DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 2012

WEDNESDAY, MAY 25, 2011

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:30 a.m., in room SD–192, Dirksen Senate Office Building, Hon. Daniel K. Inouye (chairman) presiding.

Present: Senators Inouye, Cochran, Shelby, Murkowski, and Graham.

DEPARTMENT OF DEFENSE

MISSILE DEFENSE AGENCY

STATEMENT OF LIEUTENANT GENERAL PATRICK J. O'REILLY, DIRECTOR, U.S. ARMY

STATEMENT OF CHAIRMAN DANIEL K. INOUYE

Chairman INOUYE. This morning we are pleased to welcome Lieutenant General Patrick O'Reilly, the Director of the Missile Defense Agency (MDA), to discuss the administration's fiscal year 2012 budget request for missile defense programs. For fiscal year 2012, MDA is requesting $8.6 billion, an increase of $120 million over amounts appropriated in the last fiscal year, to support a viable homeland defense, finance European regional defenses, continue testing the current system, and to develop new capabilities to address emerging threats.

Fiscal year 2012 will mark the 10-year anniversary of the Missile Defense Agency, although its predecessor organizations track their origins way back to 1983 when President Reagan launched the Strategic Defense Initiative 28 years ago. Since its inception MDA has developed and fielded highly complex integrated missile defenses against short-range, medium-range, and intercontinental ballistic missiles.

For the defense of our homeland, the agency has emplaced 30 ground-based interceptors in Alaska and California, and for regional defenses MDA and the Navy have delivered 23 aegis ballistic missile defense ships capable of engaging short to medium-range missiles. In addition, the President has tasked MDA with carrying out the European phased adaptive approach to provide regional missile defense for allies. Finally, MDA continuously develops and fields upgraded capabilities to counter evolving threats.

So, General, I congratulate you and your dedicated team at MDA for your many, many successes. As you know, development of these highly sophisticated systems has not always been easy, and it carries a large price tag. For example, last year the ground-based interceptor failed two flight tests within the span of 11 months. From an operational perspective, this is obvious cause for concern. From the taxpayers' standpoint, these tests cost over $200 million apiece, so we can no longer afford to fail.

In addition, last year the terminal high altitude area defense (THAAD) interceptor requested some redesign work that resulted in significant production delays. I strongly support the THAAD program and these missiles need to be fielded. However, it is critical that the new design works and is producible in quantities that have been requested.

This subcommittee was also concerned last year over the procurement strategy of the standard missile program and redirected funding to continue buying the block 1A standard missile since the block 1B development was delayed.

The fiscal year 2012 budget request again includes no funds for the block 1A missile. Yet the request includes over $500 million for the procurement of 1B missiles. Although we will not know until the test late this summer whether the redesigned missile works, this seems like a risky strategy, especially when the Navy requires more missiles to respond to real-world threats than are in the inventory today.

So I look forward to hearing from you, sir, and hearing your thoughts on how you plan to address the challenges mentioned.

However, before we proceed I'd like to turn to the vice chairman of the subcommittee for any remarks he may wish to make.

STATEMENT OF SENATOR THAD COCHRAN

Senator COCHRAN. Mr. Chairman, thank you. I'm very pleased to join you in welcoming General O'Reilly to be here today to testify before our subcommittee as we continue our review of the President's budget request for fiscal year 2012 for the Department of Defense.

Specifically, we are interested in the provisions relating to our missile defense capabilities. We recognize the seriousness of purpose that this office requires of General O'Reilly and we appreciate the experience and know-how he brings to this task. He's got a very challenging job. We look forward to hearing the testimony and working with him and others in the Department of Defense on making sure that we are allocating the funds we need and that they are justified and that they will lead to the development and deployment of an effective missile defense system.

Thank you.

Chairman INOUYE. Thank you very much.

Senator Shelby.

Senator SHELBY. Mr. Chairman, I too would join you and Senator Cochran in welcoming General O'Reilly and we look forward to his testimony.

Chairman INOUYE. Care to make a statement?

Senator GRAHAM. Thank you. I'm ready to listen.

Chairman INOUYE. Then it's your show, sir.

SUMMARY STATEMENT OF LIEUTENANT GENERAL PATRICK J. O'REILLY

General O'REILLY. Thank you, Chairman Inouye, Ranking Member Cochran, and other distinguished members of the subcommittee. I thank you for the opportunity to testify today on the Missile Defense Agency's $8.6 billion fiscal year 2012 budget request to develop protection of our Nation, our armed forces, allies, and friends against the growing threat of proliferating—the proliferation of increasingly capable ballistic missiles of all ranges.

In fiscal year 2012 we propose to complete the initial fielding of the Ground-based Midcourse Defense, or GMD, system for homeland defense against first generation intercontinental ballistic missiles, or ICBMs. We are also on track to develop, test, and deliver the phased adaptive approach to regional defense announced by the President in September 2009. We will deliver initial defense of Southern Europe by December of this year, enhance that defense against medium-range ballistic missiles in 2015, further enhance the defense of all European NATO countries against intermediate-range ballistic missiles by 2018, and provide an early intercept capability against missiles of all range classes by the end of this decade.

During the past year, we achieved many accomplishments, including the first two-stage ground-based interceptor, or GBI, flight test, the third missile intercept by the Japanese aegis program, the lowest altitude intercept by the terminal high altitude area defense, or THAAD, system, the destruction of two boosting ballistic missiles with our Airborne Laser Testbed, the collection of the most accurate missile tracks in history by our Space Tracking and Surveillance System satellites, and a successful intercept by Israel's Arrow 2 missile. We also delivered 25 SM–3 1A interceptors, began THAAD interceptor production, emplaced the 30th GBI, and completed the upgrade of the early warning radar in Thule, Greenland.

Last year our aggressive test program also identified an issue with the latest version of the GBI's exo-atmospheric kill vehicle, or EKV. It's MDA's top priority to verify the resolution of the problem by conducting extensive ground testing this summer, conducting a non-intercept test with an upgraded EKV and repeating the previous failed intercept test in 2012. We suspended EKV—the resolution of the GMD test failure is dependent upon technical progress, not funding.

We suspended the EKV production and applied funding to rapidly initiate activities to correct the EKV problem. Thus, our proposed fiscal year 2012 GMD program today differs from the one we proposed in the President's budget request that we developed prior to the latest GMD flight test failure. We are still requesting $1.16 billion for fiscal year 2012 to recover from the GBI flight test failure and continue to enhance the defense of our homeland by completing Missile Field 2 at Fort Greely, Alaska, in 2012, beginning the procurement of five new GBIs, upgrading the early warning radar in Clear, Alaska, and initiating the installation of a GBI communications system on the east coast of the United States.

Today 30 operational GBIs protect the United States against a limited ICBM attack if current regional threats successfully develop an ICBM capability. We continually monitor intelligence as-

sessments, and to address the possibility that our current GMD capability is determined to be insufficient in the future we are developing options to increase the number of operational GBIs and accelerate the delivery of new sensor and interceptor capabilities.

The Department is committed to bringing to Congress soon our strategy to hedge against uncertainties in the threat estimates. But, given the two GBI flight test failures, the need for a new non-intercept flight test, and the repeat of the last flight test, we will assess the total procurement quantity of the additional GBIs as part of the 2013 President's budget request.

We also are on schedule to execute our phased adaptive approach, or PAA, for regional defense. For phase 1, our first aegis ballistic missile ship deployment, the USS *Monterey*, is on station today. The latest command and control system upgrades are being installed in the European Command and the AN/TPY–2 forward-based radar is on track for deployment in southern Europe by the end of this year.

