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SENATE COMMITTEE ON ARMED SERVICES

STATEMENT OF
CHARLES A. RICHARD
COMMANDER
UNITED STATES STRATEGIC COMMAND
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INTRODUCTION

USSTRATCOM is a global warfighting command, and I am privileged to lead the 150,000 Sailors, Soldiers, Airmen, Marines, and Civilians who dedicate themselves to the Department of Defense's highest priority mission. I thank the President, Secretary of Defense, and Chairman of the Joint Chiefs for their confidence in me to lead this Command and the Department's nuclear enterprise. I also thank Congress for their continued support, which ensures USSTRATCOM has the required resources necessary to continue providing our Nation's strategic deterrence.

Commander, USSTRATCOM, as a key enabler and contributor to Joint Force operations, is the combatant commander responsible for Strategic Deterrence; Nuclear Operations; Global Strike; Joint Electromagnetic Spectrum Operations; Missile Defense; Analysis and Targeting; and Missile Threat Assessment. To execute our assigned responsibilities, the men and women of this Command operate globally across all domains, to include the information environment. We work closely with the Joint Force across organizations, and with our Allies and partners to address the strategic challenges facing our Nation. Our mission: To deter strategic attack and employ forces, as directed, to guarantee the security of our Nation, our Allies, and our partners.

The Command's priorities are: 1) above all else, we will provide strategic deterrence for the Nation and assurance of the same to our Allies and partners; 2) if deterrence fails, we are prepared to deliver a decisive response, decisive in every possible way; and 3) we will do this with a resilient, equipped, and trained combat-ready force. A powerful, ready triad; a survivable nuclear command, control, and communications (NC3) system; and a responsive nuclear weapons infrastructure are the foundation that enables strategic deterrence and assurance which is fundamental to our survival as a Nation, and deters adversaries from conducting nuclear and non-nuclear strategic attacks against our Nation, our Allies, and our partners.

The dedicated professionals working for and with USSTRATCOM allow the Command to execute its operations and provide the Nation with its strategic deterrent against threats in all domains. Without the men and women of USSTRATCOM, actively performing the deterrence mission every day, we could not deter potential adversaries and guarantee the freedoms our Nation holds dear.

To be clear, nuclear deterrence is the highest priority mission of the Department of Defense – our deterrent underwrites every U.S. military operation around the world and is the foundation and backstop of our national defense.

The ability of the United States to deter threats to our Nation and our Allies is at a critical point. The contemporary security environment is the most challenging since the Cold War. In the nuclear dimension, we face a range of potential adversaries, each with different interests, objectives, and capabilities. To maintain a credible deterrent in this environment requires us to modernize and

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recapitalize our strategic forces to ensure our Nation has the capability to deter any actor, at any level. Doing so requires we remain committed to modernizing and recapitalizing our strategic forces and supporting infrastructure, and that we continue to pursue the supplemental nuclear capabilities intended to address new challenges in the security environment.

A visible symbol of our commitment to nuclear modernization is the recently completed General Curtis LeMay Command and Control Facility (C2F) at USSTRATCOM. The C2F is one of the most advanced weapon systems ever constructed, and will be a critical element for the integration of global intelligence, nuclear planning, and operations with other combatant commands in coordination with our national leadership. Its modern infrastructure for Command and Control of strategic forces provides the flexibility for effective oversight and clear direction in a new era of global, integrated operations.

We must proceed with modernization. Sustainment and modernization of our nuclear forces has transitioned from something that we should do to something that we must do. Continuing to maintain the Nation's strategic deterrent needed to meet the challenges of the global security environment and to realize Presidential and Departmental guidance defined by the National Defense Strategy (NDS), National Military Strategy (NMS), and Nuclear Posture Review (NPR) requires continued Congressional support, budget stability, and on-time appropriations.

GLOBAL SECURITY ENVIRONMENT

The NDS's prioritization of great power competition is the impetus for increasing lethality, strengthening alliances and partnerships, and reforming the Department in an increasingly complex global environment. It addresses the changing nature of threats to the United States. Competitors, such as China and Russia, are developing advanced capabilities to directly challenge our strengths across all domains. USSTRATCOM is committed to fulfilling our NDS requirements and searching out innovative ways to understand the environment and adapt to the challenges presented in the global security environment.

We understand competition does not equal conflict, and war does not have to be an inevitable conclusion in an era of great power competition. However, we must be responsive to the increasing desire for state and non-state actors to reshape the world in their favor, doing so at the expense to the security of our Nation, our Allies, and our partners, and accepted international norms and rules. We must be capable of recognizing and communicating the potential for adversarial actors who use forces in any domain to coerce, undermine, or erode the current rules-based order.

CHINA

China is advancing a comprehensive modernization program for the People's Liberation Army (PLA) and is building a robust, lethal force with capabilities spanning all domains, the electromagnetic

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spectrum, and the information environment. These initiatives increase China's ability to project power further from their mainland and support their aspirations to impose China's will throughout the Indo-Pacific region. Beijing's military modernization supports longstanding goals to establish regional hegemony, deny U.S. power projection operations in the Indo-Pacific, and supplant the U.S. as the security partner of choice.

China continues to expand and increase its strategic force capabilities. Despite maintaining a "No First Use" policy, China's lack of transparency regarding its modernization efforts to increase regional capabilities and to expand its overall arsenal bring its motives and intent into question. Among questions about Chinese intentions is their drive to likely double the size of their nuclear stockpile by the end of the decade. The PLA's range of new systems that complement its growing nuclear stockpile includes developing a survivable nuclear triad, counter-intervention, and power projection capabilities to deter and deny foreign regional force projection in the Indo-Pacific. The PLA's Air Force (PLAAF) newly reassigned nuclear mission, and a deployment of a strategic bomber would provide China with its first credible nuclear triad. During the 70th Anniversary Parade in October 2019, the PLA unveiled new strategic nuclear systems, including the H-6N BADGER bomber, DF-41 intercontinental ballistic missile (ICBM), DF-17 medium-range ballistic missile, and improved submarine-launched ballistic missiles (SLBM). Other advanced systems include a range of ballistic missile defense technologies and increased anti-access/area denial operations. Finally, the PLA is developing a space-based early warning capability and more sophisticated command and control (C2) systems to safeguard the integrity of a larger, more dispersed force. Collectively, Chinese improvements to its nuclear capabilities raise troubling concerns and underscore the need to press on with modernizing our nuclear forces, including the supplemental capabilities outlined in the NPR.

