

Unclassified Statement of

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Before the

Senate Armed Services Committee

Subcommittee on Strategic Forces

Regarding the

**Ballistic Missile Defense Policies and Programs for Fiscal
Year 2013 and the Future Years Defense Program**

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Good afternoon, Chairman Nelson, Ranking Member Sessions, 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 war fighter needs as expressed in the STRATCOM Integrated Air and Missile Defense (IAMD) Prioritized Capability List (PCL) with technical feasibility and affordability constraints and 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 including the activation of our newest hardened missile field at Ft. Greely, Alaska (FGA). This year, we will continue to aggressively pursue the Agency's highest priority – successful return to flight and intercept tests of the Capability Enhancement II (CE II) version of the Ground-Based Interceptor (GBI). We will prepare

for the next GMD non-intercept flight test by the end of this year and our next intercept early in the following year, activate the hardened power plant at FGA, prepare to restart the GBI production line, and aggressively conduct component testing and refurbish currently deployed missiles to test and improve their reliability. For regional defenses, last year we deployed Phase 1 of the European Phased Adaptive Approach (EPAA) consisting of a command and control, battle management system in Germany, 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. In our test program, we will conduct three flight tests of the SM-3 Block IB to demonstrate resolution of last year's flight test failure and 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 three short- and medium-range ballistic missiles and two cruise missiles by an integrated architecture of PATRIOT Advanced Capability (PAC)-3, THAAD, and Aegis BMD systems assisted by a remote AN/TPY-2 forward based radar – the largest, most complex, live fire missile defense test in history.

Enhancing Homeland Defense

MDA's highest priority is the successful GMD intercept flight test of the newest GBI Exo-atmospheric Kill Vehicle (EKV) – the CE II 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 CE II EKV design to

correct the problem. As a result of that FRB, we have redesigned critical GBI Exo-atmospheric Kill Vehicle (EKV) components and established more stringent manufacturing and component test standards – standards previously not used anywhere in the U.S. aerospace industry. As a result of these stringent manufacturing standards, we have encountered several delays in preparing for our next non-intercept and intercept flight tests. MDA is fully committed to test the GMD system as soon and often as possible, but we will not approve executing a flight test until our engineers, and independent government and industry experts, have been convinced that we have resolved all issues discovered in previous testing and will be successful in our next test. Flight testing as often as possible is our goal, but we risk further failure if we conduct GMD testing prior to verification that we resolved problems discovered in previous flight tests. Also, conducting flight tests at a pace greater than once a year prohibits thorough analysis of pre-mission and post-mission flight test data and causes greater risk of further failure and setbacks to developing our homeland defense capability as rapidly as possible. If our CE II non-intercept (Controlled Test Vehicle (CTV) flight) is not successful later this year, we will be prepared to conduct the next test of the previous version of the EKV (the CE I EKV) GBI test while we continue to resolve any CE II issues in order to continue to test other improvements in our homeland defense. Other improvements to homeland defense include: the upgrades and integration of the Thule Early Warning Radar into the BMDS to view and track threats originating in the Middle East; upgrade of 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. We activated Missile Field 2 earlier this year, thus increasing the number of total GBI operational silos 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. A key part of the scope of this new contract is comprehensive verification and reliability testing, and upgrades as needed, of every component of our GBIs. These component reliability improvements and tests will require 3 years to complete and will provide the NORTHCOM commander convincing GBI reliability data resulting in a greater number of ICBMs that can be engaged with a higher probability of protection of our homeland.

We are requesting \$903.2M in FY 2013 in RDT&E funding for the GMD program. We plan to continue to upgrade our fleet of 30 operational 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.

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 against a growing ICBM threat, it is possible that we can increase the operational GBIs' fire power by utilizing all 38 operational silos,

refurbishing our 6-silo prototype missile field, and accelerating the delivery of new sensor and interceptor capabilities. Additionally, our GBI reliability improvement program will enable more successful intercepts with fewer GBIs with the same probability of successful intercept. 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 over longer distances, thus improving the defense of the eastern United States. 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.

Because the defense of our homeland is our highest priority, we are pursuing a layered defense concept – similar to that in regional missile defense – to achieve high protection effectiveness by deploying more than one independently developed missile defense interceptor system; therefore, 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, expanding the forward edge of our homeland defense battle space, and providing our war fighters highly feasible “Shoot-Assess-Shoot (SAS)” firing doctrine. The recent Defense Science Board (DSB) agreed with our assessment that the SM-3 IIB will be challenged to destroy ICBMs before their earliest possible deployment of countermeasures. The DSB also supports MDA’s development of the SM-3 IIB to significantly expand the forward edge of our ICBM battle space and enable SAS to obtain very high levels of ICBM protection of our homeland. The FY 2012 congressional reduction of the SM-3 IIB funding has increased the challenge of fielding

this improvement in Homeland Defense against ICBMs in the 2020 timeframe. My additional concern is the impact of reducing funding for the SM-3 IIB will eliminate the only new interceptor design and development opportunity for our Nation's missile defense industrial base for the foreseeable future. The three SM-3 IIB industry teams lead by Lockheed Martin, Boeing and Raytheon have shown rapid progress in developing very effective and feasible SM-3 IIB interceptor design concepts. To terminate, or slow down, the SM-3 IIB development effort will have a significant negative impact on missile defense aerospace industrial base at this time and risk our ability to cost-effectively respond to emerging regional ICBM threats to our homeland for decades in the future.

