RECORD VERSION

STATEMENT BY
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Introduction

Chairman King, Ranking Member Fischer, and distinguished Members of the Subcommittee, thank you for your continued support of our Service Members, Civilians, and Families and your continued support of the Army, the U.S. Strategic Command, the U.S. Space Command, the Department of Defense, and the space and missile defense community. Thank you also for the opportunity to testify before this Subcommittee. I am honored to highlight the important space and missile defense capabilities and ongoing enhancements that enable the defense of our Nation, forward stationed and deployed forces, allies, and partners.

Today, with my assigned roles, I bring both an Army and a joint perspective on effective space and missile defense capabilities. Within the Army and joint communities, my responsibilities encompass several mission areas.

As the commander of the U.S. Army Space and Missile Defense Command (USASMDC), I have Title 10 responsibilities to organize, train, and equip Army space and missile defense forces. I serve as the Army's force modernization proponent for space, missile defense, and high altitude forces and capabilities. Further, with regard to missile defense, I am the Army Service component commander to U.S. Strategic Command (USSTRATCOM). In this role, I am responsible for planning, integrating, coordinating, and providing Army missile defense forces and capabilities in support of USSTRATCOM missions. In the space mission area, I support the U.S. Space Command (USSPACECOM) by providing trained and ready Army space warfighters and capabilities to compete, fight, and win in the space domain.

I also serve as the Army's air and missile defense (AMD) enterprise integrator. In this role, I synchronize the balanced execution of the Army's AMD posture across the functions of force planning and sourcing requirements, combat and materiel development, AMD acquisition, and lifecycle management. I coordinate with the AMD community of interest to balance priorities, inform resourcing decisions, and pursue innovative approaches in order to fulfill our AMD mission requirements.

Finally, as the commander of USSTRATCOM's Joint Functional Component Command for Integrated Missile Defense (JFCC IMD), I am responsible for providing essential global missile defense expertise in support of USSTRATCOM's Unified

Command Plan (UCP) directed missions. This entails coordinating global missile defense planning, conducting missile defense operations support, recommending allocation of missile defense assets, and advocating for missile defense capabilities on behalf of the combatant commanders. These efforts deter adversaries, assure allies, and defend U.S. deployed forces, allies, and partners against missile attacks.

Both commands are uniquely organized to conduct joint, global operations for space and missile defense and comprise multi-component Soldiers, Airmen, Sailors, Marines, Guardians, and dedicated Civilians and Contractors geographically postured to support diverse missions. Our vision is a People First team of professionals providing space, missile defense, and high altitude forces and capabilities to support joint warfighting readiness in all domains. To accomplish this vision, USASMDC is organizationally aligned to accomplish three major tasks, which can be summarized as: providing forces and capabilities for current operations; preparing forces and capabilities for the future fight; and research and development of Army technologies that will provide future advancements in space, air, and missile defense capabilities. The command aligns its activities to these priorities:

- Accomplish our mission as a People First team of empowered, innovative, ready, and resilient professionals.
- Provide trained and ready forces for space, missile defense, and high altitude missions.
- Conduct integrated planning and synchronized operations in the execution of our space and missile defense missions.
- Prepare for future conflict.

My intent today is to highlight the dedicated diverse people who serve in the geographically dispersed organizations under my command, to briefly outline the strategic environment, and to emphasize the responsibilities USASMDC bears as a space and missile defense and space force provider to combatant commanders (CCDRs). I would also like to summarize key Army AMD developments in the context of a comprehensive approach to addressing the evolving air and missile threat. Finally, I will outline JFCC IMD's role as a warfighter advocate supporting USSTRATCOM's coordinating authority for global missile defense planning.

People First

USASMDC and JFCC IMD cannot carry out our wide-ranging, no-fail, national security missions without the dedication of our greatest asset—our people. We place "People First" as we recruit, train, and develop Army space and missile defense professionals. The continued support of Congress is critical to our ability to develop and retain a highly qualified and mission-ready team. Despite the many challenges created by the ongoing coronavirus pandemic throughout the past year, our professionals remained focused on providing space and missile defense capabilities that enable multi-domain operations so combatant commanders can effectively maneuver and win. Countless examples before, and especially during, the pandemic, illustrate how our strength lies in our agile, adaptive space and missile defense team of almost 3,000 highly trained and skilled Soldiers, Sailors, Airmen, Marines, Guardians, and Civilians who stand vigilant 24/7/365 around the world, protecting the joint warfighter and defending the homeland. During the pandemic, we integrated all possible safety measures to protect personnel, preserve the command's deployable element capability, and ensured continued readiness through training and certifications. Our innovative and empowered personnel have adapted magnificently and remain the heart of both commands. Recently released results from the 2020 Federal Employee Viewpoint Survey indicates an increasing sense of workplace pride and satisfaction within our team. It is our people who make us strong; it is our people who make winning possible.

> Spanning Across 11 Time Zones, Nearly 3,000 Soldiers, Sailors, Airmen, Marines, and Civilians in 23 Worldwide Locations.

Threat Capability Proliferation and Development

The U.S. faces challenges from adversaries who are developing capabilities to challenge, limit, or exceed our military advantage. These challenges include more lethal ballistic and cruise missiles. We must contend with a growing prevalence of enhanced air and missile threats due both to the proliferation of advanced technologies and indigenous production of these technologies. The result of this trend is an increased array of ballistic and cruise missile systems that threaten U.S., allies, and

partner missile defense capabilities as well as an ever-increasing propensity for adversaries to use these weapons against U.S. and partner forces. Our potential adversaries continue to seek and develop missile systems with advanced countermeasures, including maneuverable and multiple independent reentry vehicles and electromagnetic jamming. These characteristics, coupled with an increase in mobility, accuracy, and lethality, are intended to challenge and defeat our missile defense capabilities. Hypersonic glide vehicles delivered via ballistic missile boosters, as well as hypersonic cruise missiles under development, continue to advance as emerging threats that pose significant challenges to our systems. With the proliferation of missile technology around the world, indigenous development of ballistic and cruise missile systems is becoming increasingly affordable. Approximately 30 countries possess ballistic missile expertise with many willing to share with other countries. Threats to the homeland and other theaters will only increase.

China's missile development program continues to be the most diverse and robust in the world. Within the last two years, China has launched over 100 ballistic and cruise missiles, more than the rest of the world combined, to test and evaluate weapon system performance and effectiveness. In an effort to counter perceived threats to its national sovereignty, and reassert its perceived historical dominance throughout the Pacific and East Asia region, China continues bolstering its ballistic and long-range land attack and anti-ship missile capabilities, its command and control, and its rhetoric. Continued development enhancements provides China mainland ability to conduct precision strikes in the Western Pacific, Indian Ocean, and South China Sea. China continues emphasis on hypersonic glide vehicles to counter ballistic missile defense systems.

