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Demand for Theater Missile Defense Assets**

Chairman Lamborn, Ranking Member Moulton, and distinguished Members of the subcommittee, it is an honor to appear before you today to discuss the demand for U.S. theater missile defenses. The Missile Defense Agency (MDA) mission is to design, develop, and deploy a layered Missile Defense System to defend the United States and its deployed forces, allies, and international partners from increasingly diverse missile threats. Threats posed by missile delivery systems are likely to continue increasing and grow more complex. Adversary missile systems are showing more maneuver capability as well as greater survivability, reliability, and accuracy. MDA has already delivered significant capabilities to the Warfighter and is developing, delivering, sustaining, and improving affordable, proven, and leading-edge capabilities to counter advanced ballistic and hypersonic missiles in different regions of the world. In addition, MDA is actively supporting U.S. Central Command and our regional partners with analysis and assessments to detect, track, and intercept threats in the region.

Since its inception in 2002, MDA has developed numerous missile defense capabilities to enhance the regional defense posture of geographic Combatant Commanders. Utilizing its non-standard acquisition authorities, MDA has been able to quickly develop, procure, and field missile defense systems. In recent years, the Defense Department, with considerable input from the Combatant Commands, Services and MDA, has analyzed the missile defense system capability transfer process and agreed the current approach is the best course of action for the Department as outlined in the Department's May 2020 Report to Congress titled: "Transition of Ballistic Missile Defense Program Elements to the Military Departments." Under the agreed-to construct, once a missile defense system has been fielded to a military department, the military department mans, operates, and sustains the service-common equipment of the missile defense system for the life cycle of the system. MDA modernizes, procures, and provides sustainment support of the missile defense system-unique equipment for the life cycle of system. This process is codified in cost-sharing agreements between the military departments and MDA. This construct enables MDA to continue to upgrade systems over time to achieve, for example, Terminal High Altitude Area Defense (THAAD) -PATRIOT integration, which enables Warfighters to improve self-defense, conserve interceptors, and enlarge coverage areas.

Over the years, MDA has transitioned operations and sustainment of critical theater missile defense capabilities to the military departments, including the Navy's Standard Missile (SM)-3, the Army's THAAD system and Army/Navy Transportable Radar Surveillance and Control – Model 2 (AN/TPY-2), and Space Force's ground-based radars, such as the Upgraded Early Warning Radars and Long Range Discrimination Radar for homeland defense. In the event of any future regional conflict, these systems will play a crucial role in protecting both U.S. and allied forces and key regional infrastructure.

### **Current Theater Missile Defense Capabilities**

The Missile Defense System requires a Command and Control, Battle Management and Communication (C2BMC) system that operates in a Joint, multi-domain environment and connects ground, air, sea, and space sensors and shooters. This globally deployed system interfaces with Joint, Army, Navy, Air Force, Space Force, NATO and international commands and provides continuous, real-time Missile Defense Command and Control, and Battle Management operations to six Combatant Commands. It also integrates U.S. and coalition operations with allies and partners. The C2BMC program enables the U.S. President, Secretary of Defense, and Combatant Commanders at strategic, regional and operational levels to systematically plan missile defense operations, collectively see the battle develop, and dynamically manage networked sensors and weapons systems to achieve global and regional mission objectives. C2BMC provides a common operating missile defense picture for decision makers and the Combatant Commands and is capable of generating and distributing fire control quality data to enable, for example, Launch- and Engage-on-Remote capabilities. The Warfighter also uses this system to understand what is happening in real time in current conflict zones, such as Ukraine and the Middle East.

MDA jointly develops Aegis Ballistic Missile Defense (BMD) weapon systems for theater defense with the U.S. Navy. Globally deployed ship-based and land-based Aegis BMD capabilities are critical to the Nation's defense of our deployed forces, allies, and partners against short-, medium-, and intermediate-range missile threats. There are currently 49 Aegis BMD-capable ships with Aegis Ashore sites in Romania and Poland.

