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Chairman King, Vice Chairman Fischer, and distinguished Members of the subcommittee, I am honored to appear before you today to discuss the Missile Defense Agency (MDA) budget request of $10.4 billion for Fiscal Year (FY) 2025. Our request will enable the continued execution of the MDA mission to develop, deploy, and support a layered Missile Defense System to defend the United States and its deployed forces, allies, and international partners from increasingly diverse and dangerous missile threats.

As we witnessed on April 13, 2024, when Iranian forces in Yemen launched over 100 ballistic missiles in addition to cruise missiles and unmanned aerial vehicles against Israel, our potential adversaries place a high priority on developing capabilities to defeat U.S. and allied missile defenses. They are well resourced and are testing and fielding advanced ballistic, hypersonic, and cruise missiles that are increasingly accurate, survivable, and capable of achieving longer ranges and higher levels of maneuverability. Today, many of the newest systems, including hypersonic and anti-ship ballistic missiles, are undergoing unprecedented combat evaluation in Ukraine and the Middle East. This could potentially lead to innovations that challenge missile defenses and lead to broader proliferation as the battlefield effectiveness of these systems is demonstrated. The attack last month against Israel and the ongoing war in Ukraine also highlight the importance of being prepared to defend against large raid

sizes involving diverse missile threats. We must prepare ourselves to defend against a level of capability and capacity we have never seen before.

Ensuring our Combatant Commanders and Services have what they need to fight today and win tomorrow is my top priority. Continuous and frank collaboration with the Warfighter is essential to delivering adaptable, affordable capabilities as fast as possible to defeat an increasingly diverse and unprecedented missile threat set. As part of the Department's missile defense enterprise, MDA is committed to collaborating closely with the Warfighter throughout the lifecycle of a capability. There are proven processes in place to identify, prioritize, assess, and validate Warfighter requirements and requests for modifications and upgrades to systems already fielded. MDA works with the Warfighter early in the technology development and product development phases to address a requested capability. We also support Lead Military Department efforts to plan for Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy factors. Once a capability is fielded, close collaboration with the Services and Combatant Commands is essential to sustaining and enhancing that capability throughout its service life. Finally, MDA provides real-time technical support to the Warfighter, as demonstrated during recent real world operations.

Urgency of Hypersonic Missile Defense

Initially just focused on ballistic missile defense, MDA today is developing weapons systems and sensors to defeat the serious threat posed by hypersonic glide vehicles and maneuvering threats. MDA continues to develop a layered defense capability to defeat regional hypersonic threats with the Glide Phase Intercept (GPI) development program. By the end of FY 2024, MDA will select a single GPI interceptor

design with which to complete development. In FY 2025, MDA will continue to develop and mature the GPI capability with a focus on critical technology maturation and risk reduction activities. We will also continue to update the Aegis Weapon System to integrate the GPI interceptor. Our FY 2025 budget request supports the planned cooperative development of the glide phase interceptor with Japan. We expect to complete the formal agreement on that project this spring. Japan will fund and develop key missile components, primarily propulsion elements.

The GPI weapon system design will provide a layered defense with currently deployed Sea-Based Terminal (SBT) capabilities. SBT provides terminal defense of assets at sea and forces ashore. We anticipate delivering SBT Increment 3 capabilities in FY 2025 to provide expanded capability. SBT will demonstrate a simulated engagement against an operationally realistic hypersonic glide vehicle target in FY 2025, and an engagement using a Standard Missile (SM)-6 against a hypersonic glide target in FY 2026.

