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SENATE COMMITTEE ON ARMED SERVICES

STATEMENT OF  
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BEFORE THE  
SENATE COMMITTEE ON ARMED SERVICES  
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## INTRODUCTION

United States Strategic Command (USSTRATCOM) is a global warfighting command, and as the Commander, I am privileged to lead the 150,000 Sailors, Soldiers, Airmen, Marines, Guardians, and Civilians who dedicate themselves to the Department of Defense's highest priority mission. I thank the President, Secretary of Defense Austin, and Chairman of the Joint Chiefs Milley for their continued leadership in this vital mission area. The command is focused on and committed to the Secretary of Defense priorities to defend the nation, take care of our people, and succeed through teamwork. I also thank Congress for your continued support to ensure USSTRATCOM is equipped with the required resources necessary to achieve strategic deterrence in any situation on behalf of the nation.

USSTRATCOM enables Joint Force operations and is the combatant command responsible for Strategic Deterrence, Nuclear Operations, Nuclear Command, Control, and Communications (NC3) Enterprise Operations, Joint Electromagnetic Spectrum Operations, Global Strike, Missile Defense, Analysis and Targeting, and Missile Threat Assessment. Our mission is to deter strategic attack and employ forces as directed, to guarantee the security of the nation and assure our allies and partners. The command has three priorities. First, above all else, we will provide strategic deterrence for the nation and assurance of the same to our allies and partners. Second, if deterrence fails, we are prepared to deliver a decisive response, decisive in every possible way. Third, we will do this with a modern resilient, equipped, and trained combat-ready force. To execute our assigned responsibilities, the men and women of USSTRATCOM operate globally, as a joint force, in all warfighting domains, and with our allies and partners to address strategic challenges facing our nation.

As Congress is well aware, the past year's pandemic challenged us in ways we never expected. Within days, the command transitioned from approximately 30 teleworking personnel

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to thousands, without missing a beat. I am pleased to report USSTRATCOM remained, and continues to be fully mission capable. This is a true testament to the resilience of our workforce, our command and control (C2) systems, and the support from our base and local community.

*Peace is our profession...* continues to be the USSTRATCOM motto. It serves as an acknowledgement that the nation leads first with diplomacy as military force should be the last resort. The three dots are intentional to remind potential adversaries that if tested, the command enables the President to lead the nation from a position of strength. Fundamental to our survival as a nation is a safe, secure, and effective nuclear triad; a reliable and modern nuclear command, control, and communications (NC3) architecture; and a responsive nuclear weapons infrastructure. These elements deter adversaries from conducting nuclear and non-nuclear strategic attacks against our nation, and assure our allies and partners. As Secretary Austin testified, strategic deterrence, and within that nuclear deterrence, is the highest priority mission of the Department of Defense.

*Strategic deterrence is the foundation of our national defense policy and enables every U.S. military operation around the world.* Any individual strategic policy or capability decision made absent an understanding of the effect on the overall strategy could potentially increase the risk of deterrence failure. *If strategic deterrence fails, little else...no plan or capability, works as designed.*

USSTRATCOM will fully support ongoing reviews of strategic and nuclear policy with a goal of reducing the role of nuclear weapons in our defense strategy while adjusting to the operational implications of policy choices. Presidential and Departmental guidance defined by the National Defense Strategy (NDS), National Military Strategy (NMS), and by our nuclear policy depend on a strategic deterrent required to meet the challenges of the changing global security environment. This is not possible without stable, consistent, and on-time appropriations

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and support to program modernization by Congress. Sustainment and modernization of our nuclear forces, weapons complex, and requisite NC3 capabilities has transitioned from something we should do, to something we must do. *Based on current programmatic and acquisition timelines, if we find out we were wrong, decisions to divest or delay could take ten to fifteen years to recover and render the nation unable to respond to advancing threats. Any decision to delay or defer recapitalization requires us to be absolutely sure, for the next 40 years, that we won't need that capability to deter threats, many of which we can't predict.*

### OUR PEOPLE

USSTRATCOM's military and civilian professionals are the driving force behind Strategic Deterrence. The command is committed to building a diverse and inclusive workforce with the needed skills to meet current and future security environment demands, as we pursue innovative ways to recruit and retain top talent. Workforce enhancements through internships, development and mentorship programs, academic partnerships, and our Women in Leadership program are just a few examples of ways the command attracts software, nuclear engineering, scientific, and strategy and policy skill sets into service.