The SM-3, which uses hit-to-kill technologies, engages the target in space and is a key part of a layered theater missile defense architecture. The SM-3 Block (Blk) IA/IB provides BMD mission capabilities across Fleet areas of responsibility. The SM-3 also is a critical part of the European Phased Adaptive Approach (EPAA) Phases 1 and 2, which is the U.S. contribution to NATO missile defenses. The SM-3 Blk IA/IB capability also support the defensive capability of Aegis Ashore.

SM-3 Blk IA/IB capabilities were first deployed in 2006 (for Blk IA) and 2013 (for Blk IB). This interceptor can be launched from BMD-capable ships as well as Aegis Ashore sites to defeat short- and medium-range ballistic missile threats. In October 2023, Flight Test Aegis Weapon System (FTM)-48 demonstrated an Aegis Weapon System Integrated Air and Missile Defense raid scenario consisting of BMD engagements of two short-range ballistic missile targets presented as a raid with two SM-3 Blk IA interceptors, while concurrently demonstrating Anti-Air Warfare engagements of two BQM-177A targets. This test was the first BMD raid engagement with SM-3 interceptors and was accomplished with the longest fielded SM-3 (Blk IA) variant, demonstrating residual capability against raids. Japan is currently a Foreign Military Sales (FMS) partner for the SM-3.

SM-3 Blk IIA capabilities, first deployed in 2021, were cooperatively developed by the United States and Japan to address rogue nation missile threats. SM-3 Blk IIA expands ship operational areas and increases the areas within which we can engage threats and the types of missiles the Navy can engage. Aegis Ashore Poland and the Blk IIA capability supports EPAA Phase 3. Engage-on-remote technologies further increase the Blk IIA engagement battlespace. The SM-3 Blk IIA increases capability in Defense of Japan scenarios and will eventually replace Japan's Blk IA inventory, along with FMS Blk IBs. Japan Flight Test Aegis Weapon System (JFTM)-07 was a four-event Japanese-funded FMS flight test campaign that was successfully executed in November 2022 to support the Japan Maritime Defense Force BMD modernization and certification of the Japanese Aegis Weapon System Baseline J7. All four JFTM-07 events were successfully executed and support the Japan Maritime Self Defense Force combat system certification of the SM-3 Blk IIA deployment and qualification of the Maya Class Destroyers. JFTM-07 was a significant milestone in the cooperation between Japan and the U.S. in the area of missile defense.

Aegis Ashore is a land-based variant of the Aegis BMD weapon system. Aegis Ashore Missile Defense System Romania (AAMDSRO) is located in Deveselu and is the first delivered and operational Aegis Ashore Missile Defense System. AAMDSRO was delivered to the U.S. Navy in May 2016 and joined the NATO Operational Capability in July 2016. AAMDSRO completes the EPAA Phase 2, which protects Europe against medium- and intermediate-range ballistic missiles and provides capability to launch SM-3 Blk IA, IB, and IIA missiles.

Aegis Ashore Poland, located in Redzikowo, was added to the Operational Capability Baseline in September 2023 with upgrades over the original design and state-of-the-art Integrated Electronic Security System. Aegis Ashore Poland was delivered to the U.S. Navy on October 1, 2023 for operational use and maintenance. The Navy will formally accept Aegis Ashore Poland into their inventory on December 15, 2023. This will complete EPAA Phase 3, originally established in 2009. The Navy will

install additional upgrades at Aegis Ashore Poland through May 2024, after which it will transfer to NATO in July 2024 for command and control of Aegis Ashore Poland in the defense of NATO European states against ballistic missile threats originating outside the Euro-Atlantic area.

The Aegis Ashore Missile Defense Test Complex (AAMDTC) is a test site only and is located at the Pacific Missile Range Facility, Kauai, Hawaii. Initially developed to support Aegis Ashore fielding in Europe, AAMDTC has taken on a larger role to support Aegis BMD baseline integration and provide support for operational tests and innovation of new concepts and systems interoperability. With the delivery of Aegis Ashore Poland, the AAMDTC will continue to evolve with an increased focus on innovation, integration, test and operational support, all with a limited emergency activation capability to support the Missile Defense System.