The Missile Defense System will increasingly leverage the space domain with our Service partners to gain a strategic edge against advanced missile threats. MDA already has demonstrated the ability to generate a fire control solution to track and engage ballistic missile targets using the Space Tracking and Surveillance System demonstration satellites, which are now decommissioned. Today, MDA is on-orbit with the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) and preparing to demonstrate fire control solutions generated from satellites against missile threats that glide and maneuver at hypersonic velocities through the atmosphere. MDA is collaborating with the U.S. Space Force Space Development Agency to demonstrate a

fire-control capability to track and defeat advanced missile threats. HBTSS's Launch and Early Orbit Testing period, which began on February 14, 2024, will be followed by testing to characterize and validate performance of the two HBTSS prototype satellites by leveraging MDA and cooperative flight test events. Following a successful demonstration of HBTSS, the responsibility for fielding HBTSS fire-control capabilities will be transferred to the Space Force. When fully operational, the fire-control capability developed through MDA's HBTSS program will be part of the Space Force Proliferated Warfighter Space Architecture and provide a capability to detect hypersonic, ballistic, and other advanced threats earlier than terrestrial radars and send tracking data to the Missile Defense System for handover to missile defense weapons for engagement.

MDA upgraded the Ballistic Missile Defense System Overhead Persistent Infrared (OPIR) Architecture (BOA) three years earlier than planned to provide expanded hypersonic tracking capability. Ongoing BOA 8.1 development updates the system architecture to integrate increased raid-handling capability in Increment 8/9. These system architecture updates enable initial integration of Space Development Agency Low Earth Orbit and Space Force Space Systems Command Medium Earth Orbit sensors into BOA for improved tracking and fire control. FY 2025 funding will continue to develop and test Increment 6C/7 to deliver expanded support that leverages systems and sensors to track maneuvering, hypersonic non-ballistic missiles as well as report maneuvering tracks and impact area predictions to external systems. Increment 6C/7 will also update Command and Control, Battle Management and Communications (C2BMC) to prioritize supporting sensors for defense against hypersonic glide threats.

Homeland Defense

The Ground-based Midcourse Defense (GMD) system has protected the U.S. homeland from rogue long-range ballistic missile attacks for almost 20 years. Today, we are improving the reliability of the in-service fleet and developing new capabilities to address the limited but increasingly advanced North Korean long-range ballistic missiles. We continue the U.S. Northern Command's Ground Based Interceptor (GBI) Service Life Extension Program to improve reliability and availability, which we anticipate will extend portions of the existing fleet. These interceptors will help mitigate risk until the Next Generation Interceptor (NGI) is fielded no later than the end of 2028. In parallel, MDA continues to upgrade the ground system infrastructure, communications network, fire control system, Warfighter training systems, and missile fields to improve the reliability, capability, cybersecurity, and resiliency of the GMD weapon system.

In December 2023, we successfully executed a GMD intercept flight test, demonstrating the weapon system's capability to intercept an Intermediate Range Ballistic Missile target using the 2-/3-stage selectable GBI in 2-Stage mode equipped with a Capability Enhanced-II Block 1 Exo-atmospheric Kill Vehicle. This was the first intercept flight test of a 3-stage GBI operating in 2-stage mode, meaning the third stage was commanded not to ignite. The earlier release of the kill vehicle provides increased battlespace to the Warfighter to execute closer range engagements. With a successful Operational Capability Baseline decision for Increment 6.B in late FY 2024, the software enabling the selectable 2-/3-stage will be deployed for the GBI fleet.

We are developing the Next Generation Interceptor to improve the GMD system's ability to defend against future threats. The Next Generation Interceptor program is currently in its Technology Development Phase and will transition to its Product Development Phase in May 2024. Recently, each one of the two competing Prime Contractor teams successfully completed their Preliminary Design Reviews and Knowledge Points #1. MDA applied lessons learned from other large-scale defense programs that faced increasing costs due to extended design phases involving multiple competitive solution teams which adversely impacted schedule. Due to accelerated contractor execution schedules, MDA had an appreciably larger body of technical knowledge and data available to assess contractor performance ahead of a traditional systems development at this point in the design maturation process. Consistent with the down select contract clause, MDA completed a best value determination using contractor provided objective evidence from their Preliminary Design Reviews and Knowledge Points #1. Last month, MDA selected Lockheed Martin to continue development, testing, production, and fielding of Nation's Next Generation Interceptor.