Of note, a critical European PAA phase 1 milestone was achieved in March of this year when an intermediate range ballistic missile target was intercepted in the Pacific using the phase 1 aegis AN/TPY–2 radar and the European Command's command and control system, architecture, and configuration.

For phase 2, we will conduct the first flight test of the next generation aegis interceptor, the SM–1 1B, this summer. Additionally, the design of the aegis Ashore system began last summer. The test site will be installed in Hawaii in 2013 and flight testing will begin in 2014. Furthermore, the Romanian Government recently announced the site of the aegis Ashore system that will be operational in 2015.

For phase 3, the SM–3 block 2A interceptor has completed 57 of its 60 preliminary design reviews and is on track to support flight testing in 2015 and deployment in 2018.

Key to achieving cost-effective assured missile defense and to enable early intercepts of ballistic missiles is the development of the Precision Tracking Space System, or PTSS, and AirBorne InfraRed, or ABIR, missile sensor capabilities. PTSS will provide three to six times the simultaneous tracking capability at a small fraction of the high operations cost of an AN/TPY–2 or ABIR air combat patrol, and the PTSS does not require host nation basing or overflight approvals of other countries for deployment.

Additionally, to optimize the integration of the PTSS with all contracted activities developing our ballistic missile defense system, we are using federally funded research and development centers to lead an industry-government team to develop a non-proprietary design to enable full and open competition for the production of PTSS satellites.

For phase 4, we competitively awarded the design concept contracts for the SM–3 2B interceptor to three industry teams on a time line consistent with the average development of missile interceptors, to ensure the lowest risk delivery of an early intercept capability. While not necessary for the defense of the United States against limited attacks by early generation ICBMs, the SM–3 2B will augment the GMD system to significantly increase the cost effectiveness of homeland and regional missile defense.

Beyond PAA phase 4, we are pursuing advanced technologies, including very efficient, lightweight, high energy laser systems.

Finally, MDA continues to collaborate with over 20 countries and NATO in international missile defense projects and cooperative activities.

PREPARED STATEMENT

In conclusion, our requested fiscal year 2012 budget funds the development and deployment of missile defense capabilities that are adaptable, survivable, cost-effective, and tolerant of uncertainties in intelligence estimates of both nation-state and extremist ballistic missile threats.

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

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL PATRICK J. O'REILLY

Good morning, Chairman Inouye, Ranking Member Cochran, other distinguished Members of the subcommittee. I thank you for the opportunity to testify today on the Missile Defense Agency's (MDA) $8.6 billion fiscal year 2012 budget request to develop protection for our Nation, our Armed Forces, allies, and friends against a growing threat—the proliferation of increasingly capable ballistic missiles of all ranges. We continue to test and improve the reliability and performance of our homeland and regional missile defenses to defeat a growing variety of ballistic missiles over the next decade while posturing our Nation to respond to the uncertainties in estimates of future missile threats. By the end of fiscal year 2012, we will complete the initial fielding of the Ground-based Midcourse Defense (GMD) system for homeland defense against first generation Intercontinental Ballistic Missiles (ICBMs) potentially being developed by current regional threat actors. We will also continue our initial fielding of regional defenses against today's short-range (1,000 km or less), medium-range (1,000 to 3,000 km), and intermediate-range ballistic missiles (3,000 to 5,500 km), or SRBMs, MRBMs and IRBMs, respectively.

FISCAL YEAR 2010 ACCOMPLISHMENT HIGHLIGHTS

During this past year, we have improved our homeland defense by emplacing the 30th Ground Based Interceptor (GBI), upgrading two additional GBIs, installing a training node at Fort Greely, Alaska (FGA), and completing a significant upgrade of the Early Warning Radar in Thule, Greenland. Additionally, we had a successful two-stage Ground Based Interceptor (GBI) booster test and conducted a three-stage GBI intercept test where we did not achieve our primary objective, but we did demonstrate integrated sensors and command, control, battle management, and communication (C^2BMC) during the longest range flight test to date. In fiscal year 2010, we also improved our regional defenses by converting two Aegis BMD ships, delivering 25 SM–3 IA interceptors, and increasing the Aegis BMD fleet to 20 operationally configured BMD ships. Aegis BMD ships carrying SM–3 IA interceptors are currently deployed and on-station in forward operating areas, including the USS *Monterey* as part of the first phase of the European Phased Adaptive Approach (EPAA). We also commenced production of Terminal High Altitude Area Defense (THAAD) Batteries 3 and 4 and the associated interceptors. We accelerated the refurbishment of an AN/TPY–2 radar for phase 1 of the EPAA and installed a C^2BMC system and prepared a second AN/TPY–2 for deployment to U.S. Central Command. Moreover, we successfully flew 14 target missions, including a successful intercept of a separating MRBM with our Japanese allies using an SM–3 IA interceptor (thus completing the first BMD Foreign Military Sales (FMS) case), and conducted a successful intercept of a unitary SRBM with THAAD. For future capabilities, we demonstrated the ability of the two Space Tracking and Surveillance System (STSS) satellites to provide stereo, high-fidelity tracking capabilities and transfer tracks into C^2BMC. Our Airborne Laser Test Bed successfully destroyed two boosting ballistic missiles. We achieved our goal of demonstrating NATO Active Layered Theater Ballistic Missile Defense interoperability with the U.S. C^2BMC in Joint Project Optic Windmill. Finally, we completed United States and Israeli Government project agreements on the Arrow 3 Upper Tier Interceptor, the David's Sling Weapon Sys-

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

ENHANCING HOMELAND DEFENSE

MDA's top priority is to confirm the root cause of the most recent GBI flight test failure, verify the resolution of the problem, and successfully execute the previous flight test. The Failure Review Board (FRB) has identified the most likely cause, but more ground testing this summer and an additional non-intercept flight test in fiscal year 2012 of an upgraded GBI Exo-atmospheric Kill Vehicle (EKV) will be required before the next intercept in late 2012. We suspended production of the latest version of the EKV until the required design modifications are completed and verified, and we diverted fiscal year 2011 GMD funding to expedite these modifications. Until we can resolve this technical issue, advancement of our GMD capability is primarily limited by technical progress, not funding.

Initiation of activities to quickly recover from the GMD flight test failure caused us to revise our proposed fiscal year 2012 GMD schedule of work after we developed the current fiscal year 2012 President's budget request. By deferring lower priority fiscal year 2011 activities not associated with the flight test failure resolution, we were able to rapidly begin our resolution of the GMD flight test issues; however, we still need the requested $1.16 billion for fiscal year 2012 to complete the test failure resolution and the initial fielding of the defense of our homeland against limited ICBM attacks, including the completion of the hardened power plant and Missile Field 2 at Fort Greely Alaska.. During the suspension of EKV production, we will accelerate the refurbishment of the existing GBI fleet, and also begin acquiring material needed to produce new GBIs to meet our minimum requirement of 26 operational GBIs at FGA, 4 at Vandenberg Air Force Base (VAFB), California, and 22 GBIs for testing, stockpile reliability testing, and spares. Given the two flight test failures, the need for a new non-intercept flight, and a repeat of the last flight test, we will assess the procurement quantity of additional GBIs as part of the fiscal year 2013 President's budget request after we have confirmation that we have resolved the EKV issue. As a hedge against uncertainties in ICBM threat estimates, we will place Missile Field 1 in a storage mode for possible upgrade for operational use in the future. Additionally, we will complete the construction of a second fire control node at FGA to allow testing or exercises to be conducted while simultaneously controlling the operational system. We will also begin the planning, design and environment work for a GBI In-Flight Interceptor Communication System (IFCS) Data Terminal (IDT) on the east coast of the United States by 2015. This East Coast IDT will enable communication with GBIs launched from FGA and VAFB on longer flights, thus improving the defense of the eastern United States against potential ICBM threats from the Middle East. Finally, we are requesting $177.1 millionin RDT&E funding for the Sea-Based X-band (SBX) radar in fiscal year 2012, which includes software upgrades to improve its discrimination capability.