Today, the SM-6, which uses a blast fragmentation kill mechanism, is the only interceptor available for a limited defense against hypersonic missile threats. Sea-Based Terminal (SBT) defense Increment (Inc) 1 initially fielded in 2016, and SBT Inc 2 was fielded in 2018. In March 2023, FTM-31 E1a successfully completed an endo-engagement with a salvo of two SM-6 Dual II missiles against a medium-range ballistic missile (MRBM) target. This test allowed MDA to add the SM-6 Blk IA Dual I and Dual II with Software Upgrade missiles to the Missile Defense System Operational Capability Baseline, adding significant defense capability to the Navy fleet against advanced threats.

MDA develops, produces, and fields the THAAD weapon systems for theater defense with the U.S. Army. The THAAD Weapon System is a globally transportable, ground-based system that is highly effective against short-, medium- and intermediate-range missile threats inside and outside the atmosphere in the terminal phase of flight. THAAD is combat-proven, and it has a perfect operational flight test record to date. AN/TPY-2 radars deployed abroad support THAAD batteries for regional defense. These radars are also deployed abroad in forward-based mode to support regional and homeland defense by providing early warning, precision tracking, discrimination capabilities, and space domain awareness.

We have delivered 800 operational Interceptors to the U.S. Army and FMS customers as of October 23, 2023 and MDA continues to deliver and sustain THAAD interceptors in support of fielded U.S. batteries and FMS customers. Eight THAAD Batteries have been procured and seven are currently fielded to the U.S. Army to support the ballistic missile defense of the United States, its deployed forces, allies, and friends. The eighth THAAD Battery is currently in production and hardware availability will be in third quarter FY 2025.

MDA currently supports forward-deployment of two THAAD batteries stationed in the U.S. Indo-Pacific Command (INDOPACOM) area of responsibility under 94th Army Air and Missile Defense Command (AAMDC). One THAAD battery is forward deployed in U.S. Forces Korea (USFK) and one is forward deployed in Guam. As of November 17, 2023, both batteries are on THAAD System Build 4.0, which supports tighter integration between upper and lower tier missile defense systems in INDOPACOM. THAAD/MSE Integration was demonstrated during Flight Test THAAD Weapon System-21 (FTT-21) in March 2022. All remaining U.S. THAAD batteries are on THAAD System Build 3.0 and are scheduled to be upgraded to THAAD 4.0 beginning in FY2024.

### **Improving Theater Missile Defenses**

In line with the Department's *2022 Missile Defense Review*, MDA continues to strengthen defenses against all regional missile threats from any source, to include the development of active defenses against regional hypersonic missile threats, and pursue a resilient sensor network to characterize and track all hypersonic threats, improve attribution, and enable engagement. MDA also works closely with select Allies and partners to improve missile defense capability, integration, and interoperability. We are pursuing opportunities for joint research and development on hypersonic defense programs with key Allies and partners.

Current plans for improving Aegis BMD and THAAD system performance to meet increasingly sophisticated emerging threats involve the growth in the number of interceptors and system batteries and platforms to increase missile defense quantities and to improve the quality of missile defense through greater integration of deployed capabilities and development of systems. The missile proliferation challenge is expected to worsen and lead to diverse and unanticipated missile threats to the United States and our forces, allies, and partners.

MDA is continuing our cooperative missile defense relationship with Israel, jointly developing and delivering systems to strengthen their missile defenses and to increase interoperability between U.S. and Israeli forces. Our two nations continue to cooperate on engineering, development, co-production, testing, and fielding of the Arrow Weapon System, the David's Sling Weapon System, and co-production for the Iron Dome Defense System. I would like to highlight that since October 7, 2023, during Operation Swords of Iron, each of these multi-tiered defense elements have successfully intercepted multiple air and ballistic missile attacks against Israel and deployed US personnel. MDA will continue to work with Israel to enhance defense capabilities.

