Unclassified Statement of

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Before the

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Subcommittee on Strategic Forces

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Good morning, Chairman Turner, Ranking Member Sanchez, other distinguished Members of the subcommittee. I appreciate the opportunity to testify before you today on the Missile Defense Agency's (MDA) $7.75 billion Fiscal Year (FY) 2013 budget request to develop protection for our Nation, our Armed Forces, allies, and partners against the proliferation of increasingly capable ballistic missiles. The Department developed the FY 2013 President's Budget Request in accordance with the February 2010 *Ballistic Missile Defense Review*, which balanced affordability concerns with intelligence community updates. We continue to demonstrate and improve the integration of sensor, fire control, battle management, and interceptor systems that transforms individual missile defense projects into a Ballistic Missile Defense System (BMDS) capable of defeating large raids of a growing variety of ballistic missiles over the next decade. For homeland defense, last year we completed the construction of the Ground-based Midcourse Defense (GMD) infrastructure for protection of the U.S. homeland against future limited intercontinental ballistic missile (ICBM) threats from current regional threats. This year we will activate our newest missile field and power plant at Fort Greely, Alaska (FGA), conduct two GMD flight tests and restart the Ground Based Interceptor (GBI) production line. For regional defenses, last year we deployed Phase 1 of the European Phased Adaptive Approach (EPAA) consisting of command and control in Germany, a forward-based radar in Turkey, and an Aegis Ballistic Missile Defense (BMD) ship in the Eastern Mediterranean Sea. This year we will have two

operational THAAD batteries, convert 5 Aegis ships and upgrade 1 for a total of 29 ships with BMD capability installed, and increase the number of associated SM-3 interceptors. This year, in our test program, we will conduct three flight tests of the SM-3 Block IB to demonstrate its ability to intercept complex Short-Range Ballistic Missile, or SRBM (up to 1,000km) targets. Finally, this year we will demonstrate the maturity of our layered regional defense with the first simultaneous intercepts of short- and medium-range ballistic missiles by the PATRIOT Advanced Capability (PAC)-3, THAAD, and Aegis BMD systems integrated with remote AN/TPY-2 radar.

Enhancing Homeland Defense

MDA's highest priority is the successful GMD intercept flight test of the newest GBI Exo-atmospheric Kill Vehicle (EKV). Last year, we concluded the Failure Review Board (FRB) evaluation for the December 2010 FTG-06a flight test by identifying the most probable cause of the failure and revising the EKV design to correct the problem. This year, we will execute a non-intercept GBI flight test (CTV-01) with an upgraded EKV in the fourth quarter before repeating the intercept test early in FY 2013 (FTG-06b). Other improvements to homeland defense during the past year included: upgrading and integrating the Thule Early Warning Radar into the BMDS to view and track threats originating in the Middle East; upgrading three emplaced FGA GBIs as part of our on-going GMD fleet refurbishment and reliability enhancement program; fielding improved GMD fire control software to allow testing or exercises to be conducted while simultaneously controlling the operational system; and upgrading the FGA communications system. After activating Missile Field 2 later this year, the number of total GBI silos will increase to 38 (34 at FGA and 4 at Vandenberg Air Force Base

((VAFB)) in California). This past December, we awarded the GMD Development and Sustainment contract, one of the Agency's largest and most complex competitive acquisitions, with a price of almost $1B less than the independent government cost estimate. For the next seven years, this $3.5B contract will provide for sustainment and operations as well as improvements and enhancements of the current capability, provide for a robust and vigorous testing program, and deliver new and upgraded interceptors.

We are requesting $903.2M in FY 2013 in RDT&E funding for the GMD program. We plan to maintain our fleet of 30 operational GBIs and continue to upgrade existing GBIs, and acquire 5 additional GBIs for enhanced testing, stockpile reliability, and spares, for a total of 57 GBIs. We will continue GBI component vendor requalifications for the future GBI avionics upgrade and obsolescence program, and we will enhance our Stockpile Reliability Program to support life-cycle management decisions and increase GBI reliability.

Today, 30 operational GBIs protect the United States against a limited ICBM raid size launched from current regional threats. If, at some point in the future, this capability is determined to be insufficient, we can increase the operational GBIs' fire power by utilizing all 38 silos, refurbishing our 6-silo prototype missile field, and accelerating the delivery of new sensor and interceptor capabilities. In FY 2013 we will begin construction of the GBI In-Flight Interceptor Communication System (IFCS) Data Terminal (IDT) at Fort Drum, New York, with a completion date by 2015. The East Coast IDT will enable communication with GBIs launched from FGA and VAFB for longer flights, thus improving the defense of the eastern United States. Our pro-active

GBI reliability improvement program will enable successful intercepts with fewer GBIs than are required today with the same probability of successful intercept. This additional firepower will increase the number of ICBMs that can be defeated by the GMD system. We will also continue to develop and assess the 2-stage GBI to preserve future deployment options, including an intercept flight test in FY 2014. Finally, we will continue development of the SM-3 Block IIB to protect our homeland in the future by creating a new first layer of intercept opportunities, thus expanding the forward edge of our homeland defense battle space.