To support defense of the homeland, MDA is developing, deploying, and sustaining a robust, cyber-secure and networked ground- and sea-based radar architecture that includes the Long Range Discrimination Radar (LRDR) located at Clear Space Force Station, Alaska. LRDR enhances tracking and discrimination, hit assessment, and space-intelligence data collection. The LRDR successfully tracked and discriminated a medium-range ballistic missile (MRBM) target in September 2023. When the radar is added to MDA's Operational Capability Baseline (OCB) in December 2024, LRDR will support the GMD capability against long-range missile threats. The

LRDR completed a Space Domain Awareness (SDA) data collect event in January 2024 and, subsequently, MDA confirmed LRDR and C2BMC are ready and available to provide Space Domain Awareness (SDA) mission capabilities to U.S. Space Command in March. The U.S. Space Force declaration of LRDR ready for early SDA use is imminent. In FY 2025, LRDR will continue support of SDA and will be added to the OCB for the missile defense mission.

The Sea-Based X-Band (SBX) radar provides a relocatable, precision midcourse tracking and discrimination capability supporting homeland defense operations, Missile Defense System testing, data collection, and SDA. SBX completed a rigorous in-port maintenance and capability upgrade period in March 2023 and is currently deployed at-sea conducting homeland defense operations. Fabrication of the SBX replacement radome continues on schedule for installation in January 2026.

Upgraded Early Warning Radars (UEWRs) and the COBRA DANE radar support homeland missile defense and improve midcourse Missile Defense System sensor coverage by providing critical early warning, tracking, object classification, and cueing data. They also provide critical missile warning data and space object detection and tracking data for the Space Surveillance Network. While the Space Force is the overall UEWR and COBRA DANE sustainment organization, MDA provides sustainment support for the radars located in California, Massachusetts, Alaska, United Kingdom, and Greenland.

There are five AN/TPY-2 forward-based radar sites currently deployed worldwide that augment our capabilities to execute the homeland defense mission. Operating at

forward locations in key regions, these radars extend detection and early warning capabilities and enhance our ability to track and discriminate inbound targets earlier.

The Space-based Kill Assessment (SKA) experiment of infrared sensors continues to demonstrate hit assessment capabilities for homeland defense. SKA sensors will continue to provide situational awareness of intercepts to U.S. Northern Command and participate in flight tests and engineering activities to characterize sensor capabilities that provide data to support future Post Intercept Assessment capabilities.

Meeting the current and future ballistic missile threat for homeland and regional defense requires global persistence and increased precision and accuracy. The Discriminating Space Sensor (DSS) program, designed to perform birth-to-death tracking and global coverage for discrimination against ballistic missile threat targets, is moving into the next phase of development after successfully completing its ground concept feasibility phase. The next phase, space demonstration, will develop the on-orbit demonstrator and follow a similar path as HBTSS capabilities leading to incorporation into the operational Proliferated Warfighter Space Architecture.

C2BMC Spiral 8.2-5 will enable homeland defense capabilities by providing critical LRDR data to GMD. C2BMC conducts command and control functions for LRDR and executes tasking in direct support of GMD engagements. C2BMC Spiral 8.2-5 delivers the initial ability to receive messages from space command and control to generate acquisition tasking for Aegis Ballistic Missile Defense (BMD) and LRDR. C2BMC S8.2-5 also enables the capability to task Aegis BMD and LRDR to detect, track and report on resident space objects.

Regional Defense

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 a wide variety of short-, medium-, and intermediate-range missile threats. In FY 2025, MDA is designing improvements to the Aegis BMD capability, improving SBT defense, advancing weapon system and missile reliability, and enhancing Aegis BMD engagement capacity and lethality. As the Members of this subcommittee are aware, the Aegis Weapon System, the Standard Missile (SM)-3 Block IB, and the system operators onboard the USS Arleigh Burke and the USS Carney were highly effective in countering the ballistic missiles fired against Israel last month. We will continue to develop Aegis BMD weapon system software to enhance functionality and leverage more-capable radars and National Technical Means.