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

After last year's successful initial flight of a two-stage GBI, we plan to conduct an intercept flight test with a two-stage GBI as a potential hedge to allow for a longer intercept window of time if ICBMs were launched against the United States from Northeast Asia or the Middle East. However, as a consequence of the need to repeat the failed three-stage GBI flight tests, we plan to delay the first intercept test of the two-stage GBI from fiscal year 2012 to fiscal year 2014. Finally, we will continue development of the Standard Missile 3 (SM–3) IIB to complement the GMD system's protection of our homeland in the future by adding an additional layer of ICBM defense, which will provide an early intercept capability against first generation ICBMs within the regions from which they were launched.

HEDGE FOR PROTECTION OF THE UNITED STATES

Today, 30 operational GBIs protect the United States against a medium ICBM raid size launched from current regional threats. If this capability is determined to be insufficient for protection of the U.S. homeland based on intelligence estimations of future threats, we have options to increase the number of operational GBIs and accelerate the delivery of new sensor and interceptor capabilities. The Department is committed to brief Congress soon on the results of our ongoing BMD analysis and our recommended hedge strategy.

ENHANCING REGIONAL DEFENSE

We are also currently deploying our initial missile defense capability against SRBMs, MRBMs, and IRBMs. Over the next decade, we are enhancing this initial capability by developing increasingly capable missile defenses that can be adapted to the unique circumstances of each Combatant Command region. In regions where ballistic missile threats are a concern, the United States will tailor Missile Defense Phased Adaptive Approaches (PAAs) (like the European PAA, or EPAA) to plan the establishment of command and control, sensor, fire control, and interceptor infrastructures to provide fundamental defenses and facilitate the effective surge of transportable missile defense assets to their regions when needed.

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

Phase 1: Initial SRBM, MRBM, and IRBM Defense in Europe—to be completed by the end of 2011.—In this phase, our goal is to achieve an initial missile defense capability in Europe using the Aegis BMD 3.6.1 weapon system with SM–3 IA interceptors, forward-based AN/TPY–2 and SPY–1 radars, and the C^2BMC system at Ramstein Air Force Base, Germany, which will improve connections to NATO command and control structures. The USS *Monterey* is at sea today and, when paired with the AN/TPY–2 radar, will provide initial BMD protection of southern Europe from existing SRBM, MRBM and IRBM threats. While no decision on the location of the radar has been made, we expect to meet our 2011 deployment timeline. Additionally, THAAD batteries will be available for deployment in this and subsequent phases. The Army activated a second THAAD battery in October 2009, which is scheduled to complete training by the end of calendar year 2011. We are requesting $290.5 million in RDT&E funding to enhance communications and enable THAAD's launch-on-sensor network capability, which will allow THAAD to intercept threat missiles tracked by many different missile defense sensors. We also request $833.2 million for the production of 63 THAAD interceptors, six launchers, and one Tactical Station Group to be delivered by fiscal year 2014, and $380.2 million for the production of two AN/TPY–2 radars. A critical EPAA phase 1 milestone was achieved in March 2011 when an IRBM range target was intercepted in the Pacific by a SM–3 IA interceptor using the current Aegis fire control system and the EPAA forward based AN/TPY–2 and Command and Control architecture. Additionally, we will conduct two critical ground tests this year to demonstrate the EPAA Phase 1 capability for defending European allies and deployed forces from multiple and simultaneous SRBM and MRBM threats.

Phase 2: Enhanced MRBM Defense in Europe by 2015.—Our goal in this phase is to provide a robust capability against SRBMs and MRBMs by launching several different interceptors to engage each threat missile multiple times in its flight. This architecture includes the deployment of the Aegis BMD 4.0.1/5.0 weapon fire control systems with SM–3 IB interceptors at sea and at an Aegis Ashore site at Deveselu Airbase in Romania. When compared to the current SM–3 IA, the IB will have an improved two-color seeker for greater ability to discriminate threat Reentry Vehicles from other objects, and it will have improvements to enhance reliability and producibility of the SM–3 IB's divert and attitude control system. These improvements also provide greater capability against larger sized raids. Later this summer, we will demonstrate Aegis BMD 4.0.1 fire control and the first flight test of the SM–3 IB interceptor. We are requesting $565.4 million for the production of 46 SM–3 Block IB interceptors to be delivered by fiscal year 2014 and $960 million for Aegis BMD to fund continued development and testing of the SM–3 IB as well as up-

grades to Aegis 5.0 fire control software to support the operation of the SM–3 IB and IIA interceptors and associated flight tests. In fiscal year 2012, we are requesting $306.6 million to begin acquiring Aegis Ashore Missile Defense Systems (land-based SM–3) batteries—one for testing at the Pacific Missile Range Facility (PMRF), and one for deployment in Romania by fiscal year 2015. We request $364.1 million for the C²BMC program for continued development of software and engineering to incorporate enhanced C²BMC capability into the C²BMC battle management architecture and enable interoperability among the BMDS elements, incorporate boost phase tracking, and improve system-level correlation and tracking.

Phase 3: Enhanced IRBM Defenses in Europe by 2018.—Key to achieving more cost-effective missile defense, expanding the engagement range of our interceptors, improving discrimination and enabling early intercepts of ballistic missiles is our phase 3 sensor strategy. This strategy is based on complementing our forward based AN/TPY–2 radars with the development and deployment of the Precision Tracking Space System (PTSS) satellites, enhanced Airborne Infrared (ABIR) capability, and the algorithms to rapidly fuse all our data sources to provide the most precise tracking for the GMD, Aegis BMD, and THAAD fire control systems. The PTSS is the principal capability in this sensor strategy as, unlike AN/TPY–2 and aircraft that require host nation and over flight permissions respectively, the PTSS will provide assured, persistent capability to detect and track large raid sizes of hostile ballistic missiles over their entire flight in the Northern Hemisphere and enable earlier engagements to improve both homeland and regional defense. In sum PTSS provides three to six times the simultaneous tracking capability of the AN/TPY–2 radars or ABIR Combat Air Patrols at a smaller percentage of the operations and support costs. Furthermore, to maximize competition and integration of the PTSS into all elements of the BMDS, we are executing an acquisition strategy in which Government federally Funded Research and Development Centers (FFRDCs) develop non-proprietary preliminary designs and government owned intellectual property, which will be used to enable full and open competition for the production of the satellite constellation while we are validating the performance of prototype satellites on orbit. Recent flight tests using the Space Tracking and Surveillance System (STSS) demonstrator satellites on orbit today have repeatedly shown the significant improvement in our ability to acquire and track ballistic missiles.

In concert with the Phase 3 sensor architecture, the SM–3 Block IIA interceptor is being co-developed with the Japanese Government to nearly double the range of our SM–3 interceptors. The SM–3 IIA project is on schedule to be deployed at the Aegis Ashore site in Romania and at an additional Aegis Ashore site in Poland, and at sea, in 2018. The fiscal year 2012 request for SM–3 Block IIA co-development is $424.5 million. Additional BMDS improvements during this phase include expanded coordination of missile defense fire control systems and improvements to radar discrimination.