Our Nation, and our Allies and partners, should not accept Chinese policies or actions that threaten the international rules-based order or undermine regional and global stability. We must remain postured to counter Chinese coercion and subversion, assure our regional Allies and partners, and protect our national security interests as international law allows.

RUSSIA

Russia seeks to regain its role as a world power and erode U.S. leadership in world affairs. Russia continues to pursue a sphere of influence over the states on its periphery and attempts to dictate the parameters of those states' sovereignty, especially regarding matters of security or economics. Russian military doctrine emphasizes the potential coercive and military uses of nuclear weapons and Russia fields advanced capabilities to achieve these objectives. Moreover, Russian doctrine and rhetoric

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highlights a willingness to use nuclear weapons first, perhaps in an attempt to terminate a conventional conflict on terms acceptable to Russia.

Russia's aggressive and robust military and nuclear modernization campaign across its strategic triad and dual-use systems is close to completion. To date, Russia has recapitalized 76 percent of its strategic nuclear forces with modern weapons and equipment, strengthening its overall combat potential. It is easier to list the nuclear weapons and equipment Russia has not modernized, than it is to describe their all new equipment and capabilities. Upgrades to existing strategic forces include updating the Tu-95MS BEAR strategic bomber and Kh-101/102 long-range, air-launched cruise missiles; building and deploying the DOLGORUKIY-class SSBN platform for the BULAVA SS-N-32 SLBM; replacing silo-based and mobile ICBMs with newer systems and increased warhead upload capacity; and fielding the Avangard Hypersonic Glide Vehicle. In addition to modernization efforts, Russia is embracing new and novel technologies such as the TSIRKON hypersonic anti-ship missile, Belgorod submarine, nuclear capable Poseidon unmanned underwater vehicle, Kalibr land-attack cruise missile, Kinzhal air-launched ballistic missile, and Skyfall nuclear powered intercontinental cruise missile. These advanced dual-capable systems are specifically designed to challenge U.S. and Allied deterrent structures and target our capabilities.

Over the past decade, Moscow has not only emphasized strategic forces preparedness, but also endeavored to enhance Russia's civil defense readiness for strategic conflict, and has conducted exercises geared towards increasing interoperability between civil and military organizations in a time of war. Additionally, both Russia and China appear to be expanding their strategic partnership in the Asia/Pacific Region. Last summer, this partnership went on display through a combined out-of-area (OOA) flight. Their joint efforts continue to erode transparency and predictability, use force to achieve their goals, undermine rules-based international order, and violate the sovereignty and territorial integrity of their neighbors.

Russia's nuclear forces include a range of strategic weapons, some not captured by existing arms control structures, and theater and tactical nuclear weapons entirely outside the arms control framework. Due to Russia's refusal to submit these theater (or non-strategic) systems to arms control limits or transparency initiatives, a considerable level of uncertainty clouds judgements on the scope and disposition of Russia's stockpile. However, Russia's overall nuclear stockpile is likely to grow significantly over the next decade – growth driven primarily by a projected increase in Russia's non-strategic nuclear weapons. Russia's determined pursuit of "non-strategic" nuclear weapons, together with their recent theory of nuclear rhetoric, indicates a troubling readiness to resort to nuclear weapons early in a crisis. Accordingly, our nuclear forces must include a sufficient range of capabilities such that

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Russia never mistakenly perceives any advantage from using nuclear weapons, at any threshold of violence.

NORTH KOREA AND IRAN

North Korea continues to defy international norms and conducts malign activities to foster regional instability. North Korea has tested ICBM-class missiles designed to reach the United States and has increased the number of short and medium-range ballistic missiles in its inventory. USSTRATCOM is committed to supporting the Department's efforts to work with like-minded regional partners to reduce military tensions and support our diplomats in achieving the final, fully verified denuclearization of North Korea.

Iran remains the world's leading sponsor of terror. By arming and utilizing proxy forces with advanced conventional weapons, Iran threatens our Nation and our partners in the region. Iran relies on its missile forces as a tool for signaling, propaganda, and retaliation, as observed through violation of the 2015 Joint Comprehensive Plan of Action (JCPOA), and further illustrated by last month's ballistic missile launches against airbases in Iraq. Additionally, Iran continues to retain the technological capability and capacity to develop a nuclear weapon within one year of a decision to do so. Iran continues to ready and develop long-range ballistic missile capabilities, coupled with an aggressive strategy to destabilize the Middle East; calling into question Iran's commitment to foregoing nuclear weapons. Iran's actions introduce greater risk to an already volatile environment and threatens global commerce, security, and stability.

We remain vigilant to the threats both North Korea and Iran pose to the United States, our Allies and partners, and support on-going international and whole-of-government approaches to reduce these threats.

INTEGRATED STRATEGIC DETERRENCE

The 21st century global security environment presents challenges to deterrence. Competitors are conducting subversive actions below the levels of traditional conflict across all domains. Additionally, our adversaries are integrating nuclear, conventional, space, electromagnetic spectrum, and cyber capabilities to form an unprecedented range of threats; this includes the exploitation of the potential threat of nuclear employment to shape our response to their actions.

In a new era of warfighting, traditional Cold War deterrence concepts may be insufficient to deter the full range of threats in the modern security environment. The United States must apply tailored deterrent strategies to specific adversaries, while integrating the full spectrum of our military capabilities, both nuclear and conventional, with all elements of U.S. national power. An integrated strategic

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deterrence concept must leverage and exploit information advantage to seek long-term gains and capabilities in response to advancing threats; and fully assess the risks associated with deterrence failure.