MDA continues to support defense of NATO's European territory and forces against the ballistic missile threat from outside the Euro-Atlantic region. Aegis Ashore in Romania is operational, and the Chief of Naval Operations accepted Aegis Ashore Poland in December 2023, marking completion of a key MDA contribution to Phase 3 of the European Phased Adaptive Approach. The Poland site is undergoing a maintenance period to upgrade the computer networks and communications systems, which is funded and operated by the U.S. Navy. This will be followed by U.S. European Command acceptance of the site. Then there will be a transfer of authority from U.S. European Command to NATO. Both Aegis Ashore sites are designed to launch the SM-3 Block IBTU and Block IIA missiles.

In the FY 2025 budget, MDA continues to procure the SM-3 Block IIA missile. Previous and planned procurements are on pace to meet current Navy Inventory

Objective requirements for Block IIA in FY 2032 as defined by the outcome of the Navy Munitions Requirement process. The FY 2025 Budget proposes to discontinue further production of the SM-3 Block IB missile in favor of SM-3 BLK IIA and continue to evolve the BLK IIA missile within the Aegis Weapons System. MDA will continue to deliver prior year procurements of Block IB and sustain the existing inventory. The final Block IB delivery is currently expected in FY 2028. The SM-3 Block IB has a twelve-year service life and the oldest Block IBs in the fleet will begin to reach the end of service life in FY 2026. The combination of demilitarization and termination of new procurements will result in SM-3 Block IB inventory peaking in FY 2027. The inventory of all variants of SM-3 missiles is managed through the Navy's Global Force Management process to address the capacity requirements for Defense of Guam, European Phased Adaptive Approach, and other Combatant Commander requirements. We will continue to develop Aegis BMD weapon system software to enhance functionality and leverage more-capable radars and National Technical Means.

MDA provides software upgrades to Aegis integrated missile defense destroyers equipped with the AN/SPY-1 radar to support the Space Force Space Domain Awareness mission. The Aegis SDA capability is fully compatible with deployed Navy operations and has appropriate safeguards supporting full Aegis missile defense warfighting capability. We transitioned this important capability to the Navy and supported successful demonstrations on USS Rafael Peralta (DDG 115) in June 2023 and USS Mason (DDG 87) in October 2023. In FY 2025, we will continue to test and deliver this upgrade and support the Navy in future SDA demonstrations.

The Terminal High Altitude Area Defense (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. MDA currently supports forward-deployment of two batteries stationed in the U.S. Indo-Pacific Command (INDOPACOM) area of responsibility and an emergency deployment in the U.S. Central Command (CENTCOM) area of responsibility. In FY 2025, we will continue U.S. THAAD interceptor procurement, production of battery hardware, obsolescence mitigation efforts, fielding and training support, the THAAD Stockpile Reliability Program, and modifications to meet growing cybersecurity threats. THAAD will continue to demonstrate capability improvements with rigorous testing throughout the Future Years Defense Program.

THAAD, in conjunction with the U.S. Army, is in the process of fielding the THAAD 4.0 capability to all THAAD batteries. The upgrade was completed at the battery located in Guam in November 2023, and we are in the process of upgrading remaining batteries to be completed by the end of 2025. TH 4.0 capability enables remote launch, Patriot Launch-on-Remote, and integration of Army Patriot Missile Segment Enhancement (MSE) launchers and missiles into the THAAD battery. This capability increases Patriot defended area and engagement opportunities by allowing the MSE interceptor to leverage the highly effective THAAD AN/TPY-2 radar.

THAAD System Build 5.0 is in development and is the largest hardware refresh to-date with operational availability 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.

THAAD System Build 6.0 operational availability has been expedited to 2027 from 2032 and will provide initial capability against maneuvering threats and increase the threat engagement space. TH 6.0 includes capability enhancements to the THAAD interceptor, increased integration with Patriot MSE, and improvements to the cybersecurity risk posture and program protection. Additionally, THAAD will begin initial systems engineering in FY 2025 to support the Army's Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS) integration of THAAD.

