freeze and the challenges that that poses, and the other impact on civilian professional development.

So I am also concerned about that impact of sequestration as well.

Senator KING. I presume there would also be an effect—we were talking about testing and development. I presume there would be an effect across the board. Admiral?

Admiral SYRING. I would echo the General's comments, sir. As I said earlier in the hearing, the cut that I took in 2013 had impact and the cut if the law is not changed in 2014 will have equal or more impact as well. I see the demand for missile defense from the combatant commanders as increasing in terms of capacity required and I worry about us being able to meet that demand signal, given continued budget reductions.

Senator KING. One of the concerns that's been raised in other hearings of this committee is that there's a lag effect, that the negative effects will take place in the next 2 or 3 years, but it would be years later, would still be an effect, because of loss of talent, for example, and loss of or slowing down of development, R&D, and those kinds of things.

General FORMICA. Yes, Senator. Just as an example, for this year most of the soldiers, sailors, airmen, and marines that are manning the missile defense systems are trained and on station. As we look through the impact of sequestration on our ability to train those forces, that becomes a problem in succeeding years.

So right now, in terms of trained and ready forces in SMDC, for instance, I'm confident that we have them, we have them in place in fiscal year 2013. I'm concerned about the impact on the reduction in training in fiscal year 2014 and beyond.

The other thing I didn't talk about when I talked about training is we're also scaling back on exercises. As we conduct fewer exercises and less robust exercises, not just the test program but the exercise program, then those are the opportunities for us to train our battle staffs and those that would make decisions so that we can execute the missile defense system.

Senator KING. So training and exercises are being curtailed now, is that correct?

General FORMICA. That's correct, Senator.

Senator KING. Thank you, Mr. Chairman.

Senator UDALL. General Formica, let me turn to a topic I raised a little bit earlier, which is the annual military assessment of our global missile defense capabilities that you lead. You look both at Homeland defense capabilities and regional missile defense capabilities, as I understand it, in regards to the combat commanders'—I should say, combatant commanders' needs. Then you assess risk in terms of threats and capabilities.

In the most recent assessment, what were the overall risk assessments for Homeland defense and for regional defense capabilities? Was one considered higher risk than the other? Then as a follow-on, did the assessment suggest that our combatant commanders have a need for increased regional missile defense capabilities relative to the regional missile threats they face today?

General FORMICA. Mr. Chairman, thank you for the question. Yes, we conduct a global ballistic missile defense assessment annually that informs STRATCOM's process to develop a prioritized capability list that the MDA and others respond to. When we conduct

that assessment, last year's for instance, we assessed—and again, the specific assessments for each region would obviously be classified. But the assessment for the Homeland, which clearly remains our number one priority, is at a lower risk than the assessment for the regions in terms of their ability to provide for missile defense for their forward-deployed forces there.

The trends generally tend to go back to some of the things I've mentioned previously in my testimony today: capacity of interceptors, the need for adequate sensor coverage so we can take advantage of the sensors that are out there. It reinforced the need for offense-defense integration to reduce the dependence strictly on missile defense, but that comes with an increased requirement for intelligence, surveillance, and reconnaissance. Also to continue to improve our integration of the missile defense capabilities of our allies and coalition partners.

Senator UDALL. I'm tempted to ask you about Iron Dome, but I don't know if that's a question that's appropriate in this setting. But I would acknowledge that, having visited both a battery and the command headquarters in Israel last May, that's a real success story. Those of us who watched this, we understand that it gave the Israeli Government flexibility that it wouldn't have had otherwise perhaps, and we might have seen the Israel Defense Forces (IDF) go into Gaza because they would have had no other alternative.

General FORMICA. Mr. Chairman, I would say it's safe to that Iron Dome is a very successful missile defense system. Again, there's no shield that completely protects us, but it does provide effective missile defenses and the IDF have demonstrated that.

Senator UDALL. Dr. Gilmore, let me turn back to you. You're the independent source of oversight of operational test and evaluation programs, as we know. That includes missile defense testing, and you've reviewed and approved the MDA integrated master test plan. Do you believe that test plan is robust, rigorous, and properly structured to provide the data we need to assess the performance of our missile defense systems in an orderly and disciplined fashion?

Then a second question: Do you believe the planned pace of MDA testing is appropriate and sufficient, given the need to learn from previous test results and other real-world constraints?

Dr. GILMORE. My answer to both those questions is yes. I'll elaborate a little bit on the second one.

Senator UDALL. Sure.

Dr. GILMORE. Historically over the last decade, the pace of ground-based missile defense testing, which I think is the subject of some discussion and controversy, is about 1.3 intercept tests per year. The pace of flight testing earlier in the decade was a little higher. It was about 1.7 intercept tests per year. As Admiral Syring just mentioned in an answer not too long ago, during the course of the next year beginning now we may actually—including the test that we did not too long ago—conduct three tests for ground-based missile defense: the non-intercept test, the test of the Capability Enhancement 1 kill vehicle coming up within a month, and then the test of the Capability Enhancement 2 kill vehicle, probably early in fiscal year 2014.

That's an outlier and there are some reasons that that more rapid pace of testing that I've characterized as an outlier is possible. First of all, the non-intercept test did not involve a target. That made the planning for that test simpler to do. The CE–1 test later, within a month, and the CE–2 test at the beginning of fiscal year 2014 will be tests that are flown using the same trajectories and targets that were already planned for and analyzed for what was called FTG, Flight Test Global Missile Defense, 06 and 06A, both of which failed, for different reasons, 2 and 3 years ago.

So because we didn't have the target in the case of the test that was conducted not too long ago and because of the fact that we're basically using the analysis and the plans that were developed previously for the upcoming two intercept tests, that makes it possible—that's a large part of the reason that makes it possible to conduct those three tests and to shorten the amount of time that's needed for planning for the test, executing the test.

It won't shorten much the amount of time that's needed to analyze the data. What we don't want to do in this testing is to cause the period during which the data from a test is analyzed so that we can learn, understand and learn to overlap with the period that's used for planning the next test, because if we do that then we're not going to be able to learn.

Now, I'm not going to sit here and deny that the existing process couldn't be accelerated somewhat. But I would say this: planning for these tests, and in particular analyzing the data from the tests, is not like building automobiles. I don't mean that to be pejorative to automobile manufacturers, but automobile manufacturers can double their output by building a new plant and hiring a bunch of new workers. That's not the case when it comes to analyzing these test results. Could additional personnel help somewhat? Yes, they could. But it's the kind of activity that reaches a point of diminishing returns in my experience. For example, you can't half the time it takes to analyze data by hiring twice the number of engineers and analysts.