### **Growing Theater Missile Defense Inventory and Integration**

In the President's Budget 2024, MDA will continue to meet the quickly advancing threat through improvements to the Aegis BMD capability, including procuring and

delivering SM-3 Blk IB and Blk IIA missiles, improving SBT defense, advancing weapon system and missile reliability, and enhancing Aegis BMD engagement capacity and lethality. Deliveries of FMS SM-3 Blk IB and Blk IIA missiles are ongoing. The Navy Munitions Requirements Process (NMRP) aggregates the demand from each Combatant Command and informs MDA of the demand for SM-3 Blk IA, IB and IIA interceptors. By the end of FY 2025, we will increase capacity to 56 ships plus two Aegis Ashore sites (Romania and Poland), and by FY 2030 we will increase capacity to 69 ships.

MDA is working closely with the Navy to develop, field, and upgrade SBT defenses to counter more advanced maneuvering and hypersonic threats. SBT Inc 2 is deployed. MDA is analyzing the evasion maneuvers that hypersonic weapons may perform and addressing them in Aegis SBT Inc 3. SBT Inc 3 upgrade and delivery are in 2025 and include terminal defense capability against hypersonic threats. MDA will conduct flight tests against advanced threat-representative targets in FY 2024 and FY 2025.

MDA will continue to produce THAAD interceptors to address the proliferating missile threat. Urgent Materiel Release for THAAD System Build 4.0 Global was granted by the US Army on September 27, 2023. One of the forward deployed INDO-PACOM batteries was upgraded to 4.0 Global in November 2023, and the remaining batteries will begin upgrades in 2024. Redesigned components are scheduled to enter into Interceptor production units in FY 2026. These hardware redesigns ensure production of THAAD Interceptors can continue uninterrupted and will also facilitate potential increases to THAAD Interceptor capability in future development increments.

THAAD/PATRIOT Missile Segment Enhancement (MSE) Integration capability TH 4.0 was fielded in October 2022 to U.S. Indo-Pacific Command Area of Responsibility. THAAD Weapon System integrates the Army's PATRIOT M903 MSE launchers and missiles into the system enabling a more tightly integrated upper/lower tier defensive capability. THAAD/MSE Integration enables increased Shoot-Assess-Shoot opportunities to conserve interceptors, improved self-defense without a dedicated PATRIOT battalion, additional engagement opportunities, and enhanced performance against ballistic missile threats.

### **New Theater Missile Defense Developments**

The *2022 Missile Defense Review* encourages the development of new technologies and systems to hedge against continuing adversary missile developments and emerging capabilities. Future sensors must transition seamlessly between theater-level threats, to homeland defense, to global threats by sharing and transmitting data with command and control, and they must be Joint and all-domain integrated and have

survivable command and control networks that allow for improvements to battle management.

The *2022 National Defense Strategy and Missile Defense Review* reference a layered defensive system to defend Guam. MDA will continue to support the Army to meet the INDOPACOM requirement to deliver a persistent 360-degree Integrated Air and Missile Defense (IAMD) layered capability to defend the people, infrastructure, and territory of Guam from the scope and scale of advanced ballistic, hypersonic, and cruise missile threats. The Guam Defense System integrates existing DoD systems and programs in development distributed across the island under a single command and control facility and organization. MDA's contribution includes the Aegis Guam System with AN/TPY-6 radar, SM-3, SM-6, THAAD Weapon System, and C2BMC.

Currently, the Ballistic Missile Defense System (BMDS) Overhead Persistent Infrared (OPIR) Architecture (BOA) integrates OPIR data from national overhead sensors to support Missile Defense System mission needs. BOA uses this data to detect, type, and track missile threats and then forwards track reports to C2BMC. C2BMC correlates BOA tracks with other sensor tracks and uses BOA data to cue downrange sensors.