USSTRATCOM works closely with world-class universities and education systems, through our Academic Alliance - a partnership of over 60 institutions. The command advocates to incorporate deterrence history and theory, allied perspectives, the importance of treaties and alliances, an understanding of capabilities, delivery systems, weapons, and C2 capabilities into curriculums. The aim is to enhance understanding of our mission and the importance of strategic deterrence while further developing the nation's next generation of national security professionals. Together with Professional Military Education, this creates a strategic advantage necessary for interoperability across Joint and Allied forces.

Joint Force interoperability is further enhanced through USSTRATCOM's joint exercises

and wargames. Despite the challenges posed by the pandemic, the command completed over 350 events specifically designed to produce trained and ready forces capable of operating across the spectrum of conflict. Whether done virtually or in person, exercises and wargames are critical command enablers to sustaining readiness and enhancing our ability to rapidly project national military power globally. They are also a primary mechanism in strengthening relationships with allies and partners.

## DYNAMIC STRATEGIC ENVIRONMENT

*Strategic Competition demands we be ready for any threat, in any domain, at any time. Potential adversaries are building advanced nuclear capabilities, fielding increasingly capable conventional forces, and exploiting seams below the level of armed conflict, in an attempt to gain strategic advantages in pursuit of their national objectives.* China and Russia are challenging our strength through a wide array of activities that warrant a concerted and integrated whole of government response. *For the first time in our history, the nation is on a trajectory to face two nuclear-capable, strategic peer adversaries at the same time, who must be deterred differently. We can no longer assume the risk of strategic deterrence failure in conflict will always remain low.*

This is not to say strategic competition will end in armed conflict; rather, in the event of conflict with a near-peer, nuclear-armed adversary, the risk of a strategic deterrence failure increases. We must maximize our ability to prevent strategic deterrence failure and find ways to reduce the risk of miscalculation in a crisis, by engaging all elements of national power to effectively communicate our resolve to potential adversaries. The command stands ready to support diplomatic efforts as a tool of first resort, utilizing innovative and reliable ways to deter strategic threats and set favorable conditions to shape the global environment.

## China

Under a veil of secrecy, China continues to advance comprehensive military modernization programs for the People's Liberation Army (PLA), building a robust lethal force with capabilities spanning all domains. This modernization includes nuclear weapons and forces, and supports longstanding goals to establish regional hegemony, deny U.S. power projection in the Indo-Pacific region, and supplant the United States as the security partner of choice. While China's nuclear stockpile is currently smaller (but undergoing an unprecedented expansion) than those fielded by Russia and the United States, the size of a nation's weapons stockpile is a crude measure of its overall strategic capability. To fully assess the China threat, it is also necessary to consider the capability of the associated delivery system, command and control, readiness, posture, doctrine and training. By these measures, China is already capable of executing any plausible nuclear employment strategy within their region and will soon be able to do so at intercontinental ranges as well. *They are no longer a "lesser included case" of the pacing nuclear threat, Russia.*

These capabilities bring into question China's stated "No First Use" policy declaration and implied minimum deterrent strategy. Behind a complete lack of transparency, China is rapidly improving its strategic nuclear capability and capacity, with rapid growth in road mobile production, doubling the numbers of launchers in some ICBM brigades, deployment of solid fuel intercontinental ballistic missile (ICBM) silos on a potentially large-scale, an added air leg, and are well ahead of the pace necessary to double their nuclear stockpile by the end of the decade. This is all in keeping with Chinese President Xi Jinping's 14th Five-Year Plan's (2021-2025) call to "strengthen strategic forces" and "accelerate the creation of high-level strategic deterrence."