So again I'll reiterate. My answer to both questions is yes, and I support a deliberate pace that's not any slower than it has to be, but allows the time that's needed to rigorously plan and rigorously analyze the test results. Otherwise we won't be learning and the point of the tests will be lost.

Senator UDALL. Thank you for that. I want to turn to Senator Fischer.

I'm trying to think of something disparaging to say about our British cousins, because I think the uproar out in the hall is because Prince Harry is in the Senate, I should say, not in the House. He's in the Senate. Initially I thought it was because—and this is a very important hearing—that they were waiting for the results of our hearing. [Laughter.]

Let me turn to Senator Fischer.

Senator FISCHER. Thank you, Mr. Chairman. Yes, I said to you earlier, I think Prince Harry's in the house. But you corrected that. He's in the Senate. [Laughter.]

If I could just ask a couple more questions here on a different topic. On Tuesday before this subcommittee, we had the national lab people come and it was a very informative discussion that we

had on that. I know in the past, Admiral, that you've worked with I believe it's the Lawrence Livermore Lab. Do you still work with our national labs?

Admiral SYRING. Yes, ma'am, very closely. Lawrence Livermore in particular is with the diode pumped alkali laser system. That is a big effort of ours and theirs for the future. So yes, ma'am.

Senator FISCHER. Are you worried about what's going to happen when we see funding cut and the concerns that the labs now have with their funding and not being able to do testing, how that will affect your program as well?

Admiral SYRING. Yes, ma'am, I am. I watched that very closely as to took the sequestration cuts.

Senator FISCHER. Madam Secretary, do you have anything to add on that point?

Ms. CREEDON. Other than this really is a significant problem. The labs, particularly the three labs that you had here before, truly are crown jewels for this country, and they do a wide variety of things. I know that they really are mostly billed as weapons labs, but each of them does much, much, much more than nuclear weapons. In many respects, a lot of what DOD has across the board from its various weapons systems and capabilities, many of that—many of those capabilities can find their way back in some form or fashion to the labs.

They also are very much involved in the whole nonproliferation effort that DOD has, that's obviously not related to this hearing, but is under my office. They do a tremendous amount of work in detection technologies. They support our intelligence-gathering function and a wide variety of things. So they have a very wide and very important slate of activities. I do worry that we make sure we pay attention to all of that and keep them healthy.

Senator FISCHER. Thank you very much.

I would like to thank all of the panel for being here today. I appreciate your views and your input on this very important subject.

Thank you, Mr. Chairman.

Senator UDALL. Thank you, Senator Fischer.

I thought I'd ask one last question of Ms. Chaplain and then we'll bring the hearing to a close. What I wanted to ask is, of course, the GAO has provided numerous suggestions over the years for improving missile defense acquisitions. You've had some additional recommendations this year. There seems to be a tension between the sense of urgency and demand for missile defense capabilities, particularly to address combatant commander needs for existing regional missile threats, which I referenced earlier, and the acquisition practices you recommend. Given that tension, can you tell us what acquisition improvements you believe are achievable in the near-term to meet the needs of our warfighters, but also ensure that the systems we provide work well and are affordable? Easy question, I know.

Ms. CHAPLAIN. I agree that there is tension, because there's a lot of schedule pressure on MDA to deliver systems within presidential set timeframes. There are concerns about the industrial base and the need to keep it stabilized and productive over time.

We, on the other hand, do recommend strategies that are knowledge-based. We talk about concurrency, being more sequential in

terms of the development process. But we are not recommending 100 percent absolutely conservative strategies, given the mission that missile defense has. We do believe the overlap in some activities, like production and testing, has just been way too significant in some cases and caused just way too many problems in terms of retrofitting, that end up ultimately disrupting the industrial base because you're turning them on and off and on and off, and it's just really hard to get people on and off and on and off, and it creates more problems.

For older programs, it's do what you can with what you have in terms of reducing that risk. Where we really like to see attention placed is on the newer programs and structuring them in a way—now that you have an initial capability in place, you have more the ability to follow best practices and more knowledge-based acquisitions.

So where we've seen new programs take higher-risk approaches, they're setting their commitment dates where all the acquisition activities ramp up before they really understand the requirements and how they match their resources, we're really encouraging them to restructure those milestones in a way that will benefit them in the long run. To its credit, Missile Defense has done that on some key programs in recent years.

So we're hoping, with the focus on recent programs, we can have better execution paths going forward.

Senator UDALL. Thank you for those thoughtful recommendations and insights.

I'm going to bring the hearing to a close. I think I speak for Senator Fischer when I say I had a chance to look at each and every one of your biographies and it makes me really proud and impressed, and I'm in awe of each and every one of your commitments to public service, as well as your educational backgrounds. You give me a lot of comfort that you're on the mission, that you're serving our country, and that you've dedicated yourselves to causes greater than your own self-interest.

So thank you for being here.

General Formica, we wish you all the best. I don't think you're really going to retire, knowing you. I look forward to the next mountain you're going to climb.

With that, we'll have additional questions for the record and we'll ask that you provide prompt responses to those questions. We are in the process of working up our subcommittee mark here soon because we want to get the National Defense Authorization Act underway. So I know you'll do so.

With that, this hearing is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

EAST COAST MISSILE DEFENSE SITE

1. Senator SESSIONS. Secretary Creedon, what led Secretary of Defense Hagel to announce plans to deploy an additional 14 ground-based interceptors (GBI) at Fort Greely, AK?

Ms. CREEDON. On March 15, 2013, Secretary Hagel announced a series of steps the United States will take to stay ahead of the challenge posed by North Korea and Iran's development of longer-range ballistic missile capabilities. The United States has missile defense systems in place to protect the homeland from limited

intercontinental ballistic missile (ICBM) attacks, but North Korea in particular has recently made advances in its capabilities. Specifically, North Korea announced last month that it conducted its third nuclear test, and last April displayed what appears to be a road-mobile ICBM. It also used its Taepo Dong-2 missile to put a satellite in orbit, thus demonstrating progress in its development of ICBM technology.

In order to bolster protection of the Homeland and stay ahead of this threat the Secretary announced four steps. First, we will strengthen Homeland missile defense by deploying 14 additional Ground-Based Interceptors (GBIs) at Fort Greely, AK. This will increase the number of deployed GBIs from 30 to 44, including the 4 GBIs at Vandenberg Air Force Base, CA.

Second, with the support of the Japanese Government, we are planning to deploy an additional radar in Japan. This second TPY–2 radar will provide improved early warning and tracking of missiles launched from North Korea at the United States or Japan.

Third, as required by statute, the Department of Defense (DOD) will consider a number of locations in the United States for a potential additional interceptor site, and DOD will complete Environmental Impact Statements (EIS) for candidate sites. Although the administration has not made any decision on whether to proceed with an additional site, completing these EISs will shorten the timeline for construction should that decision be made.