To address 21st century challenges, integration cannot stop within our government. Building and maintaining our relationships are critical to preserving shared interests and responding to mutual threats. The Command continues to engage with Allies and partners to strengthen relationships, build trust, and set conditions across the globe.

USSTRATCOM supported seventeen senior-level international engagements in 2019, including visits to the United Kingdom, Denmark, and Canada as well as visits from the United Kingdom, Denmark, Japan, Australia, the Republic of Korea, and 32 Defense Attachés through the International Visitor Leadership Program (IVLP). Our daily interactions with our Allies and partners coupled with Bomber Task Force (BTF) deployments, submarine port-calls and visits, and cooperative missile defense activities provide unique opportunities to strengthen relationships, build trust between our senior leaders, and increase the interoperability of our forces. The Command also hosted an annual Deterrence Symposium to exchange viewpoints on security challenges; senior political, military, and academic leaders from over 13 nations attended this event.

To facilitate these interactions, Headquarters USSTRATCOM hosts permanently assigned liaison officers from Australia, Canada, Denmark, the Republic of Korea, and the United Kingdom; and our Joint Functional Component Command for Integrated Missile Defense hosts a liaison officer from Germany. These Foreign Liaison Officers serve as a conduit between the Command and their nations' militaries. To the extent possible, liaison officers and their superiors participate in our Tier 1 globally integrated exercises, offering mutual benefits to our Allies and the United States. These peacetime engagements develop relationships before a crisis. This past year's successes have included funding secure communication infrastructure compatibility, defining operational relationships, enhancing our military interoperability, improving combined capabilities across our Allies and partners, and integrating critical defense missions to assure Allies and partners of our Nation's extended deterrence commitments and non-proliferation objectives.

GLOBALLY INTEGRATED OPERATIONS

Globally integrated operations remain essential to achieving defense objectives in this era of great power competition. The worldwide dispersal of friendly and adversarial forces create both opportunities and challenges. As a Joint Force, we must continue to work with our Allies and partners across geographic and warfighting boundaries to create security advantages. Additionally, the Joint Force must increase proficiency in employing global capabilities - space, cyber, and special operations forces - hand-in-hand with traditional air, land, and sea warfighting capabilities. The essence of globally

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integrated operations is the alignment of the Joint Force in purpose, time, and tempo regardless of which commander is responsible for execution; this is particularly important for execution of the strategic deterrence mission where the operations and activities of combatant commanders significantly affect deterrence success. Investments in cross-combatant command coordination are vital. There is also a temporal aspect to global integration; the ability of operational commanders to gain warfighting advantages depends on enacting decisions faster than our adversaries. In the last year, the Joint Force has made enormous strides in implementing the Secretary's vision for global integration, but we must continue on the path to defend the Nation's interests in the 21st century.

NUCLEAR OPERATIONS

USSTRATCOM bears the responsibility for operating our Nation's nuclear triad. The Nation's nuclear triad is safe, secure, and effective; and is foundational to our survival. It remains the greatest contributor to deterring adversaries from conducting nuclear and non-nuclear strategic attacks against our Nation, and our Allies and partners. However, the Nation is at a critical juncture regarding the future of our nuclear forces. Since the end of the Cold War, we led the world in reducing our nuclear stockpile while increasing transparency. While we reduced the number and types of nuclear weapons in our arsenal, our adversaries went in the other direction and continued to modernize and expand their strategic capabilities. We now find ourselves fielding a reduced Cold War era arsenal against a larger, more modern, and more varied Russian force and a continually improving and growing Chinese force. If we do not address 2018 NPR recommendations, this will create the potential for insufficient flexibility in the triad to impose costs and deter all potential conventional and nuclear threats in the early-2030s.

For the last three decades, we have anticipated reaching a tipping point in the nuclear weapons complex. That point is almost here. Our weapons, NC3, and triad delivery systems will soon reach retirement or require refurbishment. If we do not invest smartly and consistently in our nuclear enterprise now, we will need to rebuild from scratch the talent and infrastructure required to design the deterrent forces for our Nation's future needs. As the foundation for deterrence for our Nation, Allies, and partners, we must continue to sustain, modernize, and recapitalize our Nation's strategic nuclear capabilities. Previous de-emphasis on our nuclear deterrent and the infrastructure that supports it, coupled with a changing security environment, coupled with adversaries that are modernizing and creating increasingly capable forces, has led us to the point where we must modernize now to continue to maintain a viable deterrent in the future. We appreciate that Congress has recognized the importance of modernizing U.S. nuclear forces after decades of deferred recapitalization and has funded these programs. We request your continued support to modernize and sustain our Nation's nuclear deterrent.

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LAND-BASED STRATEGIC DETERRENT

USSTRATCOM's geographically dispersed ICBM force is the most responsive leg of the triad, continuing to deliver a highly reliable, secure deterrent capability and an overwhelming challenge to defeat. While the Minuteman has served as the backbone of our Nation's ICBM force since 1962, its aging infrastructure, and asset attrition require a comprehensive weapon system replacement beginning in 2028. The Air Force remains focused on sustaining our ICBM force at the lowest reasonable cost. The Ground Based Strategic Deterrent (GBSD) Analysis of Alternatives provided decisive analysis that continued life extension of the Minuteman III (MM III) would be more costly than a replacement system and would not address future challenges and threats to our current ICBM force. GBSD is the lowest risk, highest value decision to meet current and future military requirements.

USSTRATCOM supports the ongoing MM III sustainment programs needed to keep the weapon system viable and effective until GBSD reaches full operational capability in 2036. Smart, consistent sustainment of our current missile systems, while we modernize the ICBM force, will ensure an effective deterrent remains for many decades. GBSD is a just-in-time replacement program, and we cannot afford to have the MM III weapon system deteriorate prematurely.

The GBSD program completes the Technology Maturation and Risk Reduction (TMRR) phase in FY2020 and transitions to Engineering and Manufacturing Development (EMD) following a successful Milestone B decision this year. USSTRATCOM remains firmly committed to GBSD as the Air Force pursues mature, low-risk technologies, modularity, and open system standards to enable affordable technology insertion. On-time GBSD deployment remains a USSTRATCOM imperative; we must keep requirements stable and protect existing schedule margin or where possible, expand these schedule margins.