In the very near-term China will possess a credible nuclear triad, supported by its growing stockpile and weapon systems capable of multiple independently targetable reentry vehicles

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(MIRV). The PLA is developing and fielding precision strike nuclear delivery systems such as the dual use DF-26 intermediate-range ballistic missile (IRBM) and survivable road-mobile ICBMs with the CSS-10 mod 2 (DF-31A) class missile capable of striking locations within the continental United States. The CSS-20 (DF-41) became operational last year, and China has stood up at least two brigades. Enhancing the PLA Air Force's newly reassigned nuclear mission, the redesigned H-6N is capable of carrying a nuclear capable air-launched ballistic missile (ALBM) and conducting air-to-air refueling for greater range and flexibility. China's six, second-generation JIN-class ballistic missile submarines (SSBN) with JL-2 submarine launched ballistic missile (SLBM) provide a viable sea-based deterrent capable of maintaining continuous at-sea presence.

While China keeps the majority of its forces in a peacetime status, increasing evidence suggests China has moved a portion of its nuclear force to a Launch on Warning (LOW) posture and are adopting a limited "high alert duty" strategy. To support this, China continues to prioritize improved space-based strategic early warning, and command and control as specific nuclear force modernization goals. Their networked and integrated platform advancements will enable skip-echelon decision-making processes and greater rapid reaction. This shifting posture is particularly unsettling, considering the immature nature of Chinese strategic forces and compressed timelines needed to assess and frame a response, increasing the potential for error and miscalculation. Collectively, China's strategic nuclear modernization expansion raises troubling concerns and complements the conventional capability growth reported by INDOPACOM and other Combatant Commands.

Their conventional and strategic initiatives across the air and missile defense, anti-surface, anti-submarine, cyber, and space increase its ability to project counter-intervention and control further from their mainland throughout the Indo-Pacific region. To deter and deny foreign

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regional force projection, China is developing a range of new ballistic missile defense technologies in support of anti-access/area denial (A2AD) and tested a mid-course interceptor in February 2021. Within the last two years the PLA launched over 400 ballistic missiles (more than the rest of the world combined for non-wartime uses) to test and evaluate weapon system performance, and improve combat force effectiveness.

China recognizes the necessity of survivable command and control capabilities to more robustly support joint operations, speed of decision making, and cyber operations in modern warfare. The PLA placed a high priority on modernizing joint C2, logistics, and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems in part to resemble Western-style joint C2 systems. The PLA Strategic Support Forces (SSF) are taking steps to combine and restructure cyber forces into reconnaissance, attack, and defense capabilities to better support military operations. Then, while Beijing insists that the Chinese military does not engage in cyberespionage, continued theft of intellectual property translates to significant wealth losses with significant strategic implications.

My best military advice is to offer caution, observe their actions which speak louder than words, take steps to credibly deter armed conflict, and reject 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 continues to seek ways to enhance and reinforce its great power status through actions designed to polarize and erode U.S. leadership in international affairs. It continues to pursue a sphere of influence over and beyond its periphery and interfere with regional states' sovereignty, especially in matters of military security and economics. Over the last decade, Russia



also focused on national preparedness through strategic civil defense readiness exercises, demonstrating interoperability between civil and military organizations through wartime scenarios.

Russia pursued a strategic partnership with China through bilateral and multi-lateral military exercises such as KAVKAZ-2020, focused primarily on improved military-to-military relations at the highest levels. *Prudence dictates military planners consider and account for the complex threat environment, enabled by the strategic cooperation of these two nuclear-armed States with global military reach and shared multi-domain offensive capabilities.*

Russia's determined military and nuclear modernization campaign across its strategic triad and dual-use systems is close to completion. Over the last decade, Russia has recapitalized roughly 80 percent of its strategic nuclear forces, strengthening its overall combat potential with an imposing array of modernization efforts and novel weapons programs designed to ensure a retaliatory strike capability by all three triad legs. Upgrades incorporate new technologies into weapons systems, such as the nuclear-armed ICBM launched Avangard hypersonic glide vehicle. Other weapons programs, such as the Poseidon nuclear-powered and nuclear-armed underwater vehicle, and the Skyfall nuclear-powered and nuclear-armed cruise missile, threaten to redefine Russia's nuclear force with asymmetric strategic weapons capabilities never before fielded. 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 U.S. homeland.