AN/TPY-2 radars deployed abroad support THAAD batteries for regional defense. Radar 13, planned for delivery in the second quarter of FY 2025, will be part of THAAD Battery 8. Radar 13 includes significant obsolescence redesigns that are leveraged from ongoing Foreign Military Sales (FMS) cases. As a supplement to each of these weapon systems in regional defense roles, the AN/TPY-2 forward-based radars mentioned earlier extend the capabilities of each by expanding their detection range and enhancing their ability track and discriminate enemy launches. These radars greatly enhance our ability to protect our allies and deployed soldiers in a regional defense mission.

The C2BMC system includes the operation of a global network enterprise with equipment and personnel in 25 locations across 14 time zones. Funding in FY 2025 continues to provide situational awareness, battle management, training, and SDA capabilities to users within each Combatant Command as well as the global missile

defense network. Over the past year the C2BMC system provided INDOPACOM with the ability to acquire and exchange missile track data with multiple partner nations' command and control systems to demonstrate strength in partnering with allies for collective regional missile defense. Funding in FY 2025 continues this effort and includes support for Warfighter contingency activities such as those in support of Israel. MDA's C2BMC system is providing sensor data to cue Aegis ships in the region from continued attacks on shipping and other partner interests in the region.

The Department is continuing development of a missile defense system for the defense of Guam against diverse missile threats. We will expand capability and capacity as the threat evolves. In collaboration with the Army and Navy, we are moving towards meeting an INDOPACOM requirement for a persistent 360-degree layered missile defense capability on Guam against simultaneous raids of cruise, ballistic, maneuvering, and hypersonic glide threats. The MDA MILCON designs will complete this calendar year and the Environmental Impact Study will complete in Calendar year 2025. MDA construction will begin in FY 2025, establishing the joint command center, an AN/TPY-6 radar site, and a Navy Standard Missile Vertical Launch System (VLS) site. We will execute a flight experiment intercept in first quarter FY 2025 demonstrating the increased Guam protection capabilities the Department is developing for the western most territories of the homeland, while the integrated Aegis Guam System continues final design and testing.

Leveraging Science and Technology Innovation

MDA is investing in disruptive technologies to deliver dynamic, next generation missile defense capabilities. MDA has an integrated, strategic Science and Technology

(S&T) approach that prioritizes identifying and maturing transformational, leap-ahead technologies to address the future threat. Additionally, we continue to rapidly develop near-term technologies to support incremental Missile Defense System upgrades. MDA is collaborating with OSD, the Services and Warfighters, National Laboratories, Universities/Academia, International partners, and Industry (traditional and non-traditional defense partners) to leverage technology development. We are aligning our S&T roadmap to maximize cutting-edge technology to close capability gaps and meet Warfighter requirements.

Kinetic capabilities by themselves will not be adequate to keep pace with threats, which continue to increase in complexity, range, and quantity. Accordingly, MDA plans to enhance current kinetic kill capabilities with directed energy and other non-kinetic solutions. MDA is working with OSD and the Services to develop the technologies to support the development and integration of directed energy systems. In 2024, a directed energy Independent Assessment Team (IAT) completed an evaluation to incorporate directed energy into the Missile Defense System. Based upon recent Office of the Under Secretary of Defense for Research & Engineering-funded increases in electric laser power levels and projected increases to 500 kilowatt-class in two years, the IAT recommended that MDA fund a laser technology demonstrator. The Agency will initiate this effort with our Service partners beginning with long-range detect and track while technology continues to mature for the missile defense mission. We are also developing advanced sensors to improve position accuracy and range estimates of missile threats.

The NanoSat Testbed Initiative (NTI) is a collaborative, experimental approach leveraging commercial satellite platforms to mature technology and perform risk reduction for encrypted communications in a meshed network in space to support Service and Agency initiatives. Space Edge Experiments and Demonstration (SEED) is a small form factor, Commercial-Off-The-Shelf (COTS) processor that leverages artificial intelligence and machine learning (AI/ML). SEED will fly on the Space Test Program (STP)-H10 mission to the International Space Station. The Laser Communications Experiment (LaCE) will demonstrate the viability of a low-SWaP (increasing the power while reducing the size and weight) optical inter-satellite-link between two nodes in LEO as a method for secure and assured space-to-space communications.