GBSD, when fielded, will be an affordable, modern weapon system, deployed in updated infrastructure and fully integrated into a modernized NC3 system. Our ICBMs, and prospectively the GBSD, raise the threshold of an adversary's attack on the homeland by presenting an intractable targeting problem. Eliminating our ICBM capability, and specifically the GBSD, would be dangerously provocative, present a less credible strategic threat, and grant adversaries a vastly reduced target set – raising the risk to our Nation of a disabling first strike. Thus, USSTRATCOM strongly supports the Air Force in providing GBSD to ensure our deterrent remains effective and lethal in an ever-changing and increasingly threatening strategic environment.

AIR-BASED STRATEGIC DETERRENT

The bomber leg of the nuclear triad is the most flexible and visible aspect of our Nation's nuclear forces. Through their discernable adaptability, bombers continue to provide a wide variety of deterrence

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options to the President and unambiguously signal unwavering resolve to our adversaries. Additionally, their persistence and reliability of our bomber force reassures our Allies and partners. Nevertheless, current bombers and associated weapon systems are beyond or quickly approaching their intended end of service life and require sustainment to remain operational and modernization to address evolving and emerging threats.

The B-52 remains the backbone of the bomber force and will remain in service for an additional 30 years. It serves as an important hedge against delays in our future bomber programs and is a key component of the Nation's triad. To remain effective, the B-52 must receive several critical upgrades. First, the B-52's Commercial Engine Replacement Program will replace the existing TF-33 engines (1960s era) that are becoming increasingly unsupportable, and will also yield increased fuel efficiency resulting in greater range, longer flight times, and reduced tanker requirements. In addition to new engines, modernization plans are underway to upgrade the B-52's radar, avionics, and NC3 systems, which must remain on schedule to meet the operational requirements of our airborne deterrent requirement.

The B-2 is the only long-range, penetrating stealth bomber in the world. It is imperative we maintain the B-2's unique deterrent and combat capability, until replaced by the B-21. Decisions on the future bomber force structure and key enablers must be based upon strategic imperatives and combat effectiveness, ensuring no capability gaps for critical tasking across the family of operational plans (nuclear and conventional).

The future of the bomber force is the B-21 Raider. Designed to meet NDS objectives and based on firm requirements leveraging existing and mature technology, the B-21 will deliver unrivaled combat capability. It is an Air Force "Top 3" acquisition program with a planned procurement of at least 100 aircraft and is currently executing in the EMD acquisition phase. The B-21 will utilize both direct attack and standoff weapons, providing a multitude of options to the warfighter to meet national objectives. It is critical the Air Force delivers the B-21 on time and on budget to meet the Nation's deterrence objectives and global security requirements.

In addition to the bombers, the air delivered weapon stockpile modernization is also occurring through just-in-time Life Extension Programs (LEPs). Notably, the Long Range Standoff (LRSO) weapon coupled with the W80-4 warhead will replace the Air Launched Cruise Missile (ALCM) and its W80-1 warhead as that system faces reliability and sustainability challenges. Likewise, the B61-12 will replace aging B61 nuclear gravity bombs deployed on strategic long-range bombers and on our Nation's and Allies' Dual Capable Aircraft (DCA). The B61-12 life extension includes a guided tail kit assembly to improve weapon accuracy, enabling a more accurate, single gravity nuclear weapon capability that will enhance our Nation's nuclear deterrent and the extended deterrence provided to our Allies and partners.

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The success of all bomber missions depends on adequate tanker support to achieve the necessary global reach to hold strategic targets at risk. The KC-46, currently in the Initial Operational Testing and Evaluation (IOT&E) acquisition phase, will partially replace the aging KC-135 fleet. Air Force leadership continues to engage with Boeing to ensure the new tanker will meet operational objectives.

SEA-BASED STRATEGIC DETERRENT

The OHIO-class SSBN with the highly capable Trident II D5 ballistic missile constitutes the most survivable leg of our nuclear triad and provides a reliable deterrent to our adversaries around the world. The SSBN's ability to operate continuously and clandestinely sends a very clear message that our adversaries cannot benefit from a strategic attack against the U.S. or our Allies.

The OHIO-class SSBN is a marvel of technology and its robust design, along with a comprehensive maintenance program, has allowed it to be life extended from 30 to 42 years – longer than any previous submarine class in U.S. history. The Navy has never kept a single submarine in service longer than 37-years, let alone an entire class. There is no margin to extend the OHIO-class further; therefore, the COLUMBIA-class SSBN must field on time to avoid a capability gap in the triad. It is essential we maintain our technological advantage in this critical mission, and to this end, the Navy has designated COLUMBIA as the top shipbuilding priority in order to ensure its first strategic deterrent patrol in FY2031. As production begins, we must support our industrial partners' expansion of both infrastructure and training programs to minimize risk.

Furthermore, to remain survivable, we must address anticipated security threats that could undermine our own future capabilities. Advancements in Russian submarine stealth and detection requires us to remain committed to the recapitalization of our Integrated Undersea Surveillance System (IUSS) to preserve our advantage in the undersea domain.

Following the decision to extend the OHIO-class SSBN, the Navy determined the need to life-extend the Trident II D5 ballistic missile, both to address obsolescence issues and to ensure the required quantity of deployable ballistic missiles into the early 2040s. The life extension program, known as D5LE, will ultimately serve as the transition missile from OHIO to COLUMBIA. Additionally, efforts are underway to further extend the D5 missile through the life of the COLUMBIA with the D5LE2 program. D5LE2 will recapitalize the D5, using highly reliable components still in production, pull forward previously unused system margin, and provide a more cost effective design with sufficient flexibility to account for evolving threats. In order to realize these capabilities, we must revive an atrophied industrial base required to produce critical non-nuclear components employed on the D5LE2.