Russia, with its large strategic arsenal, continues upgrading both fielded and future systems with improved technologies. Moscow claims to have upgraded 82 percent of its nuclear triad, is developing several novel nuclear-capable systems, and has exhibited a growing ability to project power with long-range precision cruise missiles. Moscow is also investing significant resources in the fielding of hypersonic weapons. In October 2020, Russia successfully tested its multi-role Tsirkon hypersonic anti-ship missile with land attack capability. These new capabilities are specifically

designed to thwart ballistic missile defenses, challenge deterrence, and target our capabilities, increasing risk to allies, partners, and the homeland.

Rogue actors North Korea and Iran continue to expand their military capabilities, including the development of new ballistic and cruise missile systems, to further their regional goals to threaten the U.S. and its allies. The March 2021 North Korean missile launches highlighted the threat that its missile program continues to pose to the region, the U.S., and the international community. These launches followed the October 2020 parading of an unprecedented number of ballistic missile launchers and new, larger submarine launched ballistic missiles and intercontinental ballistic missiles (ICBMs). Despite economic sanctions and the continued impact of COVID-19, North Korea continues to modernize and increase the survivability, lethality, and diversification of its missile force. North Korea continues to emphasize the importance of its missile program for its self-defense and pursue development of a diverse short- to long-range ballistic missile inventory as a means to leverage political and economic gain and wield coercive influence over its neighbors.

> **"Defending the United States homeland against the ballistic missile threat remains a complex and technically challenging endeavor..."**
> - USNORTHCOM SASC Posture Statement March 2021

Iran has the largest ballistic missile force in the Middle East. One only has to look back at the brazen missile attack on Al-Asad Air Base in Iraq in January 2020 to realize Tehran is more than willing to use its missiles to demonstrate strength and resolve, as well as to ensure the regime's survival and achieve regional dominance. Iran continues to increase the lethality, accuracy, reliability, and survivability of its missile forces, including systems with increasing ranges and anti-ship capabilities, as well as underground ballistic missile launchers. Iran has unveiled several land attack cruise missiles that could complicate missile and air defense systems. Iran is pursuing a space launch vehicle program that could shorten the pathway to future ICBM capability to further challenge U.S. strategic influence and dominate its neighbors.

Our adversaries, and in some cases, non-state actors, have proven increasingly brazen in wielding missile technologies to oppose our presence and influence, but there are additional threats that present a challenge to our missile defense capabilities. Unmanned aircraft systems (UAS) have advanced technologically and proliferated exponentially over the past decade. As technology has progressed, both reconnaissance and attack capabilities have matured to the point where UASs represent a significant threat to Army combat operations from both state and non-state actors. The broad number of missions enabled by UAS platforms in terms of size, velocity, range, altitude, and flexibility complicates the counter-UAS (C-UAS) mission for AMD forces. We appreciate that Congress authorized the Department to take actions to mitigate the increasingly challenging UAS threat to facilities and assets related to the Department's missile defense mission.

We expect space, cyber, and electronic attacks will evolve around the anti-access/area-denial (A2/AD) strategies of our adversaries. Our ability to successfully counter these continuously advancing threats will rely heavily on our increased use of space and space-enabled capabilities. Space sensors, in greater numbers and diverse bandwidths, will expand our capability and capacity to track, discriminate, and support successfully engage incoming ballistic, cruise, and hypersonic weapons.

The strategic AMD environment is becoming more challenging as threat systems continue to proliferate in number and advance in complexity. Our evolution of capabilities requires a holistic strategy that effectively integrates alternative approaches and technologies to defeat air and missile threats. A comprehensive approach, including attack operations, active and passive defenses, and integrated command and control (C2), increases lethality and enables more efficient and effective active missile defense capabilities. In addition, implementing technological advances requires more joint and partner nation data-sharing to enable integration of current and future capabilities. We continue to prioritize integrated (IAMD) resources to optimize warfighter support and partner with the Missile Defense Agency (MDA), combatant commands (CCMDs), and the Services in pursuit of fiscally responsible methods to address evolving threats.

Global Posture to Counter the Threat

Strategic positioning must seek to deter adversary missile systems' development, deployment, and employment. To that end, a layered and integrated approach that synchronizes offensive and defensive capabilities ensures U.S. forces are prepared to leverage the full complement of fires in crisis and conflict. Effective active defense and pre-launch attack operations requires successful integration of multi-domain capabilities spanning from tactical to strategic, departmental to interagency, and includes allies and partners.

To counter the threat and meet the objectives of the 2018 National Defense and Army Strategies, USSTRATCOM and the U.S. Army continue to enhance homeland and regional active missile defenses as part of our evolving joint all-domain operations concept. We must also continue to work with our allies and partners in Europe, the Indo-Pacific region, and the Middle East to increase missile defense systems and operations integration and interoperability.

In conjunction with our allies and partners, the Department maintains deployed and forward-stationed Patriot; Terminal High Altitude Area Defense (THAAD); Army Navy/Transportable Radar Surveillance and Control, Model 2, Forward-Based Mode (AN/TPY-2 FBM) radars; Avenger Air Defense Systems; Sentinel radars; and counter-rocket, artillery, and mortar (C-RAM) forces to enhance our AMD posture, sending a deterrence message to competitors and assurance to our friends. Through deployed and forward-stationed AMD commands and air defense brigade headquarters, we continue to work with regional partners and allies to increase information and data-sharing that leverages partner nations' growing capabilities and capacity. These efforts are intended to reduce the strain on U.S. forces and enhance strategic flexibility while enabling more timely modernization of our AMD assets.

Army Air and Missile Defense 2028 is the framework guiding AMD readiness and modernization. It is the product of the Army AMD enterprise, which consists of agencies and organizations that develop, maintain, sustain, train, and employ AMD capabilities. This document is based on the 2017 National Security Strategy, the 2018 National Defense Strategy, the 2019 Missile Defense Review, the U.S. Army in Multi-Domain

Operations 2028, and the Army Operating Concept, as well as the changing operational and threat environments and the rapid pace of technological advancement.

The Air and Missile Defense Cross-Functional Team (AMD CFT) is the key agent that is rapidly facilitating capability development in accordance with AMD 2028. It is ensuring future capabilities transition quickly from concept, to prototyping, to fielding. The programs that Army AMD is rapidly developing are: Integrated AMD Battle Command System (IBCS); Maneuver-Short Range Air Defense (M-SHORAD); Indirect Fire Protection Capability (IFPC); and Lower Tier Air and Missile Defense Sensor (LTAMDS). The AMD CFT also works closely with the Rapid Capabilities and Critical Technologies Office (RCCTO) on DE capabilities to include high energy lasers (HEL) and high power microwave (HPM) systems.