Fourth, we are restructuring the SM–3 IIB program. The timeline for deploying this interceptor had been delayed to at least 2022 due to congressional cuts in funding. Meanwhile, the threat continues to mature. By shifting resources from this lagging program to fund the additional GBIs as well as advanced kill vehicle technology that will improve the performance of the GBI and other versions of the SM–3, we will be able to add protection against missiles from Iran sooner, while also providing additional protection against the North Korean threat.

The collective result of these four decisions will be to improve further our ability to counter future missile threats from Iran and North Korea, while maximizing scarce DOD resources.

2. Senator SESSIONS. Secretary Creedon, like North Korea, Iran has demonstrated an early ICBM capability by launching satellites into space, and also seems bent on acquiring a nuclear capability. Is the administration also concerned that Iran could pose a direct threat to the United States?

Ms. CREEDON. Yes, the administration remains concerned about the potential emergence of an Iranian ICBM capable of reaching the U.S. Homeland. The United States is currently defended from a limited intercontinental-range ballistic missile capability that Iran may acquire in the foreseeable future. In March 2013, due to developments in the ICBM threat from North Korea, but also due to the continued risk of the emergence of an Iranian ICBM capability, Secretary Hagel announced several steps to strengthen existing U.S. Homeland missile defenses. In addition, the fiscal year 2014 budget request maintained funding for ongoing efforts to improve the Ground-Based Midcourse Defense (GMD) system, specifically:

- A Ground-Based Inceptor (GBI) improvement program;
- Upgrades to the Command, Control, Battle Management, and Communications (C^2BMC) systems;
- Emplacement of additional In-Flight Interceptor Communications System Data Terminal on the U.S. east coast by 2015; and
- Upgrades to the Early Warning Radars at Clear, AK, and Cape Cod, MA, by 2017.

Although Iran has not yet tested an ICBM, it has demonstrated an ability to launch small satellites, and has worked to develop larger space-launch vehicles and longer-range missiles.

The Intelligence Community (IC) assesses that Iran is developing nuclear capabilities to enhance its security, prestige, and regional influence and give it the ability to develop nuclear weapons, should a decision be made to do so. Iran has developed technical expertise in a number of areas—including uranium enrichment, nuclear reactors, and ballistic missiles—from which it could draw if it decided to build missile-deliverable nuclear weapons. The IC assesses that Iran would likely choose a ballistic missile as its preferred method of delivering a nuclear weapon, if one is ever fielded.

3. Senator SESSIONS. Secretary Creedon, with the termination of the SM–3 block IIB program, protection for the United States against Middle East threats will not be as effective as originally envisioned by two Presidents. Does this not argue for an additional missile defense site in the United States?

Ms. CREEDON. The United States is currently defended from a limited intercontinental-range ballistic missile capability that Iran may acquire in the foreseeable future. Iran has not yet tested an ICBM but has demonstrated an ability to launch a small satellite, and has worked to develop larger space-launch vehicles and longer-range missiles.

In order to bolster our protection of the Homeland and stay ahead of this potential threat, DOD is taking several steps, including deploying 14 additional GBIs at Fort Greely, AK. This will increase the number of deployed GBIs from 30 to 44, including the 4 GBIs at Vandenberg Air Force Base, CA.

Other steps are also underway. We plan to deploy an additional In-Flight Interceptor Communications System data terminal on the U.S. east coast and upgrade the Early Warning Radars at Clear, AK, and Cape Cod, MA, by 2017. Additionally, we will accelerate the command and control system's development and discrimination software to handle larger numbers of incoming ballistic missiles. These improvements in sensor coverage, command and control, and interceptor reliability will have an impact on the expected performance of the GMD system. Furthermore, we are restructuring the SM–3 IIB program to develop common kill vehicle technology to address evolving threats. I am confident that these steps will allow us to maintain an advantageous position relative to the Iranian and North Korean ICBM threats.

The Department is in the early stages of identifying at least three candidate locations for a potential third GBI site as directed by the National Defense Authorization Act (NDAA) for Fiscal Year 2013. At least two of the possible sites must be on the east coast. We will complete the EI process for the possible sites.

4. Senator SESSIONS. Secretary Creedon, the additional 14 GBIs in Alaska are meant to address the North Korean threat. What if Iran and North Korea collude? Will we then have enough missiles?

Ms. CREEDON. I cannot speculate about any North Korea and Iran collusion to attack the United States with ICBMs simultaneously. The United States currently enjoys an advantageous position of 30 deployed GBIs to counter the North Korean ICBM threat, and we are increasing that number to 44 deployed interceptors by 2017. Iran does not currently possess any ICBMs but the United States is currently defended from a potential ICBM capability that Iran may acquire in the foreseeable future. We are committed to maintaining an advantageous position vis-á-vis the threats from North Korea and Iran. DOD is undertaking continued improvement to the GMD system, including efforts to enhance GBI performance, the deployment of new sensors, and upgrades to existing sensors. We have also developed and maintained a hedge strategy within our GMD program to address possible delays in the development of new missile defense systems and the possibility that the projected ICBM threat could advance faster or could include larger numbers of ICBMs than anticipated.

5. Senator SESSIONS. Admiral Syring, how would you assess the technical and operational advantages of an additional Homeland missile defense site?

Admiral SYRING. A potential East Coast Missile Field (ECMF) would add battlespace and interceptor capacity; however, it would come at significant materiel development and service sustainment costs. We recommend that the Department complete the Continental United States Interceptor Site Study and EIS mandated by section 227 of the NDAA for Fiscal Year 2013 (Public Law 112–239) and conduct a successful Ground-Based Interceptor Capability Enhancement (CE)-II flight intercept test to validate the capability of the CE–II Exo-Atmospheric Kill Vehicle before making any decision with respect to an ECMF.

The operational advantages of an additional homeland missile defense site should be assessed by the Commander, U.S. Northern Command (NORTHCOM).

6. Senator SESSIONS. Admiral Syring, how much would such a system cost?

Admiral SYRING. Total estimated cost of $3,107 million (M) (Continental United States (CONUS)) Interceptor Site and GBIs CONUS Interceptor Site (CIS): $2,026M (Base Year 2012 dollars):

- $69 million - Military Construction (MILCON) Planning and Design
- $997 million - Major MILCON
- $960 million - Research, Development, Test, and Evaluation

GBI: $1,081 million (20 additional GBIs).

Note: Location will affect CIS cost (e.g. geology, logistics, et cetera).

7. Senator SESSIONS. Admiral Syring, how much money could you use in fiscal year 2014 to get started?

Admiral SYRING. The NDAA for Fiscal Year 2013 contained a requirement for DOD to evaluate at least three additional locations in the United States that would be best suited for hosting a missile defense base to protect the Homeland and to conduct an EIS for the candidate sites.

