

Unclassified Statement of

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Director, Missile Defense Agency

Before The

Senate Appropriations Committee

Defense Subcommittee

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Good morning, Chairman Durbin, Vice Chairman Cochran, 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 (FY) 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 FY 2014 are to continue our strong support of the warfighter, 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 focus on improving the performance of the Ground Based Interceptors (GBIs) and the Aegis Weapons System, including the Standard Missile (SM) 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) and Aegis Ballistic Missile Defense (BMD) as we look for ways to make them 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 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 two near-simultaneous ballistic missile 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

On July 5 we conducted an intercept test of the upgraded Capability Enhancement (CE)-I EKV (FTG-07). The CE-I EKVs comprise a portion of our operational fleet of GBIs. Although the GBI in this test was successfully launched from Vandenberg Air Force Base, it failed to intercept the LV-2 target launched from the Reagan Test Site. We have started an extensive review to determine the cause of the FTG-07 failure. We did demonstrate all possible secondary objectives, to include demonstrations of BMDS sensors, the first use of Aegis BMD as the GMD Launch-on-Sensor, C2BMC, and warfighter tactics, techniques, and procedures. The Aegis BMD 4.0 ship acquired and tracked the target and sent a single track to the GMD Fire Control (GFC) using Link 16 through C2BMC. The GFC used this track to generate an interceptor weapons task plan and cue the SBX for target acquisition. A crew of U.S.

Army Soldiers from the 100th Missile Defense Brigade, located at Schriever AFB, Colorado and under the command of U.S. Northern Command, operated the GFC system during this test. I am committed to conducting a full evaluation of the path ahead for the GMD program and, regardless of the path we decide to embark on, aggressively attacking any substantiated quality control or systems integration problems within that program. We will continue to keep Congress apprised of our decisions.

The successful non-intercept controlled flight test of the next generation 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. Mindful of the recent FTG-07 failure to intercept and pending the outcome of our investigation, we will take the steps necessary to find and fix the cause of that problem as well. I intend for the FTG-07 failure review board to provide a comprehensive review of potential failures of the CE-I kill vehicle, and also identify any correlations with the CE-II kill vehicle. We will also work with the warfighter and DOT&E communities to determine the path toward and timing for our next GMD flight test, which could involve a repeat of the July 2013 intercept flight test attempt using the CE-I configuration or an intercept flight test using the currently planned CE-II configuration.

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. This year we will increase the focus of our Enhanced Reliability and Stockpile Reliability Programs to track performance, aging, and reliability metrics, software updates, and technology enhancements for all GMD ground systems. In light of the last three GMD failures, I recognize that quality and reliability in our GBIs must be our top concern. 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, Alaska (FGA) power plant distributes commercial power and provides generator power during outages. 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.

MDA requests \$1,033.9 million in FY 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, 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. This timeline to increase the number of deployed GBIs, of course, assumes a successful return to intercept of the next generation EKV (the CE-II) and that the results of the FTG-07 failure investigation do not point to any problematic common components within the currently planned production GBI. We will reset this program with the procurement of fourteen additional GBIs, two per year, starting in FY 2016. We also request \$135 million in FY 2014 to rebuild a hardened Missile Field 1 critical to achieving the 44-operational-GBI capability.

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

Pursuant to the FY 2013 National Defense Authorization Act, 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 FY 2015. The Environmental Impact Statement will be completed by the first quarter of FY 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, Alaska 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 FY 2014 we are requesting \$51 million to continue this work. Along with the Clear EWR contract award, we also exercised a contract option in FY 2013 to upgrade the Cape Cod EWR. The upgraded Clear EWR will be added to the BMDS operational baseline in FY 2017, with the upgraded Cape Cod EWR added in FY 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 FY 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 FY 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 FY 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 FY 2014.

Regional Defenses

Deployment of regional defenses to protect our deployed forces, allies and international partners remains one of our top priorities. Our FY 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 FY 2013 we are delivering the third THAAD battery to the U.S. Army and initiating soldier new equipment training, which will be completed in FY 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 FY 2014. For FY 2014, MDA is

requesting \$581 million for THAAD procurement, which includes the purchase of 36 THAAD interceptors and six launchers, and two THAAD Tactical Station Groups for the sixth THAAD Battery. In FY 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 FY 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 three Aegis ships, for a total of 24 Aegis BMD 3.6 ships, and completed two 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 two 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). Just last month we successfully conducted FTM-19 destroying a separating short-range target using the SM-3 Block IB interceptor and the Aegis BMD 4.0.2 weapon system. This was an important operational and developmental test for Aegis BMD that supports the All Up Round production decision for the SM-3 IB. All three 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.

The remainder of 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. 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 FY 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 FY 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 FY 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 FY 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 FY 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 FY 2014. MDA will initiate construction of the Aegis Ashore site in Deveselu, Romania with the delivery of the deckhouse in FY 2014. The site will be operational by December 2015. MDA requests \$85 million in FY 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 FY 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 FY 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 (ALTBMD) 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 FY 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 FY 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 FY 2014. In FY 2012, MDA operated STSS demonstration satellites (STSS-D) around the clock with availability exceeding 95% as well as the Near Field Infrared Experiment (NFIRE) 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)

discrimination 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 FY 2014 to demonstrate the efficiency, producibility, and scaling potential of the two candidate lasers.

MDA requests \$77.3 million in FY 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 FY 2013 National Defense Authorization Act.

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 FY 2014. In addition to the cuts imposed in the FY 2012 Appropriation and FY 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 FY 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 FY 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 \$3.5B 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-BRAC configuration, which we completed in FY 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. And, 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 committee's questions. Thank you.