To enhance the flexibility and responsiveness of our nuclear forces as directed in the 2018 NPR, we will pursue two supplemental capabilities to existing U.S. nuclear forces: a low-yield SLBM warhead

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(W76-2) capability and a modern nuclear sea launched cruise missile (SLCM-N) to address regional deterrence challenges that have resulted from increasing Russian and Chinese nuclear capabilities. These supplemental capabilities are necessary to correct any misperception an adversary can escalate their way to victory, and ensure our ability to provide a strategic deterrent. Russia's increased reliance on non-treaty accountable strategic and theater nuclear weapons and evolving doctrine of limited first-use in a regional conflict, give evidence of the increased possibility of Russia's employment of nuclear weapons. We must counter these dangerous perceptions with the supplemental capabilities the LYBM and SLCM-N will provide. An analysis of alternatives is under way for SLCM-N.

NUCLEAR WEAPONS AND SUPPORTING INFRASTRUCTURE

Today's nuclear stockpile meets current operational and policy requirements. While the stockpile and its supporting infrastructure are safe, secure, reliable, and effective, both remain fragile. Many of our weapons have remained in service well beyond their original design lives, owing to the robustness of original designs and the Department of Energy/National Nuclear Security Administration's (DOE/NNSA) continuing stockpile stewardship efforts. However, the accumulation of concurrent risks and capacity margins limit the ability to mitigate adverse impacts to the deterrent. Insufficient resourcing over the past 30+ years postponed much-needed weapon and infrastructure modernization programs, which typically require 10-15 years to execute. Directive policy changes affecting priorities and inefficient program execution across administrations have directly contributed to the related erosion in the critical capabilities and capacity of our strategic deterrent forces. As a result, many of the modernization and sustainment efforts necessary to ensure the deterrent's viability have zero schedule margin and are late-to-need.

I firmly support the Secretary's and Chairman's public statements identifying nuclear deterrence as the highest priority mission of the Department of Defense. Our nuclear deterrent underwrites every U.S. military operation around the world and is the foundation and backstop of our national defense. I cannot overemphasize the need to modernize our nuclear forces and recapitalize the supporting infrastructure to ensure we can maintain this deterrent in the future. I am concerned that the oft-repeated message of the need to modernize and recapitalize has lost its impact, and that collectively we have underestimated the risks associated with such a complex and time-constrained modernization and recapitalization effort. Even seemingly small issues can have a disproportionate impact on the force. We cannot afford more delays and uncertainty in delivering capabilities, and must maintain a focus on revitalizing our nuclear forces and the associated infrastructure.

The 2018 NPR described a hedging strategy to meet future risks and unexpected challenges. The atrophy in our nuclear weapons supporting infrastructure is consuming our hedge for avoidable programmatic risk. We no longer have hedge capacity to fully account for geopolitical risk, technological

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risk, or operational risk. Continued modernization and sustainment work deferral will only further exacerbate an already untenable situation as we repeatedly extend weapon lifetimes and do not invest in the diagnostic capabilities needed to ensure confidence in the viability of these systems.

To maintain military effectiveness in the future, we must execute the program of record (POR) immediately, and invest in advanced diagnostic, research, and development activities to mature emerging technologies to certify and field a modern deterrent for the 21st century. The next generation of deterrent forces must encompass responsive weapon systems, world-class personnel, resilient infrastructure, and intelligence informed decisions. We must address emerging 21st century threats that may reduce the effectiveness of our nuclear deterrent force.

The NNSA took efforts in 2019 to address a gap identified in the 2018 NPR by converting a small number of W76-1s into the W76-2 low-yield variant. W76-2 deliveries to the Navy and remaining production are continuing as scheduled in FY2020. In 2019, our weapon modernization programs saw a setback when reliability issues emerged with commercial off-the-shelf non-nuclear components intended for the W88 Alteration 370 program and the B61-12 LEP. NNSA has worked closely with DoD to mitigate impacts, but correcting these issues will delay initial fielding of both systems. Finally, another just-in-time program is the W80-4 LEP, which remains in synchronized development with the LRSO delivery system. It is critical for this standoff attack capability program to remain on track.

While air-delivered weapon modernization is proceeding in the B61-12 and W80-4, we must begin efforts now to modernize ballistic missile warheads for our ICBM and SLBM force in the 2030s and 2040s. After the 2018 NPR, re-evaluation of our stockpile strategy shifted to pursue separate NEP designs for the Air Force and Navy. However, the ballistic missile end-state remains the same: address known and projected aging and performance concerns; preserve triad attributes; balance warhead types across the force; and improve inter- and intra-leg hedge capability. The Air Force is developing the MK21A/W87-1 to replace the W78 ICBM warhead that will be over 50 years old when finally retired. When deployed, the W87-1 will provide enhanced safety and security compared to all other ballistic missile warheads.

The Nuclear Weapons Council has established a requirement for the W93/Mk7 warhead. This warhead will provide USSTRATCOM and the Navy a means to address evolving ballistic missile warhead modernization requirements, improve operational effectiveness, and mitigate technical, operational, and programmatic risk in the sea-leg of the triad. This effort will also support a parallel Replacement Warhead Program in the United Kingdom whose nuclear deterrent plays an absolutely vital role in NATO's overall defense posture. Without a coordinated, joint effort to develop and field the W93/MK7 as a system, the bulk of our day-to-day deterrent force will be at increased risk in the early 2040s due to aging legacy systems. Given the potential severity of impacts on overall deterrence from

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late delivery of the W93/MK7, it is imperative the complex work to identify opportunities to accelerate the development timeline and invest in technologies to reduce schedule risk. Research and development efforts for critical national capabilities, such as fuzes and aero shells, must begin immediately to deliver a capability in the 2030s that maintains a credible at-sea deterrent through the 2050s and beyond.