Currently, the EIS is not funded in the MDA PB14 request. However, MDA intends to fund the fiscal year 2014 EIS requirements ($3.641 million) within existing resources.

Once started, the EIS will require 12 to 18 months to complete. No site specific funding can be executed until completion of the EIS and subsequent identification of the selected site. The earliest that would occur is fiscal year 2015. Therefore, no additional funding is required in fiscal year 2014.

8. Senator SESSIONS. Admiral Syring, how long would it take to build an additional Homeland missile defense site?

Admiral SYRING. Five years assuming a known site—2 years for Planning and Design, and 3 years for construction. Note: Location (e.g. construction seasons, geology, et cetera) and budget programming (i.e. MILSON) will affect schedule.

9. Senator SESSIONS. Admiral Syring, would you deploy the current GBI at that site, or a two-stage version of the GBI?

Admiral SYRING. If and when a decision to deploy an East Coast Missile Defense Site is made, the specific site location and the mix of three-stage and two-stage GBIs will be established based upon the threat and performance requirements. Analysis will be performed in conjunction with NORTHCOM to determine location and optimal mix.

10. Senator SESSIONS. Admiral Syring, would such a site benefit from the deployment of an additional sensor, such as an X-band radar?

Admiral SYRING. Yes. Overall, investment in Ballistic Missile Defense System (BMDS) discrimination and sensor capabilities would result in cost-effective near-term improvements to homeland missile defense. Specifically, an additional X-band sensor would improve the effectiveness of the existing GBI sites at Fort Greeley, AK, and Vandenberg Air Force Base, CA, or at an additional East Coast Missile Defense Site. DOD is evaluating potential sensors enhancements that could be pursued to improve the BMDS kill chain and increase threat discrimination. This evaluation, and others, will serve to inform decisions on our future BMDS architecture and budget requests.

COMMON KILL VEHICLE

11. Senator SESSIONS. Admiral Syring, what is your timeline for providing a new kill vehicle for the GBI?

Admiral SYRING. The Missile Defense Agency (MDA) is developing acquisition approaches and cost estimates for maturing technology to transition to present Agency Programs of Record (GBI and SM–3) kill vehicle development. The objective is to improve the GBI's kill vehicle in three phases. Notionally, Phase I improvements will incorporate mature technology hardware and software that will improve reliability. Phase II kill vehicle improvements will enhance performance against current and some emerging threats through matured discrimination and communication technology. Phase III will evolve and develop a capability to install multiple kill vehicles on a booster stack. A specific timeline for the above phases will be provided after MDA and the Department has completed a thorough analysis.

12. Senator SESSIONS. Admiral Syring, will this timeline pace the growing threat?

Admiral SYRING. Threat assessments are continually being updated by the Intelligence Community, and using these assessments, the MDA will develop and deliver Common Kill Vehicle technology and components to expand Ballistic Missile Defense capability to address projected threats. The common kill vehicle technology effort will seek to gain higher performance and increased reliability components that can be inserted into the existing Ground Based Interceptor fleet and for potential incorporation in a future Standard Missile-3 variant.

13. Senator SESSIONS. Admiral Syring, how much will such a development effort cost?

Admiral SYRING. We are defining a phased Common Kill Vehicle technology effort to develop and transition capability to our GBI and SM–3 family of interceptors. Design solutions for the three phases are not yet complete, so precise costs are still uncertain. The MDA is working with the interceptor contractor base to finalize the content of these phases which will inform our cost estimate.

14. Senator SESSIONS. Admiral Syring, is there funding in the fiscal year 2014 request for this new kill vehicle?

Admiral SYRING. The MDA's fiscal year 2014 budget includes funding for the Common Kill Vehicle Technology effort. MDA will request funding through the Future Years Defense Plan, fiscal year 2015 and beyond to support kill vehicle improvements.

15. Senator SESSIONS. Admiral Syring, will you examine the feasibility of placing more than one kill vehicle atop the GBI?

Admiral SYRING. Yes, we will as part of our phased approach to improving the kill vehicle. Being able to destroy more than one potentially lethal object from a single interceptor will save a substantial portion of our inventory. Being able to destroy more than one lethal object also has the potential to shift the missile battle in favor of the defense.

PRECISION TRACKING SPACE SYSTEM

16. Senator SESSIONS. Secretary Creedon and Admiral Syring, why did DOD terminate the Precision Tracking Space System (PTSS)?

Ms. CREEDON and Admiral SYRING. DOD concluded that the risk and cost associated with the PTSS was too high. The program therefore was terminated.

Upon review by the Government Accountability Office, several concerns were noted. Two of the concerns critical to the decision to cancel the program were:

- The long-term program affordability due to the satellite constellation replenishment and launch vehicle costs; and
- The contract concurrency between the lab development program and the industry production program.

DOD continues to review alternatives that will provide persistent wide-area coverage at a sustainable cost.

17. Senator SESSIONS. Secretary Creedon and Admiral Syring, how do you intend to meet future sensor requirements that PTSS was intended to provide, such as tracking missile threats and warheads from birth to death?

Ms. CREEDON and Admiral SYRING. DOD and MDA understand the potential value of a persistent space-based sensor to the BMDS mission and we are studying how best to support future sensor requirements following the cancellation of the PTSS. The MDA will leverage the remaining PTSS funding to examine the layered nature of BMDS sensors to meet future sensor needs.

MDA continues to study program options and sensor solutions for the future BMDS, including space based systems. Preliminary findings from these studies show that enhancing and integrating sensors would increase the value of the scarce interceptor inventory.

An analysis of how a combination of future surface, space, and air sensors can best be combined to provide robust and affordable sensor coverage is in progress. MDA will share the results of the analysis with Congress once it is completed.

18. Senator SESSIONS. Secretary Creedon and Admiral Syring, will the missile defense system continue to have a space-based sensor layer?

Ms. CREEDON. The BMDS, through the C^2BMC element continues to take advantage of boost-phase cueing as provided by the extended family of missile warning sensors: the Air Force's Defense Support Program and Space Based Infrared System, and other Overhead Persistent Infrared (OPIR) sensors. The BMDS also uses C^2BMC to provide reverse cues to capture data from those systems for BMDS hit and kill assessments.

Those systems, however, do not have the capability to provide fire control quality missile tracks or discrimination data, as they are too distant from the threat objects. Additional space-based sensors that are closer to the threat object are necessary to deliver the warfighter requirements for tracking of a threat missile through all phases of its flight.