MDA continues with Asymmetric Left Through Right-of-launch Integration (LTRI) activities to further enhance offensive-defensive integration and improve overall full spectrum missile defeat capabilities. Asymmetric LTRI optimizes the efficiency and effectiveness of situational awareness between intelligence activities, offensive attack operations, and right-of-launch defenses. MDA has developed a medium fidelity model to simulate LTRI and is beginning to apply AI/ML to LTRI. MDA is collaborating with other government asymmetric multi-domain missile defeat efforts against ever advancing threats to optimize missile launch operations and provide data to inform decision-making in time critical situations.

MDA is partnering and cost sharing with the Department of Defense and Services to leverage sounding rockets and experimental hypersonic platforms to develop and mature key technologies for advancing hypersonic defense. These

activities are the Multi-service Advanced Capability Hypersonic Test Bed (MACH-TB), High Operational Tempo for Hypersonics (H4H), and Hypersonic Test Bed efforts, and include maturation of key technologies such as axial upper stage throttling, secured meshed communications, survivable and optically optimal seeker windows, advanced materials characterization, hypersonic wind tunnel testing, and low cost, high yield thermal protection systems capable of surviving the harsh hypersonic environment.

MDA is actively engaging with Allies and international partners to leverage opportunities for collaborative development of missile defense S&T to advance capabilities in the areas of hypersonic weapons, integrated air and missile defenses, advanced sensing, battle management command, control and communications, directed energy, and AI/ML.

International Programs

Close collaboration with our Allies and partners is critical for addressing today's security challenges. MDA's international cooperation supports guidance outlined in the Missile Defense Review, Combatant Command priorities, and partner requirements. MDA actively and closely engages with multiple partners across the globe to build capability and interoperability against missile threats.

In the INDOPACOM region, MDA's most robust and wide-ranging cooperation is with Japan. In addition to the collaboration on glide phase interceptor development, Japan continues to acquire SM-3 Block IB and Block IIA interceptors via FMS. MDA is also executing an FMS case to provide the weapon system components and associated software for two Japanese-built Aegis System Equipped Vessels. MDA is working with Australia to support its development of a Joint Air Battle Management System that will

integrate Australia's air and missile defenses and enable interoperability with U.S. and other allied Integrated Air and Missile Defense capabilities. Finally, MDA conducts cooperative research and development projects and studies with Japan, Republic of Korea, and Australia.

In Europe, MDA is assisting the United Kingdom to develop requirements for its potential purchase of a persistent discrimination radar that will complement NATO missile defenses. MDA also has a number of ongoing cooperative research and development projects and studies with the Netherlands, Norway, Denmark, and the UK. Finally, MDA continues working closely with NATO by providing subject-matter expertise to the NATO Communication and Information Agency for the continuous testing and interoperability of BMD systems.

In the Middle East, MDA has a strong, long-standing relationship with the Israel Missile Defense Organization. Through this cooperation MDA provides $500 million per year, and additionally any supplemental funding approved by Congress, for programs including Arrow, David’s Sling, and Iron Dome – all of these systems have proven their value in Operation Swords of Iron. MDA has worked closely with our Israeli partners throughout this conflict to identify and assess areas where increased U.S. support would be beneficial. MDA's THAAD program is also a major asset for cooperation within U.S. Central Command's Area of Responsibility. Finally, MDA is leading a project to develop a regional missile early warning architecture for the Gulf Cooperation Council.

Conclusion

Chairman King, Vice Chairman Fischer, Members of the Subcommittee, we are committed to attracting and building a strong, skilled workforce that will continue to focus on providing what the Warfighter needs to win today and tomorrow. I would like to recognize and thank the men and women who serve in our Armed Forces at home and abroad and who operate the Missile Defense System with the support of our dedicated civilian and contractor workforce. I appreciate your continued support for MDA and the missile defense mission, and I look forward to answering the committee's questions. Thank you.