Providing and Enhancing Missile Defense Capabilities

In accordance with Title 10 responsibilities, USASMDC is a force provider of missile defense capabilities. As a force provider, our first major task is to provide trained and ready missile defense forces and capabilities to the CCDRs. This command is manned by multi-component Soldiers, Civilians, and Contractors who contribute to operations, planning, integration, control, and coordination of Army forces and capabilities in support of USSTRATCOM's missile defense mission. Other commands around the world, including all CCDRs, also leverage the capabilities we provide. For example, USASMDC Soldiers serving in the homeland and in remote and austere forward-deployed locations operate the Ground-based Midcourse Defense (GMD) system and the AN/TPY-2 FBM radars. Highlights of the capabilities provided to current operations and readiness by our missile defense professionals include:

> **"While current capabilities provide defense of the homeland against a rogue ballistic missile threat, a concerted effort and commitment is required to expand and improve existing capabilities for both homeland and regional missile defense."**
> - USSTRATCOM SASC Posture Statement April 2021

Support to Homeland Missile Defense: Soldiers from the 100th Missile Defense Brigade (MDB), headquartered in Colorado Springs, Colorado, and the 49th Missile Defense Battalion, headquartered at Fort Greely, Alaska, are ready to defend our Nation from an ICBM attack 24/7/365. In support of U.S. Northern Command (USNORTHCOM), Army National Guard and Active Component Soldiers operate the GMD Fire Control Systems located at the Fire Direction Center in Alaska and the Missile Defense Element in Colorado; a detachment oversees operations at Vandenberg Air Force Base, California. These Soldiers, in conjunction with USNORTHCOM, also oversee maintenance of GMD interceptors and ground system components. At the Fort Greely Missile Defense Complex, the 49th Missile Defense Battalion military police secure the interceptors and C2 facilities from physical threats. Given their strategic mission in this remote location, the harsh environment and 20-hours per day of winter darkness, we must continuously review and enhance the Fort Greely Garrison services and support to these Soldiers, Civilians, Contractors, and their Families. Soldiers from the 1st Space Brigade provide combatant commanders with certified AN/TPY-2 FBM missile defense batteries that support strategic and regional missions. These batteries are globally located in five strategic locations where they provide a tangible contribution to both homeland and regional defense. Soldiers manning these radars, deployed to remote and austere locations, demonstrate daily our Nation's commitment to defend deployed forces, allies, and partners from ballistic missile attacks while also providing space domain awareness.

> **"…support continuing improvements to our homeland missile defense architecture."**
> - SECDEF SASC Confirmation Hearing January 2021

Support to Global Missile Defense Test and Development: Soldiers from the 100th MDB and the 49th Missile Defense Battalion participate in GMD test activities and work with MDA developers on future improvements to the GMD system. MDA's testing regime, conducted through a series of ground-based and operational flight tests, and rigorously verified, validated, and accredited models and simulations, emphasizes operational realism during test design and execution. This realism enables Soldiers of

the 100th MDB to sustain and improve their proficiency and validate operational employment of the system.

Global Missile Defense System Development: MDA continues to evolve the GMD weapon system to enhance existing capabilities, as well as deliver new capabilities. Construction of Fort Greely's Missile Field 4 is scheduled to be complete in June 2022 and will provide additional capacity and flexibility by the end of the calendar year. The Next Generation Interceptor (NGI), once developed, will be a significant upgrade compared to the current interceptor fleet, providing the warfighter with improved system performance and greater reliability.

> **"Missile defense endures as a critical component for comprehensive strategic and tailored regional deterrence."**
> - USSTRATCOM SASC Posture Statement April 2021

Space Support to Missile Early Warning: Space-enabled capabilities are essential for missile defense operations. They provide and enable communications; positioning, navigation, and timing; intelligence, surveillance, and ACECOM's National Space Defense Center to ensure that space assets are poised reconnaissance; and early warning. We routinely coordinate and collaborate with USSPACECOM's National Space Defense Center to ensure that space assets are poised to support missile defense.

In support of joint force commanders, USASMDC continues to provide missile warning within the U.S. European Command (USEUCOM), U.S. Central Command (USCENTCOM), and U.S. Indo-Pacific Command (USINDOPACOM) theaters of operations. The 1st Space Brigade's Joint Tactical Ground Station (JTAGS) detachments, which are essential for USSPACECOM's assured missile warning mission, are operated by USASMDC Soldiers who monitor launch activity and other events observed by infrared sensor platforms and quickly provide information to members of the AMD and operational communities. Our JTAGS detachments are forward stationed around the globe, providing continuous, dedicated, assured missile warning to USSPACECOM and CCDRs in support of deployed and forward-stationed

forces. JTAG's forward stationing reduces the risks of solely relying on long-haul communications and ensures the resilience of USSPACECOM's comprehensive missile warning system.

The relocation of the JTAGS Europe detachment from Stuttgart, Germany, to Sigonella Naval Air Station, Italy, and the installation of the Korea detachment into a new facility on Osan Air Base, Korea, have been completed, increasing our operational missile warning capability. Future capability development will enhance missile warning and modernize air and missile defense by providing the means to detect and track new missiles in an increasingly electronic warfare and cyber contested environment.

> **"The American way of life depends on reliable access to the space-based capabilities that provide the foundation of our economic security and enable our Joint Force to conduct sustained military operations in all domains."**
> - USSPACECOM SASC Posture Statement April 2021

Extended ranges needed to enhance early warning to ground forces and defend U.S. and our allies' infrastructure while supporting Army Long Range Precision Fires (LRPF) and enabling sensor-to-shooter capabilities as part of Army Multi-Domain Operations (MDO) will be realized.

USASMDC's second major task is to develop future missile defense forces and mature current capabilities. The Space and Missile Defense Center of Excellence (SMD CoE) represents Army equities across the joint community. Within the capabilities of Army and joint space, missile defense, and high altitude, the SMD CoE trains and educates agile, adaptive, and ready Soldiers and leaders; executes lifecycle management for U.S. Army space operations officers; develops Army Space Soldiers; and enables informed decision making.

To carry out its mission, the SMD CoE executes U.S. Army Training and Doctrine Command and Army Futures Command established practices to meet force management and Army modernization enterprise responsibilities. This includes performing concept development, capabilities determination, and capabilities integration relative to doctrine, organization, training, materiel, leadership and education,

personnel, facilities, and policy for process change, integration, and transition for materiel development. Additionally, the organization executes the Army's institutional training and education for space and global missile defense mission areas.