The MDA plans to partner with the Office of the Secretary of Defense (OSD); Air Force Space Command, Space and Missile Systems Center; U.S. Strategic Com-

mand; the National Geospatial Agency; the National Reconnaissance Office; and others on a post-PTSS space architecture study. The study will remove the traditional boundaries of space acquisitions by assessing all possible methods of providing capability: satellites or payloads hosted by MDA and non-MDA organizations, commercial or civil partnerships, fee-for-service options, capabilities of current systems or new satellite acquisitions. It will assess the logical combinations of missile defense and non-missile defense requirements for an overall acquisition that is minimally affected by the joint needs of a multi-mission customer base. It will also investigate how the complete requirements set could be divided among and assigned to multiple platforms (new or existing) if heterogeneous implementation is fiscally advantageous. Participation in the joint study will not bind the parties to participate in a joint acquisition program; yet it will identify the "art of the possible" as it pertains to delivering multi-mission capability at different budgets and schedules.

Admiral SYRING. Yes. The BMDS, through the C²BMC element continues to take advantage of boost-phase cueing as provided by the extended family of missile warning sensors: Air Force's Defense Support Program and Space Based Infrared System, and other OPIR sensors. The BMDS also uses C²BMC to provide reverse cues to capture data from those systems for BMDS hit and kill assessments.

However, those systems do not have the capability to provide fire control quality missile tracks or discrimination data as they are too distant from the threat objects. Additional space-based sensors that are closer to the threat object are necessary to deliver the warfighter requirements for birth-to-death tracking. As suggested by a draft version of the NDAA for Fiscal Year 2014 an analysis of alternatives is necessary to determine the most appropriate materiel solution for that requirement.

The MDA plans to partner with the OSD, Air Force Space Command, Space and Missile Systems Center, Strategic Command, National Geospatial Agency, the National Reconnaissance Office, and others on a post-PTSS space architecture study. The study will remove the traditional boundaries of space acquisitions by assessing all possible methods of providing capability: Satellites or payloads hosted by MDA and non-MDA organizations, commercial or civil partnerships, fee-for-service options, capabilities of current systems or new satellite acquisitions. It will assess the logical combinations of missile defense and non-missile defense requirements for an overall acquisition that is minimally impacted by the joint needs of a multi-mission customer base. It will also investigate how the complete requirements set could be divided between and assigned to multiple platforms (new or existing) if heterogeneous implementation is fiscally advantageous. Participation in the joint study will not bind the parties to participate in a joint acquisition program, yet it will identify the "art of the possible" as it pertains to delivering multi-mission capability at different budgets and schedules.

FUTURE SM–3 MISSILE

19. Senator SESSIONS. Admiral Syring, with the termination of the SM–3 block IIB program, what are the plans of DOD for a future SM–3 missile after deployment of the IIA variant in 2018?

Admiral SYRING. Long-term planning to address ballistic missile threats, including upgrades to the Aegis Ballistic Missile Defense weapons system and the need for advanced Standard Missile variants, is an ongoing process managed by the MDA in response to requirements directed by the Joint Staff, Office of Secretary of the Defense Policy, combatant commanders, and the Services. With termination of the IIB program, MDA does not currently have programmed development of a future Standard Missile-3 (SM–3) variant following delivery of the IIA.

As part of Secretary of Defense Hagel's announcement regarding missile defense priorities, there was a portion which addressed a shift of emphasis to advance kill vehicle technology and components for interceptors, which could potentially be included in SM–3 variants. MDA has initiated a Common Kill Vehicle Technology effort to improve performance and capability of Ground Based Interceptors and SM–3 variants.

20. Senator SESSIONS. Admiral Syring, is it possible for the Standard Missile to play a Homeland defense role, as originally intended for the IIB variant?

Admiral SYRING. The MDA is prepared to respond to this question, but access to the information is protected by higher program security classification restrictions. MDA is currently working with the responsible department to enable access to this information.

MISSILE DEFENSE OPERATIONS IN RESPONSE TO NORTH KOREA

21. Senator SESSIONS. Secretary Creedon and General Formica, please summarize our missile defense deployments—and those of our allies—in response to the recent threat posed by North Korea.

Ms. CREEDON and General FORMICA. During the recent North Korean provocation, the U.S. ballistic missile defense (BMD) capabilities protected the United States, our forces, and several of our allies from a possible ballistic missile attack from North Korea. Some forces were already in place to provide homeland and regional BMD capabilities, including Aegis BMD-capable ships, the AN/TPY–2 radar based in Japan, the GMD system, and other supporting sensors. In addition, we deployed a Terminal High-Altitude Area Defense (THAAD) battery to Guam and the Sea Based X-Band (SBX) radar. Allies with BMD capabilities in the U.S. Pacific Command area of responsibility also participated in this operation, providing their resources to help counter the threat.

22. Senator SESSIONS. Secretary Creedon and General Formica, what missile defense assets did we activate in the region and in the United States to address the threat?

Ms. CREEDON and General FORMICA. In addition to the GMD system for homeland missile defense, the United States activated supporting sensors, the AN/TPY–2 radar based in Japan, Aegis BMD-capable ships in the region, a deployed THAAD battery in Guam, and the SBX radar. Allies with BMD capabilities in the U.S. Pacific Command area of responsibility also participated in this operation, providing their resources to help counter the threat.

23. Senator SESSIONS. Secretary Creedon and General Formica, what lessons did you learn?

Ms. CREEDON. From a Policy perspective, the missile defense steps implemented in response to North Korea's provocations further demonstrated the strategic and diplomatic value of missile defense capabilities. By activating and deploying missile defenses, U.S. and allied leaders were able to signal resolve, enhance deterrence of ballistic missile proliferation or use, and provide a way to mitigate the threat in case of deterrence failure. Diplomatically, missile defenses were critical in assuring U.S. allies and partners that we remained willing and able to uphold our security commitments in the region. The recent episode has also highlighted the continued importance of the United States as a leader and force for stability in the region. Finally, the increased stress on low-density/high-demand missile defense capabilities further demonstrated the value of mobile and relocatable missile defense assets, which allow the United States to adapt in response to evolving threats worldwide.

General FORMICA. We learned four operational lessons in response to the recent North Korean event. The situation reinforced the need for: the capacity to simultaneously support more than one operation; sufficient indications and warnings; persistent, in depth, sensor coverage; and better integration of allies and coalition capabilities.

24. Senator SESSIONS. Secretary Creedon and General Formica, are you confident that had North Korea launched a missile capable of reaching the United States, we could have destroyed that missile in flight?

Ms. CREEDON and General FORMICA. Yes, we are confident that the GMD system, supported by other deployed/available BMD capabilities, would have been able to protect the United States from a limited North Korean long-range ballistic missile attack.

25. Senator SESSIONS. Secretary Creedon and General Formica, did we have enough Aegis-capable ships to deal with both the North Korea contingency and other potential ballistic missile threats—in the Middle East, for example?