This year, we will begin upgrading the Clear Early Warning Radar in Alaska for full missile defense capability by 2016. We will also continue operations of the Sea-Based X-band (SBX) radar and development of algorithms to improve its discrimination capability. We are requesting $347.0M in FY 2013 for BMDS Sensors development for homeland defense, including support of the Cobra Dane radar, the Upgraded Early Warning Radars (UEWRs) at Beale AFB (California), Fylingdales (United Kingdom), and Thule (Greenland). We are requesting $192.1M to operate and sustain these radars and $227.4M to procure additional radars and radar spares. In FY 2013, we will also place the SBX in a limited test operations status for affordability reasons, but we will be prepared to activate the SBX if indications and warnings of an advanced threat from Northeast Asia become evident. We will also continue to upgrade the GMD system software to address new and evolving threats, including enhancing EKV discrimination algorithms by 2015, improving GBI avionics, and increasing GBI interoperability with the Command and Control, Battle Management and Communications (C2BMC) system.

Enhancing Regional Defense

This year we will demonstrate integrated, layered regional missile defense in the largest, most complex missile defense test every attempted. We will simultaneously engage up to five air and ballistic missile targets with an Aegis, THAAD, PATRIOT and Forward Based Mode AN/TPY-2 radar integrated C2BMC system operated by soldiers, sailors, and airmen from multiple Combatant Commands. This test will allow our war fighters to refine operational doctrine and tactics while providing confidence in the execution of their integrated air and missile defense plans.

Last year, in addition to deploying EPAA Phase 1, we successfully supported negotiations for host nation agreements to deploy Aegis Ashore batteries to Romania (Phase 2) and Poland (Phase 3); we successfully tested the NATO Active Layered Theater Ballistic Missile Defense (ALTBMD) Interim Capability with EUCOM C2BMC to enhance NATO situational awareness and planning; we installed the Aegis BMD 3.6.1 weapon system on three Aegis ships and upgraded one Aegis BMD ship to Aegis BMD 4.0.1 (increasing the Aegis BMD fleet to 22 operationally configured BMD ships); and we delivered 19 SM-3 Block IA interceptors and the first SM-3 Block IB interceptor. We continued SM-3 Block IIA system and component Preliminary Design Reviews. We delivered 11 interceptors for THAAD Batteries 1 and 2 and flight test, and started production of Batteries 3 and 4. We also delivered the latest C2BMC upgrades to Northern Command, Strategic Command, Pacific Command, and Central Command. These software builds will improve situational awareness, sensor management, and planner functions.

We also demonstrated critical BMDS regional capabilities in key tests over the past year. In April 2011, we conducted an Aegis BMD flight test (FTM-15) using the SM-3 Block IA interceptor launched using track data from the AN/TPY-2 radar passed through the C2BMC system to intercept an Intermediate-Range Ballistic Missile, or IRBM, target (3,000km to 5,500km) to demonstrate the EPAA Phase 1 capability. This mission also was the first Launch-on-Remote Aegis engagement and intercept of an IRBM with the SM-3 Block IA. In October 2011, the BMDS Operational Test Agency, with the oversight of the Director, Operational Test & Evaluation, conducted a successful Initial Operational Test & Evaluation test (FTT-12) of THAAD's ability to detect, track, and engage SRBM and MRBM targets simultaneously.

Enhanced MRBM Defense in Europe by 2015 (EPAA Phase 2). Our goal in this phase is to provide a robust capability against SRBMs and MRBMs by deploying several interceptors to engage each threat missile multiple times in its flight. The architecture includes the deployment of the Aegis BMD 5.0 weapon systems with SM-3 Block IB interceptors at sea and at an Aegis Ashore site in Romania. When compared to the current SM-3 Block IA, the IB will be more producible, have an improved two-color seeker for greater on-board discrimination, and have improvements to enhance reliability of the SM-3 Block IB's divert and attitude control system. These improvements also provide an enhanced capability against larger sized raids.

We are requesting $992.4M in FY 2013 for sea-based Aegis BMD to continue development and testing of the SM-3 Block IB, continue outfitting of ships with the BMD 4.0.1 system as well as spiral upgrades to Aegis 5.0 to support the operation of the SM-3 Block IB and IIA interceptors and associated flight tests. We are requesting $389.6M

in FY 2013 for the procurement of 29 SM-3 Block IB interceptors and $12.2M to operate and maintain already deployed SM-3 Block IA interceptors. In FY 2013, we are also requesting $276.3M to develop and build the Aegis Ashore Test Facility at the Pacific Missile Range Facility in Hawaii and $157.9M to construct the first Aegis Ashore Missile Defense System battery in Romania by FY 2015. We request $366.5M in FY 2013 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 PAA-related C2BMC upgrades.