Phase 4: Early Intercept Defense in Europe by 2020.—Based on the enhanced early tracking capability of the PTSS and ABIR systems, the SM–3 IIB will provide an early intercept (pre-apogee) capability against MRBMs and IRBMs and provide an additional layer for a more enhanced homeland defense against ICBMs launched from today's regional threats. In fiscal year 2012, we are requesting $123.5 million to fund three industry teams to continue concept analysis and development of the SM–3 IIB design while MDA develops relevant advanced propulsion and lightweight material technologies. Advanced discrimination technologies also will be deployed during EPAA Phase 4 including GMD's use of fused data from the entire network of BMDS sensors (including enhancements from PTSS and ABIR sensor capabilities) to improve homeland defense.

PROVING MISSILE DEFENSE WORKS THROUGH ENHANCED TESTING

In fiscal year 2012, we are requesting nearly $1 billion of RDT&E funding for Testing and Targets. In collaboration with the Director, Operational Test and Evaluation (DOT&E) and the Operational Test Agencies (OTAs), MDA updated its Integrated Master Test Plan (IMTP). The updated test plan (version 11.1), consisting of 53 flight tests and 74 ground tests from fiscal year 2011 through fiscal year 2016, cost-effectively conducts increasingly complex flight tests to achieve more objectives and enhance the realism of each test.

We will hold a series of system-level operational flight and ground tests to demonstrate the initial capability against SRBMs and MRBMs for theater/regional defense as well as planning in fiscal year 2012 the first entirely operational test of the defense of the homeland by 2015. Each operational test will be conducted as realistically as possible and involve multiple targets of different ranges. These tests are being planned and will be executed in concert with the BMDS Operational Test

Agencies and under the oversight of the Department of Defense Director for Operational Test & Evaluation. The BMD system under test will be operated by the soldiers, sailors, and airmen assigned to their respective missile defense equipment and placed under realistic wartime conditions to truly document the capabilities and limitations of the system. Finally, in fiscal year 2011, THAAD will execute a near-simultaneous engagement of an MRBM and SRBM.

DEVELOPING NEW CAPABILITIES

After completing all of their original on-orbit testing in 2010, we continue to operate the two STSS demonstration satellites to conduct cooperative tests with other BMDS elements and demonstrate the capability of STSS satellites against targets of opportunity. These tests demonstrate the ability of space sensors to provide high precision, real-time, tracking of missiles and midcourse objects that enable the fire control solutions BMDS interceptors. Two recent flight tests demonstrated that STSS dramatically improved the precision of threat missile tracks and provided more accurate fire control quality data to the Aegis ships several minutes earlier than less accurate data provided by organic radars in the Aegis or THAAD systems. We are requesting $96.4 million for the STSS system in fiscal year 2012 and are planning for an Aegis intercept in fiscal year 2013 using the STSS data. Lessons learned from the two STSS demonstration satellites inform PTSS development decisions. We are requesting $160.8 million for PTSS in fiscal year 2012. The PTSS, a new program, will use simple designs and mature technologies to provide persistent classification and tracking capability of enemy ballistic missiles for areas of the globe that have ballistic missile activity. PTSS project scope includes the delivery of ground segments and the launch of the first two PTSS spacecraft in fiscal year 2017.

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

In fiscal year 2012, we are requesting $96.3 million for Directed Energy Research ($92.6 million for Airborne Laser Test Bed). Following the successful shoot downs of liquid-fueled and solid-fueled boosting ballistic missile targets with an airborne laser in fiscal year 2010, the Assistant Secretary for Defense Research and Engineering designated the Airborne Laser Test Bed (ALTB) as a science and technology test bed for high power laser research and development. In fiscal year 2012, we are teaming with the Air Force's Research Laboratory to use the ALTB for testing advanced directed energy technologies and conducting beam propagation and lethality testing. A primary objective of our directed energy program is to continue our partnership with Lawrence Livermore National Laboratory to develop Diode Pumped Alkaline-gas Laser System (DPALS) technology, which offers great potential for high efficiency, electrically driven, compact, and lightweight high energy lasers for a wide variety of missions of interest to MDA and the Department of Defense.

INTERNATIONAL COOPERATION

As stated in the 2010 Ballistic Missile Defense Review (BMDR), developing international missile defense capacity is a key aspect of our strategy to counter ballistic missile proliferation. In Europe, we remain committed to working with our NATO allies to make NATO lower layer missile defense assets interoperable with U.S. upper-tier missile defense assets deployed under the EPAA through NATO's territorial missile defense capability. In East Asia, we are improving missile defenses through bilateral relationships. And in the Middle East, we continue to work with long-term partners and pursue strengthened cooperation with other countries that

have expressed interest in missile defense. MDA is currently engaged in missile defense projects, studies and analyses with over 20 countries, including Australia, the Czech Republic, Denmark, France, Germany, Israel, Japan, Kuwait, NATO, Poland, Romania, Saudi Arabia, South Korea, the United Arab Emirates, and the United Kingdom.

MDA continues its close partnership with Japan on the SM–3 IIA interceptor (Japan is leading the development efforts on the SM–3 IIA second and third stage rocket motors and the nosecone), studying future architectures, and supporting that Nation's SM–3 IA flight test program. We also continue collaboration with Israel on the development and employment of several missile defense capabilities that are interoperable with the U.S. BMDS. In February of this year, at a U.S. test range off the coast of California, the Arrow Weapon System successfully intercepted a target representative of potential ballistic missile threats facing Israel today. We are requesting $106.1 million for Israeli Cooperative Programs (including Arrow System Improvement and the David's Sling Weapon System) in fiscal year 2012. We are working with our partners from the United Arab Emirates on the development of a Foreign Military Sales (FMS) case for the THAAD system that would represent the first sale of this capability.

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

CONCLUSION

Our fiscal year 2012 budget funds completing the initial deployment of SRBM, MRBM, IRBM, and ICBM defenses while meeting the warfighters' near-term missile defense development priorities. In parallel, we are developing enabling capability to create an enhanced, international network of integrated BMD capabilities that is flexible, survivable, cost-effective, and tolerant of uncertainties of estimates of both nation-state and extremist ballistic missile threats.

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

GROUND-BASED MIDCOURSE DEFENSE SYSTEM

Chairman INOUYE. Thank you very much, General.

I'm happy that you have responded to our concerns rather fully. But are you personally satisfied that you've been able to identify the causes of the failures of the GMD?

General O'REILLY. Yes, Mr. Chairman, I am. The first cause was a quality control problem, because we've had two failures. We have identified and confirmed that we had an error in the assembly process of our new EKV. I should stress that this is a new EKV. The ones we have deployed, most of them out there, have been successfully tested and we've seen no problems with them. But the newest one, the first test did have a quality control problem, which we have corrected.

When we flew the second test last December, again that quality control problem was found to be resolved, but we ran into another problem very late in the flight, in the last few seconds of flight. We have assembled a nationally renowned team of experts that's been working extensively on this. We completed almost all of the ground testing to confirm what the problem was and have identified that problem. We are now in the process of correcting the problem, confirming it on the ground.

But the nature of these types of problems make it very difficult to confirm in ground testing. So that is why I'm proposing to have another flight test added for the GMD system to verify the con-

firmation in space, and then we will proceed on with the intercept test that we've been trying to conduct in the last two flights.