Our present Nuclear Security Enterprise (NSE) infrastructure, which we count on to sustain our strategic deterrent, continues to atrophy and requires timely recapitalization. NNSA planned facility improvements to critical capabilities will not materialize in the near-term, yet facility age and capacities currently limit our ability to timely respond to unforeseen technical, geopolitical, programmatic, or operational developments. The non-nuclear component issue affecting the B61-12 LEP and W88 Alteration 370 program is a symptom of a fragile enterprise – a single component failure caused a disruption across multiple programs for a period of years. USSTRATCOM is able to mitigate the operational impacts today, but proposed steps to reduce accumulating further operational impacts provide a partial capability at best. The Nuclear Weapons Council Strategic Plan, NNSA Stockpile Stewardship and Management Plan, and 2020 Requirements and Planning Document describe a path forward to enable an effective, responsive, and resilient NSE, but successful navigation of the path will only be possible through continued on-time investments.

USSTRATCOM supports NNSA's highest infrastructure priority to reconstitute plutonium pit production. Since the closure of the Rocky Flats facility 30 years ago, no significant quantities of new pits have been added to the stockpile. The Nation must be able to produce no fewer than 30 pits per year in 2026 and produce at least 80 pits per year during 2030 to maintain stockpile effectiveness. This capacity is the minimum required to execute the POR; anything less will force difficult decisions on which modernization programs to defer, which could result in a less-capable nuclear deterrent, and accept unprecedented pit ages. The NNSA's two-site plan to achieve plutonium pit production at Los Alamos National Lab and the Savannah River Site is prudent and necessary to achieve pit production requirements rather than accept pit lifetimes that threaten the confidence in our weapons' capabilities. Failure to accomplish these goals will place all future stockpile modernization programs at risk.

In addition to plutonium pit production, the NSE must continue to recapitalize capabilities to process uranium and lithium, produce tritium, manufacture and procure trusted radiation-hardened microelectronics, and manufacture non-nuclear components in sufficient quantities to sustain and modernize the force. Production of nuclear weapon components and the materials needed to construct them effectively stopped during the 1990s when we began to life-extend legacy systems. This includes recruiting and developing the specialized workforce and experts required to produce and maintain these systems. Maintaining a safe, secure, reliable, and effective strategic deterrent into the future requires restoring or increasing the capacity of these material, component, and workforce capabilities.

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Congressional legislation has recognized and supported the need for an effective, responsive, and resilient NSE by directing the NNSA to continually exercise all capabilities required to conceptualize, develop, engineer, certify, and deploy nuclear weapons. The Stockpile Responsiveness Program (SRP), combined with the POR and its supporting science program, enables a process to exercise the development of nuclear weapons. I remain supportive of the program, especially activities like the rapid design-to-test experiment, which cuts time from clean-sheet design to hydrodynamic test by two-thirds.

Maintaining a safe, secure, reliable, and effective stockpile that continues to meet its intended deterrence and assurance roles into the future will require consistent, predictable funding for weapons modernization and the supporting infrastructure over the next two decades. Failure to make this investment presents an existential risk to the Nation. Success hinges on continued coordination between DoD and NNSA as well as the consistent cooperation among all stakeholders.

NUCLEAR WEAPONS SAFETY AND SECURITY

Our nuclear security standard is complete denial of unauthorized access to nuclear weapons. We have worked closely with our Navy and Air Force partners to assess nuclear security requirements and adjust our force posture, training, and equipment to address current and evolving threats. While we continue to advance our security capabilities, there are areas where additional investments are necessary to maintain the high standards this mission demands.

The proliferation, ease of use, and sophisticated capabilities of small, unmanned aircraft systems (sUAS) pose a threat to our operations. The Department continues to field counter sUAS capabilities and are refining tactics, techniques, and procedures to address the developing threat. Focused leadership, vigilance, and dedicated investment are necessary to remain ahead of this challenge.

With intense advocacy from our Command and strong support from Congress, we achieved a significant ICBM security milestone with the Air Force awarding a contract to replace our Vietnam-era UH-1N helicopter fleet with the new MH-139 “Grey Wolf.” The Air Force expects delivery of the first two aircraft to Eglin AFB in 2020 for developmental testing. Delivery of subsequent aircraft to each missile wing will provide full operational capability by FY2027. With this program moving forward, we can now focus our efforts on replacing aging armored security vehicles with Joint Light Tactical Vehicles, equipped with advanced weapons and communications systems that will provide security personnel uninterrupted situational awareness anywhere they operate.

Finally, we encourage Congress to continue supporting our ICBM Transportation and Handling equipment. The Payload Transporter Replacement and Transporter Erector Replacement Programs will provide safe, secure MM III solid rocket motor (SRM) transport, removal, and emplacement, and over the coming years, these heavily tasked force enablers will facilitate the transition from MM III to GBSD. We

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continue to support fully funding the weapons security programs for on-time delivery, enhancing the security of our strategic weapons and our vast ICBM complex.

NUCLEAR COMMAND, CONTROL, & COMMUNICATIONS ENTERPRISE

Our layered approach to providing NC3 capabilities remains reliable and effective in our current strategic environment; however, we have identified challenges in the near-term to address maintaining deterrence in the coming decades. Our posture and capabilities were adequate for the Cold War needs, especially against the Soviet-era ballistic missile and bomber threats. Now, we face improved adversarial capabilities in air- and sea-launched cruise missiles and evolving space and cyber threats. We must look beyond traditional ballistic missile profiles and understand the full spectrum of threats to NC3. We must innovate and outpace those threats to maintain our deterrent capabilities. Our continued focus is to maintain positive command and control of U.S. nuclear forces at all times, before, during, and after a nuclear attack. As we modernize our triad, we must maintain current capabilities while we address future NC3 requirements. This is one of my top priorities.

In October 2018, the Secretary of Defense designated the Commander, USSTRATCOM, as the NC3 Enterprise Lead responsible for NC3 enterprise operations, requirements, and systems engineering and integration. Last year, USSTRATCOM established the NC3 Enterprise Center (NEC) and started building relationships with the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) as the NC3 Capability Portfolio Manager (CPM). In the effort to consolidate authorities and responsibilities for the NC3 portfolio, we jointly presented the status of the NC3 Enterprise to the Deputy Secretary of Defense and the Chairman of the Joint Chiefs of Staff; this will reoccur on a continual basis as directed by the Secretary of Defense.