In 2020, USASMDC established the Office of the Commandant within the SMD CoE. This office provides a single point of focus for the education and training of skilled military and civilian space personnel and also provides doctrinal support for space and missile defense operations to enable Army forces to support the full range of multi-domain operations. As the proponent for Army space training and Army space doctrine, the commandant's office manages the eight personnel life-cycle management functions for all Army space personnel in both the active and reserve components.

Also this past year, SMD CoE's Space and Missile Defense School earned TRADOC's highest accreditation rating. The school executes the Army's institutional training and education for space and GMD mission areas. It currently conducts 20 space and missile defense courses that serve to develop all individual training tasks and necessary products to conduct Soldier-focused education and mission qualifications training. Despite the challenges of the pandemic, the school is projected to train approximately 12,000 Army Soldiers, Space Cadre, and missile defense operators this year through 120 formal course offerings and support training for 25 brigade combat teams, six divisions, and four corps. The SMD School continues to expand its current mission to educate, train, and develop world-class, highly skilled Army space and missile defense professionals to support Army and joint multi-domain operations at the strategic, operational, and tactical levels. Additionally, in support of the Army Space Training Strategy, the school coordinates directly across every Army proponent school to integrate space education and training in Army professional military education and functional qualification training.

The SMD CoE's Army Space Personnel Development Office (ASPDO) executes Functional Area 40 Space Operations Officer life-cycle management. The ASPDO conducts strategic planning, ensuring Space Cadre billets are identified, created, and tracked to support space-related missions. Successfully filling Space Cadre billets enables the Army to fulfill mission requirements in the eight codified joint space capabilities: space situational awareness; positioning, navigation, and timing; space

control; satellite communications; satellite operations; missile warning; environmental monitoring; and space-based intelligence, surveillance, and reconnaissance.

USASMDC's third major task is to provide critical technologies to address future needs that will enhance warfighter effectiveness. USASMDC's Technical Center supports the joint warfighter by providing science, technology, and test and evaluation expertise to enable warfighter dominance today and in the future. As part of the Army science and technology enterprise, the Technical Center contributes to the current fight and enables the next generation to prevail in conflicts to come. The Technical Center focuses on three essential tasks: executing science and technology research and development, test, and evaluation; managing and operating the Ronald Reagan Ballistic Missile Defense Test Site; and conducting space operations and space domain awareness.

The following are a few summaries of our science and technology research and development efforts, as well as an overview of the capabilities and recent accomplishments of an essential Army testing range.

Directed Energy (DE): The Technical Center is the Army lead for HEL technology development. This technology can be effectively employed in a variety of mission areas and offers unique performance attributes that will contribute directly to addressing existing operational capability gaps. High energy lasers are a low-cost, effective complement to kinetic energy to address rocket, artillery, and mortar (RAM) threats; unmanned aircraft systems; and cruise missiles. Additionally, the Technical Center is exploring the use of high power microwave technology for use in interdicting UAS and defeating improvised explosive devices and other improvised threats. DE work and advancements contributes directly to the development of the next generation of directed energy scientists and engineers.

The Army is leveraging DE technologies that presently exist and integrating them with Army platforms to provide additional warfighter capacity.

Tactical Space and High Altitude Technologies: As the Army lead for space and high altitude research, development, and engineering, our Technical Center identifies, develops, demonstrates, and integrates technologies in the areas of responsive space, space superiority, and high altitude. To meet Army operational needs using small satellites and high altitude platforms, focus areas include persistent beyond line-of-sight communications for forces deployed in remote areas; functionally effective resolution imagery; solutions for assured positioning, navigation, and timing; ground C2 systems to reduce operator burden; and direct downlink of tactical data feeds. Promising technologies are transitioned to the Army RCCTO, program executive officers, program managers, and users to provide for current and future Army and joint warfighter capabilities.

Systems Engineering: In mid-2020, USASMDC established a Systems Engineering Directorate within the Technical Center. The goal was to intensify the focus on in-house research and expand laboratory capability. Also last year, USASMDC initiated construction on a research, development, test and evaluation facility—the Directed Energy Systems Integration Lab. The future lab will provide opportunities for early warfighter involvement and be equipped with specialized equipment to enhance research, modeling, simulation, and testing of DE applications. In the years ahead, integration labs focused on small satellites, hypersonic aerothermal, and AMD systems are planned.

Missile Defense Testing Assets and Range: USASMDC's Technical Center is an invaluable part of the Army Test and Evaluation Enterprise and provides a suite of low-cost ballistic missile targets for use in developmental and operational AMD testing, transportable and configurable launchers, and test support. Additionally, the Technical Center is providing hypersonic flight test support from the test planning and design phase through mission execution and post-flight analysis for the Army, Navy, and Air Force. The Ronald Reagan Ballistic Missile Test Site (RTS) at the U.S. Army Garrison-Kwajalein Atoll in the Republic of the Marshall Islands provides test support to the MDA, the U.S. Air Force, NASA, and others. The strategically located, remote site provides critical testing support to both offensive and defensive missile testing requirements for programs such as GMD and U.S. Air Force strategic ballistic missile systems. RTS

retains preeminent ballistic missile testing capabilities used in validating the Nation's ability to sustain a strong, credible ballistic missile deterrent as a key element of national security and the security of U.S. allies and partners.

RTS continues to support the developmental and operational testing of both homeland and regional missile defense systems as well offensive ballistic missile testing for the Air Force Global Strike Command. During 2020, RTS supported four Minuteman III test launches (Glory Trips) to successfully validate and verify the effectiveness, readiness, and accuracy of the weapon system. This past November, RTS supported MDA's successful FTM-44 test through the launch of an ICBM-representative target as well as providing range safety support. Hypersonic system testing has become a significant element of test planning at RTS. Because of its geographic remoteness and available complex sensor suite, RTS has seen a significant upswing in hypersonic systems test planning. There are currently two hypersonic operational tests scheduled for calendar year 2021.

In concert with its testing mission and using a suite of four of the world's most sophisticated radar systems, RTS also supports the command's space object identification and space domain awareness missions in support of USSPACECOM. This mission includes space object tracking and characterization, providing critical orbital information on new foreign launches, and providing high-resolution images in support of space situational awareness. RTS supports this mission 24/7/365. The U.S. Air Force's Space Fence is a new and important capability in this mission. Last spring, the Space Fence became operational, and now provides proactive space domain awareness while complementing existing systems at the RTS. Finally, RTS works in conjunction with DoD customers to develop and demonstrate space testing capabilities. These emerging capabilities and test missions provide essential data and feedback to the space enterprise and support customers concerning spacecraft and operational performance.