TERMINAL HIGH ALTITUDE AREA DEFENSE

Chairman INOUYE. Are you also satisfied with the progress being made on the THAAD?

General O'REILLY. Yes, sir, I am. The THAAD, we have a very extensive test program and the component that was giving us problems was a safety device. So it requires absolute confirmation over an extensive series of tests that in fact it's working properly, and the Army is independently confirming that that component is working properly. And all of our testing has indicated that we have resolved that issue. We have four THAAD missiles delivered today. There are five more in production, and we do believe we are beyond that problem and are reaching a steady production rate on the THAAD program.

Chairman INOUYE. Have you resolved the block 1B and 1A problem?

General O'REILLY. Sir, with the block 1A we have had—over time have indicated that in our testing we do reveal shortfalls or concerns. We've corrected each one of them before the previous flight test and the last series of flight tests have shown that we have none of those issues today.

We do have an issue that still allows an intercept to occur, but we want to confirm that it is not a greater problem than that, and we're working that right now. We are still on track for testing.

When we test the 1B later this summer, we actually—most of the 1B is a 1A booster configuration. For the 1B, we did have an issue in—not the operation of the missile, but it was more to do with the shelf life in the environments that a Navy missile will be exposed to. The testing on the ground to date has indicated we have resolved that, but we have a couple more tests in the next 2 months to validate that we will be ready for a flight test in August.

JAPANESE GOVERNMENT

Chairman INOUYE. As you noted in your remarks, you're pleased with the partnership you have developed with the Japanese on the development of the MDA. But do you have concerns about the recent earthquake and tsunami? Will that slow down the development?

General O'REILLY. Sir, we are working very closely with the Japanese Government. They have been outstanding partners to work with, meet every commitment, and are very meticulous in their planning, and it's made it very helpful for us to work together in the fashion which we have.

Regarding the tsunami and earthquake, it did not interrupt the operations of our major activity in Nagoya with MHI, Mitsubishi Heavy Industry. Some of their subcontractors were affected. They were not stopped. It slowed down some deliveries. We do not anticipate, nor does the Japanese Government, that this will affect the ultimate delivery of the program.

But in that regard, we do rely outside that program on some of the foundries in Japan that develop our focal plane arrays, and they have been affected by their proximity to their nuclear power-

plant and we are concerned about that and we work closely with them. But that is an ongoing concern of our reliance on only one or two foundries around the world to produce these focal plane arrays that have wide application beyond just missile defense.

Chairman INOUYE. General, I have a few more questions, but I'd like to call upon the vice chairman.

Senator COCHRAN. Mr. Chairman, thank you very much.

GROUND-BASED MIDCOURSE DEFENSE SYSTEM

General O'Reilly, I was interested in your response to the chairman's question, questions plural. Let me ask you about the Ground-based Midcourse Defense System. There were two failures last year. Are these of particular concern to you, and if so what are we able to do to overcome those challenges?

General O'REILLY. Sir, they are a concern to me. These are very expensive missiles and our tests are very expensive. The good news is we are aggressively testing these systems, and by "aggressively" I mean we are operating the GBI at the very longest ranges it could ever possibly have to operate and protect the United States.

But from that, we have uncovered a quality control problem. We revised, because of this, both at Raytheon and Boeing and our Defense Contract Management Agency and MDA our inspection processes, and we have shown that we have overcome that issue in changing processes in the plant.

The second problem was of a nature that made it extremely difficult to uncover on the ground because of the sensitivity of the instruments that are on board this system. We needed to be in space. We have uncovered the problem. I believe because we know that we will be able to correct that problem, and so when we need the system in combat we will absolutely have one that we can rely on.

At that, we still have a few more tests to do and, as I said, a couple more flight tests, which will confirm that we have in fact fixed it. I am confident we will.

ARROW 3

Senator COCHRAN. Yesterday we had a very persuasive speech made in a joint session with President Netanyahu of Israel. I was interested in hearing what your reaction is to the fact that Israel is developing and fielding a missile defense system to protect its nation. I wonder if you can give us an update on the status as you understand it of the Arrow 3 and David's Sling programs in Israel and how that fits in with our own missile defense interests?

General O'REILLY. Senator, the Missile Defense Agency is a copartner to manage both of those programs with the state of Israel. They have demonstrated—what we have established is a program for Arrow 3 that's based on milestones, achieving technical milestones to confirm we have the capability that both they want and we want them to have.

Those milestones are very aggressive, more aggressive than a U.S. program would normally take on. But I understand the risks to their country and why they're being so aggressive. They have successfully achieved those milestones last year, the ones that they were supposed to achieve. As time goes on, those technical milestones get more difficult to achieve. I do anticipate that they will

achieve those milestones. The schedule is the question, and they are having some delays and repeated attempts to accomplish the technical tasks that they have to accomplish on Arrow 3.

But they have shown that they do ultimately achieve the technical capability that they need, and we are closely tracking that with them. So my confidence is very high they will be successful in developing this missile capability. The question we have is the schedule associated with that might be a little longer than what, tracking it the way we do, than what they're currently projecting.

On the David's Sling program, that is an exceptional capability for short and medium-range missiles, and the David's Sling program—also we're working with them. They've had—in their flight tests, they have also uncovered problems, which is the reason we do the flight tests, and they've shown that they're very quick to react to those problems and successfully fly afterwards.

So the David's Sling program is experiencing the type of developmental issues that we all experience in developing new missiles. But again, they've shown their commitment and their technical prowess to overcome those, and we're working closely with them. Again, the question will be not are they going to develop this capability; it's the time line in which they will ultimately have an operational capability.

Thank you, Mr. Chairman.

Chairman INOUYE. Senator Shelby.

Senator SHELBY. Thank you, Mr. Chairman.

GROUND-BASED MIDCOURSE DEFENSE SYSTEM

You've talked about some of this, General O'Reilly, but I'll get back into the GMD. This administration has scaled back planned production and deployments of ground-based interceptors in favor of more research and development into futuristic SM–3 block 2B missiles. You and I both agree that it's necessary to hedge against uncertainty as we seek to develop the block 2B.

Senior defense officials, including yourself, have stated that we need to continue modernizing and testing GBIs in the event that the rogue ICBM threat develops more quickly than expected or that the block 2B development encounters unanticipated technical hurdles. Recent test failures that you've alluded to have called into question the status of the GBI hedge.

I understand that MDA has developed a plan to fix problems with GBI that would cost an additional—getting into a little money here—$281 million in 2012. Even with full funding of the 2012 GMD budget, this plan would require MDA to delay, I understand, critical development work and to slip an intercept test of the two-stage GBI from 2012 to 2014.

I'm confused in a way here by a recent GAO claim that the GMD budget for 2012 could be cut by as much as $400 million with no significant impact to the program. Do you agree with GAO's assessment and could you explain to us what the impact of a significant cut in 2012 would be on the GMD program?

General O'REILLY. Senator, I do not agree with the Government Accountability Office (GAO) assessment. If we received a $400 million cut as they proposed, it would delay our recovery of the program by a minimum of a year. What I don't believe they took into

account is the additional activity that we're doing right now that required reapplying funding from production to fixing the problem.

Senator SHELBY. I assume or I believe that the problem resides in the EKV and not the GBI booster; is that right?

General O'REILLY. That's correct, sir.

GROUND-BASED INTERCEPTOR

Senator SHELBY. Is there any reason to delay funding for procurement of the GBI boosters?