Ms. CREEDON. Yes, DOD is able to support worldwide deployment needs. It should be noted, however, that U.S. missile defenses are in high demand across the globe. U.S. missile defense policy emphasizes the use of mobile and flexible assets in order to adapt as the threat evolves. In periods of crisis, we have the capacity to surge additional forces, but sustaining these forces at higher readiness postures may have implications on the Military Departments' ability to conduct regular training and maintenance schedules. DOD employs the global force management process to allocate these assets, balancing combatant command operational risks from a global perspective with Military Department force management risk to ensure the future health of the force. We also continue to work with allies to enhance their missile defense capabilities.

General FORMICA. Yes, DOD was able to meet its worldwide deployment needs. However, it should be noted that U.S. missile defenses are in high demand across the globe. U.S. missile defense policy emphasizes the use of mobile and flexible assets in order to adapt as the threat evolves. In periods of crisis, we have the capacity to surge additional forces, but sustaining these forces at higher readiness postures may have implications on the Services' ability to train and maintain. The Department employs the global force management process to allocate these assets, balancing combatant command operational risks from a global perspective with Service force management risk to ensure the future health of the force. Aegis BMD-capable ships and SM–3 interceptors are high demand assets that must be carefully managed during the global force management process in order to meet demand. We can only surge for a defined period and still meet multi-mission requirements.

QUESTIONS SUBMITTED BY SENATOR DAVID VITTER

ARMY/NAVY TRANSPORTABLE RADAR SURVEILLANCE—MODEL 2

26. Senator VITTER. Admiral Syring, with the number of increasing threats around the world, such as threats to Israel and Turkey posed by Syrian instability; to U.S. Central Command (CENTCOM) posed by Iran; and to U.S. Pacific Command (PACOM) by increasingly frequent missile tests by North Korea, there is an urgent demand by combatant commands (COCOM) for missile defense capabilities. While Congress provided funding in fiscal year 2013 for the procurement of a 12th TPY–2 to keep pace with COCOMs' demands, the fiscal year 2014 defense budget request does not contain adequate funding to procure a 13th TPY–2. How does the MDA intend to continue TPY–2 production when the funding request is $115 million short of what is necessary?

Admiral SYRING. The President's budget request for 2014 reflects the current warfighter radar unit requirements. The $62 million procurement funding requested in President's budget 2014 is to purchase a float Cooling Equipment Unit, radar critical spares and long lead Transmit/Receive Integrated Microwave Modules for the float Antenna Equipment Unit. The President's budget does not request funds for a 13th AN/TPY–2 radar.

The MDA will readdress COCOM sensor requirements as a part of the President's budget request for fiscal year 2015.

MDA supports the Joint Staff, the Services, and the combatant commanders through participation in the warfighter involvement process. This process allows the warfighter to establish priorities for equipment and capabilities, and MDA satisfies those priorities within budget and schedule constraints. The final program plan is adjudicated by the Missile Defense Executive Board where all stakeholders are represented. This process ensures that maximum capability is provided within resources available.

PATRIOT MODERNIZATION

27. Senator VITTER. General Formica, COCOMs' demands for the Patriot system have continued to increase given the nature of threats to our forward deployed forces. However, the President's fiscal year 2014 budget request does not address the $50 million cut to the Radar Digital Processor (RDP), which is necessary to make upgrades to make Patriot processors compatible with commercial-off-the-shelf (COTS) processors, causing upgrades to RDP to be delayed. What is the Army's timeline for undertaking modernization efforts to the Patriot system, such as the RDP, in order to meet demand?

General FORMICA. As a result of the fiscal year 2013 $50 million RDP cut and a new contractor cost estimate, the Army believes the cost to recover has grown to $94 million. Additionally, the Army will need to recover from the RDTE mark of $60 million, which affects software development required to defeat current threats while leveraging RDP and Missile Segment Enhancement (MSE) Missile capability. As a result of the fiscal year 2013 RDP cut, the Army anticipates a minimum 2-year slip in the delivery of 25 RDPs to the COCOMs. Whereas these RDPs would have been fielded in fiscal year 2015–fiscal year 2016, they will now be fielded no earlier than fiscal year 2017–fiscal year 2018, delaying availability of enhanced radar processing to the COCOMs. Similarly, as a result of the $60 million fiscal year 2013 RDT&E cut, associated software capabilities designed to leverage the RDP and the MSE missile will slip 1 to 3 years to the right.

JOINT LAND ATTACK CRUISE MISSILE DEFENSE ELEVATED NETTED SENSOR SYSTEM

28. Senator VITTER. General Formica, the Army has announced plans to demonstrate one of two existing Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) systems from Aberdeen Proving Ground starting in late 2013 or early 2014, in support of the North American Aerospace Command (NORAD) mission to defend the National Capital Region, monitoring land, air, and sea traffic from Norfolk to New York. DOD is expected to make a decision regarding procurement of this capability for COCOM deployment in fulfillment of validated requirements from NORTHCOM, U.S. Southern Command (SOUTHCOM), PACOM, and CENTCOM. Is the Army currently reviewing the feasibility of an outside the continental United States (OCONUS) JLENS demonstration in support of COCOMs' demands?

General FORMICA. The Army does not have a requirement to deploy the second orbit and is not conducting planning for deploying the second JLENS orbit to an Outside the Continental United States location at this time. The OSD, in an Acquisition Decision Memorandum (ADM) signed on May 24, 2012, directed the Army to complete the JLENS Test and Evaluation Program through Developmental Test number 3 ending in fourth quarter of fiscal year 2013; assist in site selection and planning for an employment of one JLENS orbit in the Continental United States; to conduct the exercise; to continue to develop planned capabilities, assess test results and correct short-comings/deficiencies; and to develop documentation to track and assess program status. The ADM directs the Army to not procure the support equipment and government-furnished equipment required for the second orbit or plan for entry of the JLENS program into the production phase. The Joint Requirements Oversight Committee (JROC) concurred to deploy JLENS to Aberdeen Proving Ground, MD, for an operational exercise from fiscal year 2014 to fiscal year 2017, using one of two Engineering and Manufacturing Development orbits. The President's fiscal year 2014 budget requests funding to support limited operations of the Program Office, fund military construction for APG in support of the exercise, and provide funds to support the exercise.

QUESTIONS SUBMITTED BY SENATOR MIKE LEE

MISSILE DEFENSE NEGOTIATIONS WITH RUSSIA

29. Senator LEE. Secretary Creedon and Admiral Syring, do you believe it is in the national security interests of the United States to declassify information or alter our strategic defense posture because of the objections of another country?