Reagan Ballistic Missile Defense Test Site: A Vital National Asset

Army Contributions to the Nation's Missile Defense Capabilities

Army Air and Missile Defense 2028 meets the directives of the 2018 National Defense Strategy and the Army Vision to enable MDO. To achieve the AMD force of 2028, we must continue to modernize and develop AMD capabilities, build sufficient AMD capacity for MDO, and ensure AMD forces are trained and ready. MDO requires that our capabilities and associated C2 systems are resilient and interoperable with joint and allied forces. Accomplishing these essential tasks will allow us to provide deterrence through deployments and forward stationing and enable a more robust, comprehensive defense by coordinating and integrating with our partners and allies. AMD is one of six Army modernization priorities in which the Army has significantly increased investment. The Army AMD CFT is the Army's modernization lead for these capabilities and works closely with the other Services, the Joint Staff, and MDA toward joint IAMD capabilities. The Program Executive Office for Missiles and Space is the Army's materiel developer for these capabilities and works closely with the AMD CFT and the U.S. Army Aviation and Missile Command. A summary of the Army's AMD strategic direction and major programs follows:

> The AMD force must be agile, rapidly tailorable, scalable, and able to fight multiple, complex, integrated attacks.

Air and Missile Defense Readiness: A convergence of factors impacts the AMD force's readiness, to include the enduring operational demand of the CCMDs, the transition to great power competition and its associated complex threat set, and the overdue and critical need to modernize the Army's AMD force. The operational demand to meet the requirements of joint warfighters continues to stress the Army AMD force, impacting current and future readiness, as well as modernization initiatives and air defense artillery (ADA) Soldiers. The enduring high operational tempo combined with limited deployment predictability, negatively impacts Soldier readiness and family well-being. Currently, more than twice the number of ADA Soldiers are dwell restricted as compared to the overall Army. In an effort to improve Soldier predictability and readiness, the Army has established a new Unit Life Cycle Modernization Model known

as the Regionally Aligned Readiness and Modernization Model (ReARMM). It is critical that the ADA force leverage ReARMM to inform force availability to the Joint Staff and Office of the Secretary of Defense (OSD) to improve deployment predictability for AMD Soldiers. The implementation of ReARMM nests neatly with the near term Patriot modernization efforts including IBCS and LTAMDS and will help to provide balance across readiness, predictability, modernization, and Soldier quality of life.

Mission Command: Closely linked to AMD readiness is the ability to provide low density, high demand AMD mission command elements. The mission command elements are pivotal to laying the foundation and creating an environment that supports the integration of Army AMD forces into joint C2 architectures. Over the past few years, the Army has activated an additional Active Component air defense artillery brigade headquarters in USINDOPACOM, rotated a National Guard air defense artillery brigade headquarters to USEUCOM, and elevated the command of the 10th Army Air and Missile Defense Command in USEUCOM to a general officer.

Integrated AMD Battle Control System: The IBCS program is a top Army AMD modernization priority. IBCS combines current and future AMD sensors and weapons into a common integrated fire control capability that allows the warfighter to integrate AMD capabilities fully across all echelons. IBCS is the direct replacement for the mission command nodes for the Patriot weapon system, the THAAD weapon system, the headquarter elements, and the airspace management cells. It allows rapid convergence of sensors, shooters, and mission command components on an integrated fire control network. Once fully fielded, IBCS will provide a game-changing capability, allowing AMD forces to be tailored and scaled appropriately to meet the given threat. The quantity and mix of capabilities can be dynamically retasked into a formation with an inherent, integrated mission command system to build tiered and layered defenses. The IBCS open architecture enables rapid integration of legacy and developmental sensors and shooters providing capabilities to defeat emerging threats in MDO. This year the IBCS program passed the Milestone C decision and will progress to low-rate initial production. Training is currently underway with an air defense battalion in preparation for the IBCS initial operational test and evaluation scheduled to begin in the coming months.

The program will field common mission command nodes for Army AMD forces to defend against manned aircraft, UAS, air-to-ground missiles, tactical ballistic missiles, cruise missiles, and RAM attacks. Ultimately, the IBCS will operate with air surveillance and fire control capabilities across the Army, Air Force, Navy, and with joint and multinational AMD forces at all echelons. It will enhance the lethality of the AMD force. By dismantling the current system-centric mission command paradigm, it will dramatically increase systems capability and facilitate open industry competition in support of the AMD community. IBCS is one of the Army's contributions to Combined Joint All Domain Command and Control (CJADC2) under development between the Army and Air Force, and there is continued experimentation to link with C2 systems for Army and joint fires. Additional efforts are currently underway to fully support IBCS interoperability with MDA's Ballistic Missile Defense System (BMDS). The efforts explore the feasibility and potential benefits of integrating IBCS with MDA's Command and Control, Battle Management, and Communications (C2BMC).

Terminal High Altitude Area Defense System: THAAD is a key component of the missile defense system architecture. It is designed for area defense of deployed and allied forces, population centers, and critical infrastructure against short-, medium-, and intermediate-range ballistic missiles. THAAD is a mobile and globally transportable, low density, high demand asset. THAAD has a unique endo- and exo-atmospheric intercept capability using proven hit-to-kill technology. There are currently seven operational THAAD batteries. THAAD batteries are forward stationed to Guam and the Republic of Korea in response to the North Korean nuclear and missile threat, as well as forward deployed to USCENTCOM. The development efforts associated with U.S. Forces Korea (USFK) Joint Emergent Operational Needs JEON) improve Patriot and THAAD interoperability and brings a Patriot launch-on-remote capability and a THAAD Missile Segment Enhancement (MSE) Integration in Fiscal Year 2021. As directed in the 2019 Missile Defense Review, the Army, in conjunction with OSD and MDA, reassessed the THAAD requirement as eight batteries.

Patriot/Patriot Advanced Capability-3 Missile Segment Enhancement (PAC-3 MSE): The Army Patriot force remains the cornerstone of AMD protection for our deployed forces, friends, and allies. The Patriot force is 53 percent forward stationed or

deployed as CCDRs' increasing AMD requirements drive the operational tempo, stress the Patriot force, and have resulted in modernization challenges. The PAC-3 and PAC-3 MSE interceptors employ a hit-to-kill capability. PAC-3 MSE fills the engagement gap between the THAAD and the PAC-3 missiles while also defeating advanced threats earlier, at greater range, with increased lethality. The PAC-3 MSE is in full-rate production and is the latest generation hit-to-kill PAC-3 interceptor in the Patriot force to meet global capability requirements. Annual PAC-3 MSE production capability has increased by approximately 30 percent to address U.S. requirements and demand from our international partners.