General O'REILLY. Sir, the GBI has no problems with the booster. It has no problems with it. It is a matter of storage and our supply chain management. But I do want to clarify, there are no problems with the GBI booster. We are at a point, though, that we were to be applying those to the EKVs and producing those GBIs, and so we have to manage the rate at which those boosters are produced.

Senator SHELBY. You referenced earlier some quality control in some of the failures perhaps, whatever. In your judgment, is the architecture sound you're dealing with?

General O'REILLY. Yes. Yes, Senator, it is. This work is very precise. When you're hitting a missile at 20,000 miles an hour—and we have shown over and over again we can hit it within inches of a point on an object—it requires extreme precision. But our aerospace industry has shown that they can have the discipline to produce those type of production processes.

There is over 2,000 components in a GBI, and so, as we are seeing, it's very unforgiving if there is a problem.

Senator SHELBY. Very complicated.

General O'REILLY. Yes, sir. But we have shown we can do this. We've adjusted our processes so that we can reliably produce these.

Senator SHELBY. And you—I know the chairman asked you this question, basically. You feel that you have, you and your team, have found some of the flaws in some of your testing, and you're in the process of correcting them; is that correct?

General O'REILLY. That is correct, Senator. We found one flaw and we are aggressively working to resolve it and prove it.

Senator SHELBY. Okay. In your testimony today you outline a plan to conduct previously unplanned-for flight and intercept tests of GBI to ensure that you've solved the problem with the EKV. Do these additional tests mean that you will eventually need to procure more GBIs than currently planned for in the budget? In other words, you planned—with the test thing you're into production in a sense, are you not?

General O'REILLY. Senator, it's my personal assessment—we're still developing the budget, but it is still my personal assessment that when we developed a previous number of GBIs that was 52 we had assessed the need for 4 spares. However, as you just said, in the first year since we've done that we have consumed two in failed flight tests. I've identified the need and proposed for another flight test, and then we have to repeat it.

So my personal assessment is, yes, we need to procure additional GBIs.

Senator SHELBY. You've also stated previously that the threat to U.S. interests from short-range missiles is growing even more rapidly than the ICBM threat at the moment. One of the assets that

we have in seeking to understand and encounter these threats is the Missile and Space Intelligence Center (MISIC) that you work with. Can you talk about here—I don't know if you can—about the kind of intelligence that you get from MISIC and how it contributes to your efforts to design defenses against short-range ballistic missiles? I know some of that is highly classified, but you do have a working relationship there, do you not?

General O'REILLY. Senator Shelby, we have a very strong working relationship. It goes beyond that. It's a dependency on MISIC, with their great resources. You're correct, we can't talk about a lot of it, but I would like to say the accuracy of these short-range missiles and the ease in which they now can be launched is quite disturbing, and MISIC has been very good at identifying that in order to reduce the uncertainty that we're talking about of the threat. And then we can take that through our engineering process and develop missile systems more effectively to counter those threats.

Senator SHELBY. So you have a close working relationship there?

General O'REILLY. Yes, Senator Shelby, yes.

INTEGRATED AIR AND MISSILE DEFENSE BATTLE COMMAND SYSTEM

Senator SHELBY. My last question, if the chairman will indulge me. I understand that the Army has proposed transferring its missile defense budget and program responsibilities to the Missile Defense Agency. Programs such as Patriot and the Integrated Air and Missile Defense Battle Command System, or IBCS, I believe are critical to Army warfighters here. I worry, am concerned at times that the arrangement could dilute Army control over these critical systems or even put their budgets at risk.

Could you explain for the subcommittee the status and the details of this proposal? Will the budget for Patriot and IBCS be protected if MDA controls some or all the funding? Has that crossed your mind?

General O'REILLY. Yes, Senator, it has. The process in which MDA develops its budget is a joint process that the Army is a full partner in. The Army 2 years ago started asking me questions about why does the Missile Defense Agency manage the ballistic missile defense capability of every service except—and THAAD—except the one aspect of the Patriot program, which does have ballistic missile capability?

We have provided a lot of information to the Army and from that the Army has been very positive on a potential transfer, but not this year, in the fiscal year 2013 timeframe, for a change. That is still being deliberated in the Department. A final decision hasn't been made on that.

However, I would—to answer your question, we have very closely coupled budget development processes that have been established by the Deputy Secretary of Defense between MDA and the services, so the Army does review and we actually build our budgets together before we submit them to OSD, and then they're reviewed again by the Joint Chiefs and others to ensure that there is a prioritized budget that matches the Army's needs and the Joint Chiefs' needs.

Senator SHELBY. So you don't believe you would suffer in the management of that if it came about?

General O'REILLY. Senator, no, I don't. And the particular proposal we have made for the Army's case is literally to take their leadership that does currently oversee Patriot; they would become part of the Missile Defense Agency, but still they are—they still have rating responsibilities to the Army, back to the Army and me both.

Senator SHELBY. Thank you, Mr. Chairman.

Chairman INOUYE. Thank you.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman.

MISSILE FIELD

General, welcome. Thank you for the time that you have given me in talking through some of the issues that you have before you.

I'd like to ask just for perhaps a more general description of the plans as they relate to Fort Greely and the intent to place Missile Field 1 into the storage mode, in basically mothball status, as opposed to a decommissioning; and then further, why the launch capabilities at these three missile fields at Fort Greely are necessary to hedge against ICBM threats? So if you can just speak to the mothballing versus decommissioning and then why it's so critical that we continue to have these in place?

General O'REILLY. Yes, Senator. Last year's budget, previous budget, the plan, the proposal was to decommission the missile field, which effectively puts it in a—returns it as much as possible to its pre-construction condition, and it would make it very difficult in the future if we needed to use that missile field again to bring it back into an operational capability.

It was a test missile field, so for example it is not hardened, it doesn't have backup power and other attributes that we would want in an operationally hardened system.

So we have identified in this year's budget that, instead of decommissioning the field, we put it into a storage mode. The cost is $4 million and then every year it's about $500,000 to maintain it in that mode. But if it's in that mode, within 2 years we can complete the upgrade of that missile field and bring it back into operation as a potential hedge.

The reason for the hedge is the uncertainty in the intelligence estimates on exactly what is the progress being made for successful development of ICBMs by regional threats today in northeast Asia, such as North Korea, or in the Middle East. And we are closely monitoring those programs, but we need to have capability to expand if we find that the number that we have is insufficient.

That is also the reason why we completed Missile Field 2 in the original design, so that we have 30 operational missiles, but we have 8 spare silos that could be very quickly, in a matter of weeks, made operational with the test GBIs that we are producing for test purposes, that's effectively building a stockpile for us.

So between the additional silos and if it was deemed necessary the ability to bring back Missile Field 1, we do have contingency plans to have a fully operational missile site, as we've laid out, depending on the indications and warnings from our intelligence community.

Senator MURKOWSKI. So essentially the $4 million that you indicate that it will take to put it into this storage mode allows us a level of flexibility, the option, if you will, if we need to, to reconfigure. We have that ability. If we decommission, we lose that flexibility; we do not have the nimbleness—I don't know if that's a word, but we don't have the ability to turn back as readily and in a manner that hopefully will be a cost savings to us?

General O'REILLY. That is correct.

Senator MURKOWSKI. Let me ask you also—I think most when they look at the ground-based midcourse defense operations Fort Greely, given where Fort Greely sits up in Alaska there, they view this more as a defense for the west coast against any ICBM threats that may be coming from North Korea. But I think we recognize that the system is effective also against missile threats to the east coast by actors that may be out there in the Middle East. But sometimes the geography doesn't allow us to perhaps look that broadly.