Ms. CREEDON. No. Russia will not be allowed to have a veto on U.S. missile defense plans, programs, and decisions. The President has made clear on numerous occasions that cooperation with Russia will not in any way limit U.S. or North Atlantic Treaty Organization (NATO) missile defenses. The United States is committed to develop and deploy missile defenses that are affordable and effective against projected threats. The United States will not provide any information to Russia that would compromise U.S. national security.

Admiral SYRING. Missile defense discussions with the Russian Federation have been led by the Chairman of the Joint Chiefs of Staff, Under Secretary of Defense for Policy, and Under Secretary of State for Arms Control and International Security. I defer specific questions on U.S.-Russia Federation missile defense discussions as well as questions related to national security policy to them.

30. Senator LEE. Secretary Creedon, what proposals were discussed between Under Secretary James Miller and Russian Deputy Defense Minister Anatoly Antonov?

Ms. CREEDON. Under Secretary Miller and Minister Antonov discussed the missile defense-related aspects of the letter that President Obama sent to President Putin in February 2013. Specifically, Dr. Miller described the proposal for missile defense cooperation and transparency that was included in President Obama's letter. The Russian officials appreciated the opportunity for detailed discussions and said that Russia's response is pending further consideration.

The U.S. objective in these talks is to explore opportunities for mutually beneficial missile defense cooperation and to reassure Russia that our missile defenses are not a threat to Russia's security and will not undermine strategic stability. The United States will not accept limitations on its missile defenses.

Prior administrations, both Democratic and Republican, have sought such cooperation and transparency because they also deemed this to be in the U.S. interest.

We are prepared to brief Congress on this issue.

31. Senator LEE. Secretary Creedon, are there any plans for regular talks to take place with the Russian Government on missile defense? If so, please elaborate on what these meetings would entail.

Ms. CREEDON. The United States plans to continue its dialogue with Russia on opportunities for missile defense cooperation. This dialogue has continued under both Republican and Democratic administrations, going back many years. We are pursuing a bilateral U.S.-Russia dialogue, and U.S. officials regularly provide readout briefings to our NATO allies on the substance of such discussions, and will continue to inform our allies as discussions progress. At the same time, we are also continuing to explore opportunities for missile defense cooperation in a multilateral setting via the NATO-Russia Council. The U.S. objective in these talks is to pursue mutually beneficial missile defense cooperation and to reassure Russia that our missile defenses are not a threat to Russia's security and will not undermine strategic stability. In both tracks, we will not accept limitations on U.S. missile defenses.

32. Senator LEE. Secretary Creedon, General Formica, and Admiral Syring, if DOD decided that additional missile defense systems needed to be deployed for the protection of the United States, domestically or around the world, would the Russian Government be consulted before the decision was made?

Ms. CREEDON. The United States will continue to discuss missile defense with Russia and explore opportunities for cooperation, but Russia will not be allowed to have a veto on U.S. missile defense plans, programs, and decisions. The President has made clear on numerous occasions that cooperation with Russia will not in any way limit U.S. or NATO missile defenses. The United States is committed to develop and deploy missile defenses that are affordable and effective against projected threats.

General FORMICA. If DOD were to decide that additional missile defense assets should be deployed to protect the United States, Joint Functional Component Command for Integrated Missile Defense would provide operational assessments of the projected deployments based on threat and capability. Decisions as to which foreign partners or other entities should be consulted are made at other levels in the Department. As the warfighter, we will execute deployment decisions tasked to us by the National Command Authority.

Admiral SYRING. Missile defense discussions with the Russian Federation have been led by the Chairman of the Joint Chiefs of Staff, Under Secretary of Defense for Policy, and Under Secretary of State for Arms Control and International Security, and I defer specific questions on U.S.-Russia Federation missile defense discussions to them.

QUESTIONS SUBMITTED BY SENATOR KELLY AYOTTE

FORCE PROTECTION ASSETS

33. Senator AYOTTE. Admiral Syring, AN/TPY–2 was designed to provide both THAAD fire control and precision track information to the BMDS. Congress in both the NDAA for Fiscal Year 2013 and the fiscal year 2013 Continuing Resolution provided funds ($163.0 million) for procurement of a 12th radar to meet this demand. The fiscal year 2014 budget request does not contain funding to procure a 13th radar to keep pace with increasing threats (it only contains $62.0 million). An additional $115.0 million would be required to do so. Stabilized TPY–2 production also enables MDA to preserve the option of using existing technologies—like TPY–2 and the SM–3—to provide an east coast missile defense solution. There are a number of increasing missile threats around the world. In the NDAA for Fiscal Year 2013, funding for an additional TPY–2 radar was included to meet growing COCOM demands for missile defense. I understand the demand has increased from the COCOMs for additional missile defense capabilities like the TPY–2 radar. How does MDA intend to continue TPY–2 production?

Admiral SYRING. There are validated warfighter requirements for more THAAD batteries than are funded in the President's budget. AN/TPY–2 radar procurement must be budgeted as part of additional THAAD battery procurements.

The MDA supports the Joint Staff, the Services, and the combatant commanders through participation in the Warfighter Involvement Process. This process allows the warfighter to establish priorities for equipment and capabilities, and MDA satisfies those priorities within budget and schedule constraints. The final program plan is adjudicated by the Missile Defense Executive Board where all stakeholders are represented. This process ensures that maximum capability is provided within resources available.

34. Senator AYOTTE. Admiral Syring, would additional funding to MDA, to provide an additional THAAD system with a TPY–2 radar, help meet that need by the COCOMs?

Admiral SYRING. There are validated warfighter requirements for more THAAD batteries than are funded in the President's budget. Additional funding would help meet this warfighter requirement, but at the expense of other higher priority DOD requirements.

The MDA supports the Joint Staff, the Services, and the combatant commanders through participation in the warfighter involvement process. This process allows the warfighter to establish priorities for equipment and capabilities, and MDA satisfies those priorities within budget and schedule constraints. The final program plan is adjudicated by the Missile Defense Executive Board where all stakeholders are represented. This process ensures that maximum capability is provided within resources available.

35. Senator AYOTTE. Admiral Syring, in response to increased threats in the Pacific region, DOD has relocated the test-bed TPY–2 in theater. Its unavailability will slow down refinements necessary to leverage the continuous flow of intelligence regarding evolutions in the missile threats observed. This makes permanent deployment of this asset uncertain, creating gaps in missile defense capabilities. Scarcity of assets further strains operations due to a lack of spare parts and production focus on addressing obsolescence. Would additional funding for the continuation of the THAAD system, including an additional TPY–2 radar, relieve COCOM strain on the current inventory of force protection assets?

Admiral SYRING. There are validated warfighter requirements for more THAAD batteries than are funded in the President's budget. Additional funding would help meet these warfighter requirements, but at the expense of other higher priority DOD requirements.