Patriot must continually modernize through software and hardware upgrades to address obsolescence and the evolving threat, and to best utilize the extended battlespace performance afforded by the PAC-3 MSE interceptor. Modernization efforts provide combat identification enhancements, address upper-tier debris mitigation, improve performance of the PAC-3 MSE interceptor, and enable increased Army and joint interoperability. The Army has modernized 12 of 15 Patriot battalions with the latest software and hardware capabilities to counter new emerging and evolving threats. The other three Patriot battalions will complete modernization this year. Ongoing development efforts include the enhanced interoperability of Patriot and THAAD systems. This new integrated capability expands Patriot's battlespace by enabling it to leverage THAAD's AN/TPY-2 radar together with the Patriot radar to detect threat targets at greater ranges. Originally developed for USFK, where it will be fielded this summer, this capability will be pure-fleeted across all Patriot battalions beginning in Fiscal Year 2023. To overmatch the near-term evolving threat, the Army is continuously improving Patriot capability while moving toward the IBCS architecture including a new sensor and fire protection capability.

Lower Tier Air and Missile Defense Sensor: Replacing the current Patriot radar, LTAMDS will provide networked sensing capabilities in the lower-tier portion of the missile defense battlespace and enable the full capabilities of the PAC-3 MSE missile. LTAMDS significantly expands capabilities over legacy Patriot radars by enabling full capabilities of the MSE and all of the benefits of being a networked sensor on the IBCS. The modern technology will reduce the current Patriot radar operations and sustainment

costs by enhancing reliability and maintainability. The Army plans to begin testing the initial LTAMDS prototypes with IBCS and PAC-3 in early Fiscal Year 2022 with the objective of fielding four sensors to one battalion during the upcoming calendar year.

Indirect Fire Protection Capability: The IFPC is a ground-based weapon system designed to acquire, track, engage, and defeat cruise missile, UAS, and RAM threats. The Army requires an IFPC that integrates with the IBCS as its C2. This will enable a MDO-ready Army by 2035. The Army awarded a contract to the Israel Missile Defense Organization for two batteries of the Iron Dome system as an interim cruise missile defense capability in accordance with the Fiscal Year 2019 National Defense Authorization Act. The first Iron Dome battery arrived in the U.S. in December 2020 and will be ready to deploy before the end of this fiscal year. In February 2021, the second battery arrived in the U.S. and will be prepared to deploy in the first quarter of Fiscal Year 2022.

The Army is currently executing a competitive acquisition strategy to develop and field an enduring IFPC capability integrated with IBCS. The approved competitive acquisition includes a shoot-off demonstration this summer, a follow-on performance assessment using vendor models and simulations, hardware-in-the-loop activities, and industry proposals leading to a contract award later this year. Delivery is scheduled in Fiscal Year 2023, which will lead to the first battalion fielding by Fiscal Year 2026. The Army continues to mature HEL and HPM to increase IFPC capabilities in support of the maneuver force. The Army will begin to integrate DE by fielding four HEL and HPM prototypes in Fiscal Year 2024. Ultimately, IFPC battalions will contain a mix of complementary DE and kinetic intercept systems to protect the maneuver force.

Counter-Small Unmanned Aircraft Systems: Technological advances and the proliferation of commercial and tactical UAS in both reconnaissance and attack capabilities have matured to the point where they represent a significant threat to Army operations from both state and non-state actors. To address these threats, the Army, at the direction of the Secretary of Defense, assumed executive agent responsibilities for countering UASs and established the Joint Counter-Small UAS Office (JCO). Key focus areas for the JCO include developing joint requirements and materiel solutions, as well as joint training and doctrine. C-sUAS efforts are critical to defeat the rapid proliferation

of small, commercially available, UAS technology on the battlefield. In response to a warfighter Joint Urgent Operational Needs Statement (JUONS), the Army deployed over 500 man-portable, expeditionary, and mobile C-sUAS systems and continues to adapt to changes in-theater UAS threats. The JCO continues to work across the DoD to synchronize and coordinate the development of C-sUAS technologies that meet service specific and joint requirements. Developmental efforts such as HPM and DE are critical to ensure that we maintain pace with both commercial and state developed UAS.

Maneuver-Short Range Air Defense: In response to identified operational needs, M-SHORAD will provide maneuver forces a dedicated air defense capability on a Stryker-based platform against fixed-wing, rotary-wing, and UAS threats. In Fiscal Year 2018, the Army approved and began developing initial M-SHORAD systems that integrate existing Army capabilities onto a Stryker combat vehicle. Developmental testing was conducted over the past year and an operational assessment was accomplished last fall. Four M-SHORAD battalions are planned for fielding in Fiscal Years 2022 and 2023. The Army continues to mature HEL and electronic warfare technologies to increase M-SHORAD capabilities in support of the maneuver force. The Army will begin to integrate DE by fielding four DE M-SHORAD prototypes in Fiscal Year 2022. Ultimately, M-SHORAD battalions will contain a mix of complementary DE and kinetic intercept systems to protect the maneuver force.

Joint Functional Component Command for Integrated Missile Defense (JFCC IMD)—Integrating and Synchronizing Missile Defense

JFCC IMD is USSTRATCOM's missile defense integrating element. USSTRATCOM formed JFCC IMD to execute its UCP assigned missile defense responsibility, enabling the headquarters to focus on integration and advocacy. Established in 2005 and headquartered at Schriever Air Force Base in Colorado Springs, Colorado, JFCC IMD is manned by a cohesive team of Army, Navy, Air Force, Space Force, Marine Corps, Civilian, and Contractor personnel. The headquarters location at MDA's Missile Defense Integration and Operations Center allows JFCC IMD to leverage MDA's existing infrastructure and ensures a continuing strong partnership with the materiel developer in the execution of the command's assigned responsibilities.

As outlined in previous testimonies, warfighters remain confident in our ability to protect the Nation against missile attacks. However, given the transregional nature of the threat and the low-density, high-demand nature of missile defense platforms and increasing complex architecture of sensors, shooters, and command and control nodes spanning multiple areas of responsibility, CCDRs must approach missile defense from a global perspective. To meet this challenge, we must invest in holistic approaches to defeat adversary missiles before launch or during all phases of flight (boost, midcourse, and terminal phases). Additionally, we must continue to invest in capabilities that limit or mitigate the effects of an attack that could possibly penetrate our defenses. JFCC IMD provides direct support to these efforts.