As you mention, it helps to look at a globe and figure it out from there, rather than the world of flat maps. But the decision to place an in-flight communications system data terminal on the east coast by 2015, this extends the communication with the ground-based interceptors that may be launched from Greely or from Vandenberg on in-flights, longer flights.

I understand that what this will do is allow for enhanced communications capability to really help bolster that missile defense of the east coast. Can you characterize, General, in perhaps qualitative terms the system's effectiveness against the missile, any missile threats that might be directed to the east coast, and how Alaska's strategic location can contribute to all of this? Just put that out, because we haven't had a lot of discussion about how the east coast and this in-flight communication system data terminal will coordinate or integrate together.

General O'REILLY. Yes, Senator. From a polar view, as you say, from the global view, literally the globe, you will notice that from the East—from the Middle East to the east coast or all of the United States, the most likely trajectories are over the poles or in the northern regions, far northern latitudes.

Therefore, Alaska actually is in a great position in order to launch from there and have a side shot at a missile. Instead of defending the missiles head-on, which is the most difficult way to hit a missile, Alaska gives us the positioning, the geometries, so that we can intercept a missile as it's passing by, which is the highest probability of an intercept.

However, there are great ranges involved in these launches. Due to the great distance of communication between the missile and the fire control center at Alaska or the one in Colorado Springs, we need the ability to talk to the missile late in flight, because so much time goes by as that missile is flying. We're learning about the threat missile while it is in flight, and the more we learn—we want to pass that on to the kill vehicle so that it has as much information as possible before it begins its final maneuvers.

The east coast in-flight data terminal would allow us the opportunity to communicate late in flight, where today we only have those communications sites in Alaska and on the west coast at

Vandenberg. So this is a significant improvement to the capability for intercepts that would occur over the Atlantic or heading toward the southeastern United States especially.

Senator MURKOWSKI. So it really does give us that full umbrella of protection that we talk about when we discuss the advantages of a missile defense system that truly does cover all of the United States?

General O'REILLY. Yes. Today we do have coverage of the United States, but this greatly enhances the probability of intercepts in the first couple interceptors we launch, because we have this opportunity now, or will have this capability, to communicate late in a flight.

Senator MURKOWSKI. Well, I appreciate that, General.

I know that you've spent considerable time in Alaska looking at the operations there at Greely. I appreciate the fact that you're willing to go up in January, when many others would prefer to find warmer climes. But I look forward to the opportunity to visit with you when you perhaps head north when the daylight hours are longer and it's a little bit warmer.

General O'REILLY. Senator, we have a fantastic work force up there.

Senator MURKOWSKI. Yes, we do.

General O'REILLY. And when you're working with them at 50 below zero and you see their dedication and how professional they are, we don't lose a step in that operation. That's where that workforce shines the best, is during those parts of the year, and it's my honor to be up there and observe that and witness that in those extreme environments.

Senator MURKOWSKI. Well, I think your visits help to contribute to good strong morale and commitment to the work as well. So we thank you for that.

Thank you, Mr. Chairman.

Chairman INOUYE. Thank you very much.

IRON DOME

General O'Reilly, you have assessed what you consider to be the value of the Arrow program and the David's Sling program. Can you tell us about the recent employment, deployment, of the Iron Dome in combat? This was the first time they used this in combat, and apparently they consider that to have been a great success. What is your assessment?

General O'REILLY. Senator, I don't have today and did not have responsibility for the development of Iron Dome. But I have observed their testing and I have been to their plants where they manufacture it, and my assessment is that it has been very successful in intercepting the missiles that are—the short-range, very short-range missiles, that are extremely difficult to hit because of the very short time flight, time of flight.

However, the issue we have or the Israelis face with the Iron Dome is the great number of rockets and short-range missiles that they face. Therefore, in our budget we have a proposal to assist with the procurement for four more batteries. So the system has shown to be effective in developmental testing and in actual com-

bat, or defending their civilian populations. The issue is the great number, the sheer volume of the threat they're facing.

In our budget, I would assist with the procurement of four more batteries, and that is a good capability. But obviously when you look at the threat numbers it shows how daunting a task it is and the need for additional short-range type defense systems.

The Army also faces that problem, the U.S. Army. So this is one that's shared between our country—any of our countries that have deployed forces very close in a combat theater to a potential threat. And this is one which the United States benefits from understanding and studying exactly how they've been successful with the Iron Dome system.

Chairman INOUYE. We have spent much time today discussing failures, test failures and delays in production. Does that concern you on the basis of your industrial base?

General O'REILLY. Sir, the challenge we have in this business is that—and I fully support production decisions to be supported by tests. But with the threat and the rate at which the threat continues to evolve and emerge and, even more importantly, the uncertainties associated with exactly what the threat is due to the clandestine activities in which these threat missiles are developed and proliferated, it makes it—we do need to take risks at times to move forward with the supply chain and the production of facilitization so that we can as quickly as possible, once we've completed successful testing, minimize the time between a decision to go to production to actually starting to produce these missiles.

The need for long lead procurements is critical in this so that we can begin purchasing the components that take 2 or 3 years to build before they go into final assembly. That is the approach we're taking with the SM–3 1B. As you stated, Senator, in your opening remarks, we do have technical development issues, which are not unusual for an interceptor at this point.

I believe we have addressed all of them and we have no indication that we will not be successful this summer. However, instead of going to a full—or requesting a full production decision based on one test for the SM–3 1B, we are proposing to make a decision on the procurement of the long lead items in order to keep the industrial base set and ready to go to deliver components that, when we have subsequent tests over the next year with the 1B, we'll have enough data so that the operational test agencies can independently concur that this system is ready to be fielded or go into production.

So we are balancing between the needs, which are urgent, the technical achievement, and making sure that we have a thoroughly tested system before we put it in the field, and we have to balance that with the industrial base and the need to keep the supply chain healthy.

So it is a challenge, sir, and, as I described with the 1B, those are approaches which we're using in order to reduce the risk to all three.

Chairman INOUYE. Because of the nature of our responsibilities—we're the Appropriations Committee—we seem to be focusing and concentrating on failures and delays. However, I want the record to show that the subcommittee is very pleased with your leadership

and with the work of your team, because you've had a lot of successes. But in most cases we cannot discuss these successes because of its classification. But I just wanted the record to show that we are pleased.

General O'REILLY. Thank you, Senator. I have a great, great industry-government-FFRDC-academia team across the United States that does this great work. And the Missile Defense Agency, it's my honor to be their leader, but this truly shows the prowess of our country and all of the agencies that are involved that deliver this capability.

Chairman INOUYE. I will be submitting further questions, but may I call upon the vice chairman.

Senator COCHRAN. Mr. Chairman, thank you. I'm pleased to join you in commending the distinguished witness, the Director of our Missile Defense Agency, on the excellent job that he has done leading us in this very challenging enterprise and one that is so essential to our national defense capability and the safety and security of American citizens here and around the world. We thank you for your service.

Chairman INOUYE. Thank you.

Senator Shelby.

Senator SHELBY. Mr. Chairman, I just want to associate myself with your remarks here. I think this has been a good hearing. I appreciate General O'Reilly's candor with us. I know, as you alluded to and I did earlier, there's a lot of this program that's highly classified and we have to get into it in another meeting. But I like the idea for the moment that the General feels good about the architecture, which is very important, the scheme that you lay out, and feels good about correcting some of the problems that he's recognized, and he's got an excellent team to deal with it.

So thank you, Mr. Chairman, for the hearing.