The MDA supports the Joint Staff, the Services, and the combatant commanders through participation in the Warfighter Involvement Process. This process allows the warfighter to establish priorities for equipment and capabilities, and MDA satisfies those priorities within budget and schedule constraints. The final program plan is adjudicated by the Missile Defense Executive Board where all stakeholders are represented. This process ensures that maximum capability is provided within resources available.

PATRIOT MODERNIZATION

36. Senator AYOTTE. General Formica, in fiscal year 2013, the Army unsuccessfully attempted to reclaim $50.0 million from a total of $199.6 million in the Patriot modernization account for upgrades to the Radar Digital Processor (RDP). RDP upgrades make Patriot processors compatible to modern commercial off-the-shelf processors, driving down cost, increasing reliability, and creating space for needed software upgrades. This upgrade was part of a validated modernization plan. The fiscal year 2014 President's budget, $256.4 million for Patriot modernization, does not address the $50.0 million cut to RDP upgrades needed for the entire U.S. Patriot fleet. These upgrades are currently in production or being delivered to allied nations like the UAE and Saudi Arabia. COCOM demand for the Patriot system continues to increase, given the nature of threats to our forward deployed forces. Much needed upgrades to Patriot planned for fiscal year 2013, like the RDP, have been delayed. The Army has not yet offered a time or cost schedule to undertake these upgrades to meet demand. I understand COCOM demand for missile defense capabilities continues to grow. How have fiscal year 2013 cuts to the Patriot system impacted the Army's ability to deliver these capabilities?

General FORMICA. The President's fiscal year 2014 budget (PB14) request does not address the fiscal year 2013 $50 million RDP cut or the $60 million Research, Development, Test, and Evaluation (RDT&E) cut because the timing of the fiscal year 2013 budget did not allow for changes to the PB14 request prior to submission. As a result of the fiscal year 2013 RDP cut and a new contractor cost estimate, we believe the cost to recover from the $50 million fiscal year 2013 RDP cut has grown to $94 million. Additionally, the Army will need to recover from the RDTE mark of $60 million, which affects software development required to defeat current threats while leveraging RDP and Missile Segment Enhancement (MSE) Missile capability. As a result of the fiscal year 2013 RDP mark, the Army anticipates a minimum 2 year slip in the delivery of 25 RDPs to the COCOMs. Whereas these RDPs would have been fielded in fiscal year 2015–2016, they will now be fielded no earlier than fiscal year 2017–2018, delaying availability of enhanced radar processing to

the COCOMs. Similarly, as a result of the $60 million fiscal year 2013 RDT&E cut, associated software capabilities designed to leverage the RDP and the MSE missile will slip 1 to 3 years. The RDP and critical software upgrades delayed by the RDT&E cut are key enablers for Patriot, required to defeat proliferated threats, improve combat identification, and best capitalize on the increased capability of the MSE.

37. Senator AYOTTE. General Formica, what is the Army's timeline for undertaking modernization efforts for upgrades such as the RDP?

General FORMICA. Patriot modernization is a critical effort that will be slowed significantly as a result of fiscal year 2013 cuts. The current Patriot modernization effort hinges on the RDP and associated RDT&E funded software upgrades. As a result of the fiscal year 2013 RDP cut, the Army anticipates a minimum 2-year slip in the delivery of 25 RDPs to the COCOMs. Whereas these RDPs would have been fielded in fiscal year 2015–fiscal year 2016, they will now be fielded no earlier than fiscal year 2017–fiscal year 2018, delaying availability of enhanced radar processing to the COCOMs. Similarly, as a result of the $60 million fiscal year 2013 cut, many of the associated software capabilities designed to leverage the RDP and the MSE missile will slip 1 to 3 years, fielding capability to the warfighter in fiscal year 2017–2019 rather than in fiscal year 2016 as previously planned.

GUIDANCE ENHANCED MISSILE-TACTICAL

38. Senator AYOTTE. General Formica, the Army has announced plans to begin recertification of the Guidance Enhanced Missile-Tactical (GEM–T) but has not articulated whether their timeline will meet the fiscal year 2015 expiration date or whether operation and maintenance (O&M) accounts have sufficient funding to undertake this effort. In equipping our COCOMs with the best missile inventory possible and in the most efficient manner, the Army is to be applauded for undertaking GEM–T recertification. Does the Army anticipate achieving this recertification by the end of fiscal year 2015 and does it have the resources necessary to do so at this time?

General FORMICA. The Army has not determined that Legacy Patriot [Patriot Advanced Capability (PAC)-2, Guidance Enhanced Missile (GEM), GEM Plus] missile recertification will be necessary to support the Total Army Munitions Requirement (TAMR). Raytheon recently concluded a service life extension study to determine the feasibility of a 15-year life extension. The Lower Tier Project Office has issued a memorandum stating the service life of Legacy Patriot missiles may be extended from 30 to 45 years for an additional cost. Currently, the Army is reviewing Raytheon's study. Once a decision has been made, the appropriate programming and budgeting actions will be executed.

JOINT LAND ATTACK CRUISE MISSILE DEFENSE ELEVATED NETTED SENSOR SYSTEM

39. Senator AYOTTE. General Formica, the Army has announced plans to demonstrate one of two existing JLENS systems from Aberdeen Proving Ground, starting in late 2013 or early 2014, in support of the NORAD mission to defend the National Capital Region, monitoring land, air, and sea traffic from Norfolk to New York. DOD is expected to make a decision regarding procurement of this capability for COCOM deployment in fulfillment of validated requirements from NORTHCOM, SOUTHCOM, PACOM, and CENTCOM. In anticipation of the JLENS demonstration at Aberdeen Proving Ground, has the Army worked with the Under Secretary of Defense for Acquisition, Technology, and Logistics, and other Services, especially the Navy, to identify performance data to be captured in support of a future procurement decision criteria?

General FORMICA. The Army is coordinating with NORAD/NORTHCOM and its subordinate Service components to provide a COCOM assessment of the JLENS capability. This assessment will inform the Department on the feasibility of an enduring mission for JLENS. The Army continues to work through the Joint Integrated Air and Missile Defense Organization on data needed to inform a future decision. The JLENS Exercise was concurred to by the JROC, in which the Navy participated. The Army has also conducted a successful test event with the Navy Desert Ship (Aegis Destroyer surrogate) to demonstrate the capability to execute a joint engagement.

40. Senator AYOTTE. General Formica, is the Army currently reviewing the feasibility of an OCONUS JLENS demonstration in support of COCOMs' demands?

General FORMICA. The Army does not have a requirement to deploy the second orbit and is not conducting planning for deploying the second JLENS orbit to a location outside the continental United States at this time.

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