JFCC IMD is the recognized subject matter expert across the missile defense enterprise in matters of operational support, policy, strategy, training and education, and advocacy. The command's principal mission is to coordinate with, and operationally support, joint warfighters from the regional CCDRs, and advocate for their requirements with the materiel developers at MDA and the Services. On behalf of the USSTRATCOM and other CCDRs, JFCC IMD champions warfighter priorities and capability needs, including continued development of a robust sensor network, integrated discrimination capabilities, redundant and resilient C2 networks with enhanced cybersecurity defenses, and improved interceptors for both homeland and regional missile defenses.

JFCC IMD works across the DoD and alongside key allies and partners to improve integration of existing capabilities, maximizing efficiency and effectiveness in global missile defense missions. The essential force multiplier is integration—a critically important mission enabler that JFCC IMD directly supports. As a functional component command of USSTRATCOM, JFCC IMD supports designated UCP responsibilities along four lines of effort:

- Synchronizing global missile defense planning, global force management, and missile defense security cooperation activities.
- Conducting global missile defense operations support, to include asset management, alternate execution authority, federated intelligence support, and network monitoring and protection.

- Executing above element, joint, and combined global missile defense training and education, exercises, and experimentation.
- Advocating for and recommending acceptance of global missile defense capabilities, conducting analysis and assessments of current and future capabilities, and support tests.

To accomplish these efforts, we maintain close collaborative relationships with the CCDRs, the MDA, the Services, the OSD, the Joint Staff, and our allies and partners. We continually seek to enhance our deployed forces' capabilities while gaining operational experience and confidence in our collective ability to defend the Nation, deployed forces, partners, and allies. Some of our key efforts to enhance missile defense planning and capabilities for both the homeland and regional architectures follow:

Expansion and Integration of the Missile Defense Architecture: In response to the evolving strategic environment, we continue to bolster homeland and regional missile defense capabilities. In development of the global missile defense mission, we are supporting the advancement of the new capabilities such as the Aegis Ashore in Poland; the Standard Missile-3 Block IIA; the Long Range Discrimination Radar at Clear Air Force Station, Alaska; Spacebased Kill Assessment; Hypersonic and Ballistic Tracking Space Sensor; Next Generation Interceptor for homeland defense; hypersonic defense; and various other new capabilities such as incorporating DE technologies. Given the many challenges associated with implementation of these architectures, JFCC IMD, in support of USSTRATCOM's responsibilities for global missile defense, collaborates with the CCDRs to assess and address cross-regional gaps in the areas of planning, policy, capabilities, and operations. As an example of collaboration, JFCC IMD is leading a new effort to document the comprehensive, warfighter top-level capability attributes for the hypersonic defense mission enabling early warfighter involvement with MDA in the development of new capabilities to meet the advanced threat.

Multi-Regional Missile Defense Asset Management: JFCC IMD, in coordination with USSTRATCOM and the CCDRs, manages missile defense operational readiness posture, coordinates missile defense system maintenance, and supports MDA and

Service tests. The asset management process allows us to continually assess our readiness to defend against missile attacks and to recommend adjustments to optimize the overall missile defense architecture.

Cybersecurity of the Ballistic Missile Defense System: JFCC IMD, in coordination with USSTRATCOM and MDA, conducts the Cybersecurity Service Provider mission for the missile defense architecture to ensure cyber defenses and operations are planned and executed across the globe. JFCC IMD works with key stakeholders to enhance the cyber defense posture of our missile defense operational architecture against malicious activity. We are collaborating with our mission partners to incorporate realistic cybersecurity testing in support of the Warfighter Capability Acceptance process. We are working with the National Security Agency's Cybersecurity Directorate to use their insights on threat analysis and mitigations to continue to harden our internal networks against adversary intrusion and attack. JFCC IMD also works closely with the Joint Staff, CCMDs, and MDA to educate, train, and exercise cybersecurity protocols to ensure the highest levels of readiness.

Global Planning Integration and Support: JFCC IMD works with the missile defense community to refine processes that synchronize transregional global missile defense planning and operations. Consistent with the Department’s transition to planning based on adversary problem sets, JFCC IMD supports the CCDRs in refining their adversary-centric missile defense plans with objective analysis of missile defense risks across multiple problem sets. This assessment methodology identifies systemic risk, informs recommendations for shortfall mitigation, and increases effectiveness in future missile defense planning efforts. This analysis informs bundled plans assessments across the missile defense enterprise, which shape recommendations for global force management and future capability advocacy. Looking forward, we will work with the warfighter community to increase integration, enabling a more holistic approach to missile defense.

Global Force Management: USSTRATCOM, as the designated Joint Functional Manager for Missile Defense, relies upon JFCC IMD to evaluate and recommend to the Joint Staff risk-informed sourcing of missile defense requirements. Due to the low density/high demand nature of missile defense assets, all sourcing decisions have a

direct and significant impact on other CCDRs' campaign and contingency plans. We continue to refine our approach, ensuring integrated capabilities are appropriately postured to counter transregional threats in accordance with the 2018 National Defense Strategy, the 2019 Missile Defense Review, and Department steady-state priorities. This globally integrated approach serves as the baseline for our risk-based recommendation into the Global Force Management process, enabling senior leaders to make informed decisions on allocation of low density missile defense forces.

Allied and Partner Missile Defense Integration: Given that we will never have enough active defense capacity, integrating our allies and partners into a common and mutually supportive architecture is a critical warfighter priority. One venue aimed at promoting increased cooperation is the Nimble Titan Campaign of Experimentation—a biennial series of multinational missile defense experiments. Nimble Titan brings together policy and military subject matter experts from allied and partner nations to explore the national policy and military interfaces and dynamics involved in collaborative coalition and alliance missile defense planning. Meeting this intent is necessary to develop regional defense designs, C2 relationships, and collective, bilateral, and multilateral policy. Today, ministries of foreign affairs and defense representatives from 24 nations, the North Atlantic Treaty Organization (NATO), and three additional multinational organizations, as well as the Department of State, OSD, Joint Staff, CCMDs, and MDA convene to exchange views and insights and collectively explore policy and operational concepts. The current Nimble Titan 20 campaign incorporates recent guidance from senior leaders and lessons learned to experiment with the future use of space sensors for missile defense, advanced weapon systems, deterrence, de-escalation, and non-kinetic effects as part of IAMD. Implementing a hybrid framework for virtual and in-person during the COVID-19 pandemic, the

> **"USSTRATCOM's NIMBLE TITAN wargame…continues to advance multinational collaboration and operational integration efforts aimed at enhancing deterrence and defense concepts against potential attack."**
> - USSTRATCOM SASC Posture Statement April 2021

campaign continues to address the challenges of intelligence and information sharing in a multinational coalition as well as some of the operational considerations involved in integration and countering specific threats such as cruise missiles and unmanned aerial systems. The campaign also added a "peer excursion" element in 2019 to explore how national perspectives would change with the introduction of a major peer-level state in a conceptual "what-if" construct. Nimble Titan continues to be a gateway for the U.S. to establish crucial relationships with allies and partners. It also informs the missile defense policies of the participating nations and international organizations. Nimble Titan events foster greater confidence in combined missile defenses and provide a means to advance U.S. efforts in collaboration, integration, interoperability, and burden sharing with our allies and partners.