USD(A&S) and the Commander, USSTRATCOM, coordinated and recommended adjustments for our most pressing NC3 shortfalls. We support fully funding our approach to quantitatively assessing the NC3 enterprise. While an understandably complex and ambitious undertaking, we want to be able to model and monitor the entire enterprise. Data science is quickly proving its value to industry and we need to leverage this capability and implement it into our approach to assess the NC3 Enterprise's mutually supportive, interdependent architecture. Additionally, in order to move forward, we must provide the necessary manpower to build enterprise level capabilities.

Last year we saw success in validating the mission need statement for the next generation NC3 architecture. We are continuing to build out processes and supporting capabilities that will be foundational to establishing an architecture that is mutually supportive and resilient to the entire spectrum of attacks. While we develop the next generation NC3 to conduct nuclear command and control (NC2) over assured communication paths, we must consider how NC2 infrastructure will align and interoperate

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with the future Joint All-Domain Command and Control (JADC2) structure. Future NC3 architecture will retain elements specific to NC2 while leveraging JADC2 to maintain resilient and redundant C2 and facilitate quick decision cycles.

In order to provide continuous communications and control of nuclear forces between the President, senior advisors, and Joint Forces, we must maintain our Advanced Extremely High Frequency (AEHF) satellites, paired with ground and airborne Family of Advanced Beyond Line of Sight Terminals (FAB-T). We continue to develop the plan for the next generation of airborne command and control aircraft, replacing the legacy E-4B National Airborne Operations Center (NAOC), E-6B Airborne Command Post (ABNCP) and Take Charge and Move-Out (TACAMO), and C-32 Executive Transport fleets. Existing capabilities will need to retain their current roles and may need to accept new ones as our next generation of NC3 takes shape. As we build on our airborne communication capabilities, we are evaluating the relay capabilities of ground forces to augment and enhance the survivability and endurance of our airborne layer. The Air Force's Global Aircrew Strategic Network Terminal (G-ASNT) gives our ground forces a multi-band communications system to maintain situational awareness and relay direction to nuclear forces not in direct contact with decision makers.

Cutting across all of these capabilities is the cyber defense of the systems themselves. Our NC2 hardware infrastructure fails if the NC3 fails due to a cyber-attack. We must continue to invest in active, persistent cyber defense of our NC3 systems, both current and future. We have collaborated with USCYBERCOM, USD(A&S), and the Services to ensure our existing NC3 systems remain free of adversary influence in real time and to protect our future NC3 acquisitions and sustainment from cyber threats. Cyber defense is not a "trade space" discussion; it is an additive necessity in today's technology-centric world.

USSTRATCOM, as the NC3 Enterprise lead, will continue to develop the Enterprise's future requirements and ensure a safe, secure, and reliable architecture for the future. As we move towards the next generation of NC3, we must work with industry to rapidly prototype new technologies and experiment with them to determine their effectiveness. In addition, we will continue cooperation on NATO NC3 systems that require modernization to enable appropriate consultations and effective nuclear operations, improve survivability, resilience, and flexibility. We need to move rapidly and if a new technology appears promising, acquire and field it quickly – and if our experiment shows it is not feasible, to "fail fast," and move on. We rely on the necessary resources for sustainment and modernization of NC3 systems. We must also attract the right experience and talent needed to fulfill enterprise manpower requirements to develop the innovative NC3 solutions described in the NC3 Enterprise Center Mission Needs Statement. A combined effort between the Services and Agencies, National Labs, industry, and academia are necessary to generate innovative ideas, establish working

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relationships with key stakeholders, and maintain deterrence during this transition. I am confident in the forming relationships and the direction the Department is taking to prioritize NC3 modernization.

GLOBAL STRIKE

Strategic competitors continue to invest in and rapidly develop anti-access/area denial capabilities to counter U.S. military advantages in power projection and freedom of movement. Additionally, competitors are developing hypersonic weapons as part of this counter-intervention strategy. The Department requires flexible, prompt, survivable response options for global strike. Continued investment and a commitment to fielding advanced capabilities are crucial to offset these threats and ensure our deterrence and conventional power remains strong into the future.

Offensive hypersonic strike weapons will provide conventional capabilities to ensure the Joint Force can deter aggression in contested environments short of nuclear use. They provide a highly responsive, long-range, conventional strike capability for distant, defended, or time-critical threats when other forces are unavailable or not preferred. Fielding advanced hypersonic capabilities will allow us to tailor our strategies and plans with an expanded range of conventional options. While not a replacement for nuclear weapons, new classes of hypersonic weapons will complement and enhance strategic deterrence and can deliver surgical strikes to provide effects or be integrated into larger campaigns, increasing the effectiveness of our warfighting advantages.

For more than a decade, the U.S. matured its hypersonic strike technologies and successfully demonstrated their significance to future warfighters. FY2020 represents a pivotal year for hypersonic weapon development and fielding as the Department begins aggressively flight testing capabilities across multiple domains and posturing the industrial base to produce these systems at scale to allow the Services to field operational capabilities in the near-term. A flexible mix of capabilities launched from land, sea, and air will provide a constant, visible, and global presence designed to influence adversary behavior in all stages of conflict without crossing the nuclear threshold, and will provide an effective deterrent and strike capability in the near-term to address current and future threats.

MISSILE DEFENSE

As a global warfighting command, Commander, USSTRATCOM is the coordinating authority and is responsible for global missile defense planning in coordination with other combatant commands, Services, and agencies that employ our Nation's missile defense capabilities. USSTRATCOM's Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD) supports missile defense operations worldwide: this means helping to identify and minimize gaps and seams in regional planning,

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conducting missile defense operations support, and advocating for capabilities on behalf of all other combatant commanders.