In September 2011, we conducted FTM-16 to demonstrate Aegis BMD 4.0.1 fire control and the first flight test of the SM-3 Block IB interceptor. While we did not achieve the destruction of the SRBM separating payload, we demonstrated critical system functions, including the exceptional performance of the kinetic warhead divert system, which will allow Navy certification this month of the Aegis BMD 4.0.1 computer program. In the third quarter of FY 2012, we will conduct FTM-16 (Event 2a) to demonstrate the SM-3 Block IB's capability. We will also demonstrate the ability of the SM-3 Block IB to intercept more complex SRBM targets in FTM-18 and FTM-19. In the fourth quarter, we will conduct the first operational flight test led by the BMDS Operational Test Agency team involving a coordinated and simultaneous engagement involving Aegis BMD, THAAD and PAC-3 systems against three targets. Our FY 2013 testing program continues to demonstrate the SM-3 Block IB and Aegis BMD 4.0.1

(FTM-21 and FTM-22), including a salvo engagement involving 2 interceptors against an SRBM.

Enhanced IRBM Defenses in Europe by 2018 (EPAA Phase 3). The SM-3 Block IIA interceptor, being co-developed with the Japanese government, is on schedule for deployment at an Aegis Ashore site in Poland and at sea in 2018 to provide enhanced protection for European NATO countries from all ballistic missile threats from the Middle East. This year we will complete the SM-3 Block IIA preliminary and component design reviews, shock and vibration testing of the SM-3 Block IIA interceptor canister, and continue development of Aegis BMD 5.1 fire control system. We also reduced the execution risk of the SM-3 Block IIA program by increasing the time between flight tests while maintaining the original initial capability date of 2018. The FY 2013 request for SM-3 Block IIA co-development is $420.6M.

Expanded Interceptor Battle Space by 2020 (EPAA Phase 4). The SM-3 Block IIB will provide a pre-apogee intercept capability against IRBMs and an additional layer for a more enhanced homeland defense against non-advanced ICBMs launched from today's regional threats. This program is in the technology development phase, and its seven-year development timeline is consistent with typical interceptor development timelines, according to Government Accountability Office data. Last year we awarded risk reduction contracts for missile sub-system components, including advanced propulsion, seeker, and lightweight material technologies. We also awarded concept design contracts for the SM-3 Block IIB interceptor to three aerospace industry teams. In FY 2013, we are requesting $224.1M to develop the Request For Proposal and begin source selection for the SM-3 Block IIB Product Development Phase, which will begin in

early 2014. The SM-3 Block IIB will leverage advanced tracking and discrimination technologies deployed during EPAA Phase 4 as well as the entire sensor network, with PTSS and C2BMC upgrades to maximize homeland defense.

Additional Missile Defense Capabilities

This year, we are procuring 42 THAAD interceptors for Batteries 1 and 2, six launchers, and two THAAD Tactical Station Groups.. We are requesting $316.9M in RDT&E funding in FY 2013 to enhance communications and debris mitigation, which will allow THAAD to be more interoperable with PAC-3 and Aegis BMD and connected to the BMDS, and $55.7M for THAAD operations and maintenance. We also request $460.7M to procure 36 THAAD interceptors. THAAD will complete delivery of the first fifty interceptors in June 2012, demonstrating the capacity of the contractor supply chain and the main assembly factory in Troy, Alabama to deliver interceptors. The next production lots are under contract, with delivery beginning this summer. We will maintain a production rate of 4 THAAD missiles per month through June 2012 due to components on hand and enhance the supply chain's production capacity to sustain a 3 missile per month production rate beginning in spring 2013. In late FY 2012, we will demonstrate THAAD's ability to intercept an MRBM as part of an integrated operational test with PAC-3 and Aegis BMD.

Additional BMDS improvements include expanded coordination of missile defense fire control systems and improvements to radar discrimination. We are requesting $51.3M for the Space Tracking and Surveillance System (STSS) system in FY 2013. 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 a space sensor to provide high precision, real-time tracking of missiles and midcourse objects that enable closing the fire control loops with BMDS interceptors and will lay the groundwork for a live-fire intercept using STSS and Aegis. Lessons learned from the two STSS demonstration satellites inform Precision Tracking Space System (PTSS) development decisions.

Developing New Capabilities

We are requesting $80M in FY 2013 to continue development of fiscally sustainable advanced BMD technologies that can be integrated into the BMDS to adapt as threats change. Intercepts early in the battle space will provide additional opportunities to kill threat missiles, enlarge protection areas, and improve the overall performance of the BMDS.