JFCC IMD, in coordination with CCMDs and selected allied and partner militaries, is developing a multilateral information sharing and modeling and simulation construct to enable collaborative planning and provide a better assessment of allied and partner nations' missile defense systems and capabilities. It also participates in regular multilateral tabletop exercises and events to help partner nations identify and close capability gaps. Additionally, we have successfully integrated allies directly into the JFCC IMD staff through the Foreign Liaison Officer (FLO) Program. Our current FLOs include a German Air Force and a Danish Army officer. Both have been integrated into Nimble Titan, NATO ballistic missile defense training, and allied and partner modeling and simulation efforts resulting in an increased understanding of multinational missile defense policy, capabilities, and planning initiatives in the European region.

Joint Missile Defense Training and Education: Even with COVID-19 creating obstacles during the past year, in coordination with USSTRATCOM, the Joint Staff, CCMDs, and the Services, we continue to develop comprehensive and innovative training programs to close gaps between Service, joint, and regional missile defense training and education. In 2018, OSD designated JFCC IMD's Joint Ballistic Missile Defense Training and Education Center (JBTEC) as the first Joint Center of Excellence. The JBTEC now offers 16 mission-oriented resident, online, and mobile training team courses to include orientation, asset management, C2BMC situational awareness, and general officer/flag officer seminar training. In 2020, JFCC IMD instructors executed

162 courses, training over 8,000 students worldwide. The significant increase in the number of students trained over past years was a result of the rise of students using online training during the COVID-19 pandemic. Additionally, JFCC IMD provided training courses to our allies and partners through military-to-military and Foreign Military Sales training venues. Earlier this year, our instructors conducted a four day Joint IAMD course for Sweden's Headquarters Military Staff. In 2019, we provided training to the Japan Self Defense Force Joint Staff, the Republic of Korea Armed Forces, and the United Arab Emirates. We anticipate additional foreign training as COVID-19 restrictions are rescinded in allied countries.

Warfighter Support and Advocacy: We need to continue streamlining and speeding MDA's efforts to provide capabilities to our warfighters as quickly as possible to meet accelerated threat developments. JFCC IMD collaborates with the CCDRs, MDA, and Services as well as their respective test agencies to leverage emerging technology to enhance existing systems, explore innovative operational concepts, and prioritize maturing technological advancements with the most promising near-term potential. To that end, we continue to optimize the collaboration inherent in the Warfighter Involvement Process to advocate for required missile defense capabilities and performance enhancements on behalf of the warfighter. Sustaining our competitive advantage through innovation and expedience depends on well-resourced and operationally relevant test campaigns as well as high fidelity modeling and simulation infrastructure and forward looking wargaming to challenge our assumptions regarding our future missile defense readiness and posture. In testing over the past year, JFCC IMD supported the first Aegis SM-3 Block IIA remote engagement of an ICBM-class target utilizing forward-based sensors; an interoperability test of THAAD and PATRIOT where a PATRIOT MSE interceptor successfully intercepted the target with data provided by THAAD, and several data collections of hypersonic vehicle flight tests to characterize sensor performance.

Offense-Defense Integration: An optimal missile defense requires an offensive capability. By retaining a capability to attack the adversary's ability to launch missiles in addition to a capability to destroy them after launch, JFCC IMD can lower the overall cost of missile defense and reduce the risks of failure. The 2019 Missile Defense Review highlighted this and directed that our future missile defense integrates offense-defense capabilities in a comprehensive posture. Creating a comprehensive approach will require balancing a variety of offensive approaches within our deterrence calculus.

> **"Strategic deterrence is the foundation of our national defense policy…"**
> - USSTRATCOM SASC Posture Statement April 2021

Methods that could be used to attack the adversary's ability to launch include kinetic attack, cyber, the electromagnetic spectrum, or DE. Each provides opportunities to reduce the burden on active defense; however, there is no "silver bullet" to defeating the threat. As we continue to develop increased range and lethality in our precision strike capability, we need to consider how this fits within our deterrence calculus, how we should organize to operationalize the capability, and its contribution to missile defense. Our future offensive materiel solutions to address the adversary's strike capabilities will likely be a mix of guns, missiles, electronic warfare, cyber, space, and DE. To this end, we must understand how they complement each other and strive for a balance that includes left-of-launch and offense-defense integration capabilities.

In summary, JFCC IMD continues to expand our Nation's global missile defense architecture and explores future capabilities to maintain operational advantage against current and future threats. Our competitive edge is maintained through integrated planning and operational support, deliberate investments in our capability developments by MDA and the Services, investments in our warfighters through education and training, expansion of collaboration with our allies and partners, and the speed of innovation and fielding to get capability in the hands of our warfighters.

Conclusion

Chairman King and Ranking Member Fischer, as members of the joint missile defense community, the Army and USSTRATCOM continue to pursue enhancements to the Nation's IAMD systems, from the tactical to the strategic levels of warfare. As outlined here, USASMDC and JFCC IMD perform a broad set of critical national security missions. These missions include providing professional warfighters and capabilities to support current operations, ensuring they are prepared for tomorrow's fight, and developing new technologies required to maintain a technological advantage against our adversaries. Our trained and ready Soldiers, operating GMD elements in Colorado, Alaska, New York, California, and from remote, globally deployed locations, remain on point to defend the homeland against an ICBM attack. As a force provider to the CCDRs, we provide essential regional sensor capabilities, ballistic missile early warning, and space-enabled communications. Our regional forces continue to leverage allied collaboration and planning efforts in developing integrated and interoperable defenses against the various threat sets. USSTRATCOM, through JFCC IMD, continues to integrate missile defense system capabilities to counter global missile threats and to protect our Nation, deployed forces, allies, and partners.

While operational, doctrinal, and materiel developments are essential, our most important assets are the thousands of Soldiers, Sailors, Airmen, Marines, Guardians, Civilians, and Contractors who deploy and operate our IAMD systems. As recognized by Department leadership, the strength behind our outstanding workforce is their Families. Their contributions and sacrifices are foundational to the dedication and performance of our workforce—the role and support of our Families empowers mission accomplishment.

I appreciate having the opportunity to address missile defense matters and look forward to addressing your questions.