While current missile defense capabilities ensure defense of the homeland against a rogue ballistic missile threat, a concerted U.S. effort is required to expand and improve existing capabilities for both homeland and regional missile defense. Potential adversaries are improving existing missile system capabilities and capacities, blurring missile defense operations across traditional regional boundaries. Solving the trans-regional threat, increased range, and lethality requires more than just active missile defense; we must address the problem of decreased warning and adjust defensive postures appropriately. Navigating this environment requires a comprehensive approach that establishes a renewed emphasis on leveraging opportunities to negate missile threats prior to launch, during all phases of flight, and after impact, drawing on effects generated from capabilities throughout all domains.

As the warfighter advocate for missile defense, USSTRATCOM must focus developers on examining, developing, and exploiting advanced concepts and technologies. Research and development across all domains is key to ensuring we keep pace with evolving adversary threats, such as hypersonic weapons and cruise missiles. Future space-based sensors may be able to provide birth-to-death detection, tracking, and discrimination of hypersonic glide vehicle, cruise missile, and ballistic missile threats globally. These abilities cannot be fully achieved with the current or future terrestrial-based radar architecture due to the constraints of geography and characteristics of future missile threats.

Our regional missile defenses protect against missile attacks on deployed U.S. forces, Allies, and partners; assist Allies and partners in better defending themselves; preserve freedom of action; and counter adversary anti-access/area denial tactics. However, challenges remain to the Department's efforts to fully integrate and optimize limited defense resources and architectures through Allied and partner integration and interoperability. USSTRATCOM's NIMBLE TITAN exercise series, with participants from 24 countries and four international organizations, advances multinational collaboration through the experimentation of operational integration concepts to enhance deterrence and defense against missile attacks.

The Ground Based Interceptors (GBI) currently emplaced have the capability of defending the homeland from today's rogue threat. Although we are pursuing development of the Next Generation Interceptor (NGI) to complement our GBI capability, we need to examine new approaches to defeat ICBMs in ways that repurpose existing options and are cost effective. As we address future threats, we must account for the air and missile defense assets required to defend the homeland, while simultaneously improving our regional security architectures. We continue to embrace new and developing technologies and find innovative ways to use, as well as repurposing existing technologies to strengthen and expand

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current capabilities. Examples include developing an underlay for homeland defense to account for ballistic missiles and using existing sensors for tracking ballistic, hypersonic, and cruise missile threats.

The 2019 Missile Defense Review (MDR) provided an opportunity to conduct focused reviews clarifying and optimizing missile defense roles and responsibilities across the Department. In accordance with the MDR, the Department is reviewing policy, responsibilities, and procedures for missile defense research, development, test and evaluation, procurement, operations, and sustainment. Revised improvements to the Warfighter Involvement Process (WIP) will meet 2019 MDR guidance, align with Department budget process and maximize warfighter input in capability development and acquisition, and seeks to deliver missile defense capabilities in a timely manner. USSTRATCOM is working with the community of interest to update the WIP and incorporate findings established in the MDR. As Commander, I will continue to advocate for missile defense requirements through continued capability and utility assessments and by ensuring operational tests and evaluations meet warfighter demands. Missile defense endures as a critical component of comprehensive U.S. strategic and tailored regional deterrence strategies and is a key element of any integrated response options.

JOINT ELECTROMAGNETIC SPECTRUM OPERATIONS (JEMSO)

The Electromagnetic Spectrum (EMS) is the one physical maneuver space depended upon by forces across all warfighting domains. If we cannot achieve EMS superiority and assure access to the EMS, the joint force cannot prevail. Our adversaries have observed our use and dependence on the EMS, and have developed and organized their forces to achieve EMS superiority; it is essential we develop capabilities and appropriately organize to counter this threat. Achieving and maintaining EMS superiority is the critical enabler for successful Joint Force operations.

To address warfighter requirements, USSTRATCOM collaborates with the Secretary of Defense Electromagnetic Spectrum Operations (EMSO) Cross Functional Team, the Electronic Warfare Executive Committee (EW EXCOM), the Services, the DoD Chief Information Officer (CIO), the joint staff, and Under Secretary of Defense offices to advocate for essential warfighter EMSO capabilities. Additionally, we engage with Australia and North Atlantic Treaty Organization partners to ensure compatible JEMSO doctrine, capabilities, and concepts of operation.

USSTRATCOM led the effort to create the first Joint Publication for JEMSO. Working with DoD CIO and Defense Information Systems Agency (DISA), USSTRATCOM provided the initial warfighter requirements for an Electromagnetic Battle Management (EMBM) system to achieve EMS superiority. In coordination with the DISA Defense Spectrum Organization, USSTRATCOM is establishing the initial Joint Electromagnetic Spectrum Information Analysis and Fusion capability that will provide spectrum specific data for battle management and combatant command operational cells.

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Our Command also led a combatant command JEMSO cell manpower requirement validation study through the joint manpower validation process for the FY2022 Program Objective Memorandum budget. All of these warfighter requirement initiatives will require sustained investments.

CONCLUSION

USSTRATCOM is a global warfighting command, actively and successfully deterring strategic attack against our Nation and our Allies. The men and women of our Command are committed to maintaining a safe, secure, reliable, and effective deterrent for our Nation. If deterrence fails, our combat-ready force is prepared now to deliver a decisive response anywhere on the globe, across all domains, in coordination with geographic and global warfighting combatant commanders and our Allies and partners.

The Command is focused on integrating strategic deterrence in the 21st century, expanding the intellectual capital to educate the joint force on deterrence and nuclear policy, and ensuring our forces are prepared to meet challenges in the global security environment.

Our strategic forces provide the foundation and credibility that backstops all U.S. military operations and diplomacy around the world. Our triad remains the most effective way to deter adversaries from conducting strategic attacks against our Nation and our Allies and partners. Our Nation's strength has helped deter great power war and we must continue to prioritize the capabilities that underpin our strength.

Our Nation is at a critical point in maintaining our strategic advantages and must remain committed to modernization and recapitalization programs in place. Our strategic forces are a prudent investment in the current and future security of our Nation, with some systems scheduled to operate effectively well into the 2070s and 2080s. With continued Congressional support and budget stability, we can continue to pace the threat and develop the future force necessary to guarantee the continued execution of the Department's highest priority mission, to keep our Nation and our Allies safe.