Last year, we accelerated our test campaign with the Airborne Laser Test Bed (ALTB) to collect data on tracking and atmospheric compensation, system jitter, and boundary layer effects on propagation for future directed energy applications. This year, in accordance with the funding reduction enacted by Congress and operating constraints, we grounded the aircraft and are examining the technical feasibility of high efficiency directed energy technology for the next decade. In FY 2013, we are requesting $46.9M to pursue Diode Pumped Alkaline-gas Laser System (DPALS) and coherent fiber combining laser technologies, which promise to provide high efficiency, electrically-driven, compact, and light-weight high energy lasers for a wide variety of missions of interest to MDA and the Department of Defense and support concept development for the next generation of airborne missile defense directed energy systems.

We request $58.7M in FY 2013 to continue support for research and development of advanced remote sensing technologies, demonstrate acquisition, tracking and discrimination of multi-color infrared sensors, and investigate techniques to improve the system's data fusion capability to further strengthen the nation's missile defense sensor network. We have integrated our international and domestic university research programs into the same structure, allowing the Agency to capitalize on the creativity and innovation within our small business and academic communities to enhance our science and technology programs.

The greatest future enhancement for both homeland and regional defense in the next ten years is the development of the PTSS satellites, which will provide fire control quality track of raids of hostile ballistic missiles over their entire flight and expand the forward edge of the our interceptors' battle space for persistent coverage of over 70% of the earth's landmass. PTSS will enhance the performance of all missile defense interceptors. PTSS spacecraft-sensors are much simpler in overall design than STSS, and use only components with a high technology readiness level. Due to the intrinsic simplicity and component maturity of the PTSS design, the integration of concurrent developments is considered to be a low acquisition risk. Partnering with Johns Hopkins Applied Physics Laboratory (APL), MDA is requesting $297.4M for PTSS in FY 2013 to continue development of preliminary design requirements to create these multi-mission satellites (e.g., missile defense, space situation awareness, DoD and Intelligence Community support). APL has a noteworthy track record, dating back to 1979, for meeting planned development cost and schedule projections involving 17 significant spacecraft missions. We will complete final design and engineering models

for the PTSS bus, optical payload, and communications payload in FY 2013. PTSS project scope includes delivery of PTSS ground segments and launch of the first two PTSS spacecraft in FY 2017.

International Cooperation

As stated in the 2010 *Ballistic Missile Defense Review*, developing international missile defense capacity is a key aspect of our strategy to counter ballistic missile proliferation. A significant accomplishment of international cooperation in 2011 was the signing of the first Foreign Military Sale case for the THAAD system to the United Arab Emirates, valued at nearly $3.5B. In Europe, we successfully tested our C2BMC system with the ALTBMD Interim Capability, demonstrating interoperability and sharing situational awareness and planning data. We are working with our NATO allies on developing requirements for territorial missile defense. In East Asia, we are supporting the BMDR-based objective in leading expanded international efforts for missile defense through bilateral projects and efforts with Japan, the Republic of Korea, and Australia. And in the Middle East, we continue to work with long-term partners, such as Israel, and are pursuing strengthened cooperation with various Gulf Cooperation Council countries that have expressed interest in missile defense. MDA is currently engaged in missile defense projects, studies and analyses with over twenty countries, including Australia, the Czech Republic, Denmark, France, Germany, Israel, Japan, Poland, Romania, Saudi Arabia, Republic of Korea, the United Arab Emirates, the United Kingdom, and NATO.

MDA continues its close partnership with Japan on the SM–3 IIA interceptor (Japan is leading the development efforts on the SM-3 Block IIA second and third stage rocket motors and the nosecone), studying future missile defense architectures for

defense of Japan, and supporting that nation's SM-3 Block IA flight test program, to include the successful intercept flight test in October 2010 involving a Japanese SM-3 Block IA. This test completed the first foreign military sale of Aegis BMD to a key maritime partner. Japan now has four Aegis destroyers equipped with Aegis BMD systems and a complement of SM-3 Block IA interceptors. We also continue collaboration with Israel on the development and employment of several missile defense capabilities that are interoperable with the U.S. BMDS. Last 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 $99.8M for Israeli Cooperative Programs (including Arrow System Improvement and the David's Sling Weapon System) in FY 2013. MDA will conduct a David's Sling flight test to demonstrate end game and midcourse algorithms and initiate David's Sling and Arrow-3 Low Rate Initial Production.

Conclusion

Our FY 2013 budget funds the continued development and deployment of SRBM, MRBM, IRBM, and ICBM defenses while meeting the warfighters' near-term missile defense development priorities. We are dedicated to creating an international and enhanced network of integrated BMD capabilities that is flexible, survivable, affordable, 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.