Chairman INOUYE. I thank you.

ADDITIONAL COMMITTEE QUESTIONS

Thank you, General, for your testimony today and for your service to our Nation, and we look forward to working with you in the coming months.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY CHAIRMAN DANIEL K. INOUYE

PACIFIC MISSILE RANGE FACILITY (PMRF)

Question. General O'Reilly, can you provide the Committee a schedule of THAAD tests that will be conducted at PMRF over the next 5 years?

Answer. THAAD tests planned for the next 5 years at PMRF are listed below:

THAAD FLIGHT TEST SCHEDULE (U)

Flight test (fiscal year 2011–fiscal year 2016)	Description	Date
FTT–12	Initial Operational Test to demonstrate soldiers' ability to plan, deploy, emplace, and operate the THAAD System using approved Tactics, Techniques, and Procedures. Demonstrate THAAD closed-loop operations and engagement functions. Demonstrate the capability to conduct a multiple, simultaneous engagement of two Short-Range Ballistic Missiles (SRBM).	4Q fiscal year 2011
FTT–13	THAAD endo-atmospheric engagement of a separating Medium-Range Ballistic Missile (MRBM) with associated objects.	3Q fiscal year 2012
FTT–11a	THAAD exo-atmospheric engagement of a complex, separating SRBM with associated objects.	3Q fiscal year 2013
FTT–15	THAAD exo-atmospheric engagement of a complex, separating maximum range MRBM using Launch-on Network Track.	3Q fiscal year 2014
FTT–17	THAAD operational engagement of a MRBM with associated objects using Launch-on Network Track.	3Q fiscal year 2016

Based on IMTP v11.1 as approved on February 23, 2011.

Question. What is the current schedule for Aegis Ashore testing at PMRF?
Answer. Aegis Ashore tests currently planned at PMRF are listed below:

AEGIS ASHORE FLIGHT TEST SCHEDULE (U)

Flight test (fiscal year 2011–fiscal year 2018)	Description	Date
Aegis Ashore Controlled Test Vehicle 01 (AA CTV–01).	Aegis Ashore first launch events (total of 2) demonstrating system ability to launch, capture, and control the Standard Missile-3 (SM–3) Block (Blk) IB interceptor.	4Q fiscal year 2013
AAFTM–01 (Event 1)	Aegis Ashore will detect, track, and engage an air-launched Medium-Range Ballistic Missile (MRBM) with the SM–3 Blk IB interceptor.	3Q fiscal year 2014
AAFTM–01 (Event 2)	Aegis Ashore will detect, track, and engage an MRBM with an SM–3 Blk IB interceptor using Integrated Fire Control capability with AN/TPY2 (FB) (common designator for Army Navy/Transportable Radar Surveillance Forward Based).	3Q fiscal year 2014
FTO–02	Demonstrate initial BMDS operational effectiveness against full range of ballistic missile threats with SM–3 Blk IB interceptor.	4Q fiscal year 2015
FTO–03	Demonstrate initial BMDS operational effectiveness against full range of ballistic missile threats with SM–3 Blk IIA interceptor.	4Q fiscal year 2018

Per IMTP v11.1 dated February 23, 2011.

Question. I understand that within a few seconds of an SM–3 missile launch from the test Aegis Ashore facility on PMRF, it must be determined that the missile is moving in the intended direction, and, if not, the missile must be quickly destroyed. For safety considerations, PMRF is likely to require an exceptionally fast capability that can accurately determine missile condition and location, during the first few seconds of launch, something that radar alone may not be able to address. This is a critical requirement for PMRF and for safety considerations in any European country where the Aegis Ashore is deployed, since it will be in proximity to populated areas. Please provide an update on how the Navy and MDA will address this safety concern.

Answer. PMRF requires extra safety considerations during Aegis Ashore/SM–3 testing that will not be required when proven systems are deployed to Host Nations. When Aegis Ashore/SM–3 is tested at PMRF, the range requires two independent data sources to provide SM–3 position and velocity to enable the Flight Safety Officer to make a decision in the first few seconds of flight as to whether the missile is flying a nominal profile. To that end, MDA is funding two independent Early Launch Tracking Radar's which will be installed at PMRF by fiscal year 2013 to support the Aegis Ashore/SM–3. MDA is also funding a Telemetry Link Best Source Selector (BSS) upgrade which will provide fully automated and seamless source selection between the multiple telemetry antennas tracking the same link source from the missile during flight. In addition, MDA is funding modifications to the SM–3

Blk IB flight test configured missile to enable the existing destruct mechanism during the first few seconds after launch. These measures ensure safety at PMRF and allow safe developmental testing of the system to ensure it will perform in a safe manner when fielded in populated areas. When the system is fielded, the extra safety precautions required on the test range are no longer needed as the system has been proven to be reliable based on multiple successful flight tests.

QUESTION SUBMITTED BY SENATOR THAD COCHRAN

NAVAL FORCE STRUCTURE SUPPORT

Question. General O'Reilly, the Navy recently submitted a report outlining some challenges it will face in providing the necessary force structure to support ballistic missile defense. In this report, the Navy admitted that it presently does not have the capacity to meet geographic combatant commanders needs without breaking personnel deployment lengths or dwell time rotations.

Do the Navy's concerns affect how you deploy future phases of the Phased Adaptive Approach, and how is MDA working with the Navy to mitigate these concerns?

Answer. The European Phased Adaptive Approach (EPAA) concept took the Aegis BMD program of record and anticipated availability of Aegis BMD ships into consideration when developed. The Joint Staff and Navy deploy Aegis BMD ships as requested by the Combatant Commanders and adjudicated by the Global Force Management (GFM) process.

The Navy and MDA work collaboratively to combine resources and maximize Aegis BMD capability development for the fleet. In a joint review by the Secretary of the Navy and the Director of the MDA, a Report to Congress was submitted entitled "Additional Requirements for Investment in Aegis Ballistic Missile Defense" dated April 2010. In conducting the analysis for the report, consideration was given to the projected number of surface combatants required to provide Aegis BMD-capable multi-mission ship presence as requested by the geographic Combatant Commanders (CCDRs) and approved by the Secretary of Defense. Navy and MDA have jointly worked a plan for 38 funded surface combatants with Aegis BMD (by fiscal year 2015) which reflects an achievable balance of capacity and capability while sustaining the requisite number of multi-mission Aegis cruisers and destroyers deployed worldwide to meet concurrent surface combatant requirements. The plan is consistent with the Quadrennial Defense Review force-sizing guidance and the Navy's 30 year Shipbuilding Plan.

Navy and MDA are jointly responding to the Combatant Commanders' (COCOM) need for operational Aegis BMD capability in a three phase approach; through BMD upgrades to Aegis ships, Aegis Modernization Program and new construction. Today, MDA and the Navy have upgraded 22 Aegis combatants to conduct ballistic missile defense operations. Sixteen of these ships are assigned to the Pacific Fleet and six ships assigned to the Atlantic Fleet. The Chief of Naval Operations (CNO) has designated Ballistic Missile Defense as a core Navy mission and looks to populate the BMD capability throughout the Aegis Fleet to meet the COCOM demand signal.

SUBCOMMITTEE RECESS

Chairman INOUYE. The Defense Subcommittee will reconvene tomorrow, May 26, at 10:30 a.m. for a classified briefing from U.S. Central Command and Africa Command. The subcommittee stands in recess.

[Whereupon, at 11:30 a.m., Wednesday, May 25, the subcommittee was recessed, to reconvene subject to the call of the Chair.]