MDA initiated the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) program in 2018 to address the requirement to have capability to detect and track hypersonic threats and ballistic missiles much sooner than terrestrial radars. MDA is collaborating with the U.S. Space Force's Space Development Agency (SDA) and Space Systems Command (SSC) to deliver integrated capabilities that meet Warfighter requirements for missile warning, tracking, and defense and to develop HBTSS as an OPIR sensor uniquely providing fire-control-quality data that will enable the engagement and defeat of advanced missile threats. HBTSS will track maneuvering threats that can otherwise evade terrestrial radars. Early next year, HBTSS will launch and begin demonstration of unique tracking and targeting capabilities needed to defend against hypersonic glide vehicles, followed by two years of on-orbit testing. Operationally, the HBTSS, a prototype demonstrator, will have a fire-control capability that will be part of SDA's Medium-Field-of-View sensors within the Proliferated Warfighter Space Architecture and provide hypersonic threat-tracking data for hand-off through linked missile defense weapons. Following the successful demonstration of HBTSS capabilities, the responsibility for HBTSS operational fielding will be transferred to Space Force and MDA will continue the development of the next generation of space-based fire-control sensors for missile defense.

Additionally, MDA is working closely with the Navy to develop, field, and upgrade SBT defenses to counter more advanced maneuvering and hypersonic threats. We

anticipate delivering these SBT Inc 3 capabilities in 2025. We are also engaged in a competitive development effort to significantly enhance hypersonic missile defense capabilities. MDA is developing a layered defense capability against regional hypersonic threats and have initiated a development program for Glide Phase Intercept (GPI) to defend the sea-base and regional forces ashore, leveraging existing systems where possible, including proven engage-on-remote and launch-on-remote capabilities. Layered defenses provide more opportunities to engage and potentially neutralize hypersonic threats in-flight. We are focusing on the proven Aegis Weapon System to provide the depth-of-fire needed for a layered defense against hypersonic threats. Today, MDA is funding technology maturation of two GPI concepts on the path to preliminary design.

The Aegis Sea-Based GPI, planned for delivery in 2034, includes the ability to plan, detect, track, and defeat threats, and support integrated layered multiple engagement opportunities. GPI is developing a missile and updates to the existing Aegis Weapon System to counter hypersonic threats. The GPI interceptor will be hypersonic, multistage, and compatible with the Navy's MK-41 Vertical Launch System. MDA also is pursuing a Cooperative Development of the GPI Interceptor with the Japan Ministry of Defense. This project will focus on interceptor updates, and the United States will be responsible for the overall missile system design and integration. Japan will fund and develop all Japan workshare elements (to include rocket motor assemblies and control systems)

THAAD System Build 5.0 is in development and is the largest hardware refresh to-date, with planned delivery in July 2026. TH 5.0 includes hardware upgrades that address obsolescence and enhances the mission assurance and cybersecurity posture of the weapon system. TH 5.0 incorporates system safety enhancements and engagement refinements resulting in improved performance against the current THAAD assessed threat set. A capability demonstration is planned for FTT-26 in 3QFY2027. THAAD System Build 6.0 is planned to deliver in fourth quarter of calendar year 2027 and will provide the initial capability against non-ballistic threats and increase the threat engagement space. TH.6.0 will also improve THAAD Integration with the Army's Integrated Air and Missile Defense Battle Command System (IBCS) via Link-16 and continue to improve the cybersecurity risk posture and program protection. THAAD System Build 7.0 is planned to deliver in fourth quarter calendar year 2032 and allocates additional requirements to THAAD to increase threat space and engage representative threats. MDA is currently reviewing specific capabilities included in this future system build.

Chairman Lamborn, Ranking Member Moulton, Members of the Subcommittee, we are committed to addressing the theater missile threats of today and tomorrow by

working with Warfighter to prioritize missile defense capabilities that allow us to protect our forces and our international partners and win regional engagements. I appreciate your continued support for MDA and the missile defense mission, and I look forward to answering the committee's questions. Thank you.