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 ever 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 live-fire 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 to simultaneously engage larger sized raids of threat missiles.

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 intercept of the SRBM separating payload, we demonstrated critical system functions, including the exceptional performance of the kinetic warhead divert system, which allowed the Navy's partial certification 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 resolution of the previous flight test issue and the SM-3 Block IB's Kill Warhead'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 later this summer. In the third quarter FY2013, 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 and two cruise missiles. 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 Aegis Ashore sites in Romania and 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 completed the SM-3 Block IIA preliminary design review, and continue shock and vibration testing of the SM-3 Block IIA interceptor canister, and 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 potential 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 we propose to begin in early 2014. The SM-3 Block IIB is leveraging advanced tracking and discrimination technologies planned for deployment 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 in radar discrimination. We are requesting \$51.3M for the Space Tracking and Surveillance System (STSS) 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. In FY 2013, we plan the first live intercept of a threat missile by the Aegis Ballistic Missile Defense (BMD) system using only STSS data to form the fire control solution for the SM3 IB interceptor. Additionally, lessons learned from the two STSS demonstration satellites inform Precision Tracking Space System (PTSS) design 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, we grounded the ALTB 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 Precision Tracking Space System (PTSS) satellites, which will provide fire control quality track data of raids of hostile ballistic missiles over their entire flight trajectories and greatly expand the forward edge of the our interceptors' battle space for persistent coverage of over 70% of the earth's landmass. The need for persistent, full trajectory, tracking of ballistic missiles is one of the war fighter's highest development priorities as stated in the 2012 STRATCOM PCL.

PTSS will enhance the performance of all missile defense interceptors at an operational cost significantly less (and with much greater ability to track large raid sizes of threat missiles) than forward based AN/TPY-2 radars, based on MDA's experience with STSS program costs. The emerging concept design of the PTSS spacecraft is much simpler than STSS because it relies on the mature Air Force Space Based Infra-Red (SBIR) satellite system to acquire threat ballistic missiles, leverages PTSS's ability to provide precision tracks of the remainder of threat missiles' trajectories, and uses only satellite components with high technology readiness levels. 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. Key to our acquisition strategy is MDA partnering Air Force Space Command and the Naval Research Laboratory with Johns Hopkins University Applied Physics Laboratory (APL), with participation of six aerospace corporations, to develop a fully government owned preliminary design and technical data package to enable full competitions by our aerospace industry for the production for the first and subsequent PTSS satellite constellations. 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. We are fully cooperating in an

Independent Cost Estimate (ICE) of the development and 20 year life cycle cost of the PTSS constellation by the OSD office of Capability Assessment and Program Evaluation (CAPE) to achieve a high confidence cost estimate of the development and twenty year life of the PTSS constellation. Of note, this ICE will provide great insight into the validity of the recent National Academy of Science (NAS) Boost Phase Intercept study cost estimate for the PTSS constellation that we believe is considerably higher than our estimates. Although the NAS study was critical of PTSS's ability to discriminate a Re-entry Vehicle (RV) from other objects accompanying a missile, the NAS did not benefit from an understanding of our sensor discrimination architecture concept nor our classified programs developing PTSS's future RV discrimination capability. However, the NAS study did benefit from understanding our disciplined systems engineering process that scrutinizes capability trades to achieve urgent, cost-effective, satisfaction of the war fighters BMD needs as documented in STRATCOM's PCL.

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 completed interoperability testing of our C2BMC system with the Active Layer Theater Ballistic Missile Defense (ALTBMD) Interim Capability, demonstrating US and NATO's ability to share situational awareness of missile defense execution and status and planning data. NATO plans to

invest more than 600M Euros for the ALTBMD capability. Moreover, we are working with our NATO allies on developing requirements for territorial NATO missile defense. We continue to pursue potential missile defense contributions of NATO countries such as the Netherlands' announcement that they are upgrading their maritime radars with missile defense surveillance and tracking capability. 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 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. This year, we plan to conduct several first time demonstrations of significant David's Sling, Arrow-2 block 4, and Arrow-3 system capabilities. We are requesting \$99.8M for Israeli Cooperative Programs (including Arrow System Improvement and the David's Sling Weapon System) in FY 2013 to continue our cooperative development of Israeli and US missile defense technology and capability. 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 war fighters' near-term and future missile defense development priorities. We are dedicated to returning to successful GMD flight testing as soon as possible as well as developing an additional layer of homeland defense with the SM-3 IIB to ensure we have a robust and responsive ICBM defense for our Nation, during this decade and for many decades in the future. Additionally, we are committed to develop a persistent, space based, PTSS constellation to ensure always available, early tracking of large size raids of missiles to enable cost-effective homeland and regional missile defense. We are also 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.