Russia's strategic force includes a broad range of weapons, many of which are dual use or multi-role, and can be rapidly modified to be nuclear capable. As many as 2,000 nuclear weapons are not captured by existing arms control agreements; theater and tactical nuclear weapons are

entirely outside of any treaty framework. While the extension of New START provides helpful transparency and predictability for much of Russia's deployed strategic arsenal, a considerable level of uncertainty remains regarding the scope and disposition of Russia's nuclear arsenal, including non-deployed nuclear weapons and its novel systems that are not accounted for under the treaty. This is troubling given a robust nuclear weapons production complex capable of producing hundreds of warheads per year, enabling Russia to increase its overall nuclear stockpile - driven primarily by projected increases in unconstrained nuclear weapons - while our production capacity remains essentially non-existent. I stand ready to offer my best military advice in support of DoD and State Department efforts to make progress on follow-on arms control agreements.

Clearly, nuclear weapons remain a critical element of Russia's security strategy and its willingness to contemplate first-use, serves as a core strategic consideration. Russia's 2020 nuclear deterrence policy declared it may use nuclear weapons in response to a conventional attack, if the state's existence is threatened. A determined pursuit of non-strategic nuclear capabilities indicates a troubling readiness to rely on these weapons in a conventional overmatch situation. The aim is to deter the United States and our allies by offsetting its conventional inferiority and attempt to terminate conventional conflict on terms acceptable to Russia. Therefore, our nuclear forces must include a sufficient range of capabilities and attributes such that Russia never mistakenly perceives any advantage from using nuclear weapons at any threshold of violence.

### **North Korea and Iran**

**North Korea:** North Korea remains a security challenge to the United States and our allies. It continues conducting activities that threaten regional stability and defy international norms. North Korea has tested ICBMs designed to strike the entire continental United States and

has a large inventory of theater ballistic missiles. USSTRATCOM supports DoD and State Department efforts to coordinate with regional partners, reduce military tensions, and engage diplomatic efforts towards achieving the complete denuclearization of North Korea.

**Iran:** Iran's policy of arming and employing proxy forces with advanced conventional weapons ensures it will remain a destabilizing force in the Middle East. Iran possesses the largest ballistic missile force in the region. Robust research and development continues to extend the range and improve performance of various ballistic missile types, several of which can range Israel and the Gulf countries. In April 2020, Iran conducted a space launch incorporating and testing technology interchangeable with ballistic missiles. It also continues to exceed low enriched uranium stockpile limits and resumed enriching uranium at higher than acceptable levels. Iran's actions threaten global commerce, security, and stability.

## **STRATEGIC DETERRENCE IN THE 21ST CENTURY**

Deterrence fundamentals against such threats have not changed. We drive to deny any adversary their aim, or impose a cost greater than what they seek, such that the benefit of restraint outweighs the perceived benefit of their possible action. These deterrence fundamentals apply from gray zone activities through nuclear use. *The spectrum of conflict today, however, is neither linear nor predictable.* We must account for the possibility of conflict leading to conditions which could very rapidly drive an adversary to consider nuclear use as their least bad option.

To avoid strategic deterrence failure we must reinstitute a critical forgotten lesson that *deterrence operates continuously from peacetime, through the gray zone, worldwide, across all domains, and into conflict.* It requires an integrated approach from the entire Department, across the whole of government, and in cooperation with allies and partners. USSTRATCOM works with the other Combatant Commands, Services, and Allies to integrate deterrence into all plans

and operations. In 2020, USSTRATCOM executed six combined Bomber Task Force (BTF) deployments and included Allied participation in our Tier 1 Globally Integrated Exercises, giving us the best opportunity to strengthen communications, operational relationships, and overcome unforeseen issues.

## **SAFE, SECURE, RELIABLE AND EFFECTIVE NUCLEAR FORCE**

USSTRATCOM's requirements are based on what is needed to meet Presidential direction. As reaffirmed by every Presidential Administration over the past sixty years, a safe, secure, and effective nuclear force remains the most credible combination of capabilities to deter strategic attack. Current programs of record have been repeatedly shown to be the best way to meet those requirements.

*The nation requires a fully modernized nuclear force and supporting infrastructure to ensure the solemn obligation to protect the security of the American people is upheld.* Each element of our nuclear force has unique capabilities, but it is the combined attributes provided by each leg of the triad that together allow the command to execute our national security strategic guidance. I want to be clear, each piece of the triad is essential...but they are also complementary, underpinning U.S. military operations around the world.

*Every Operation Plan (OPLAN) in the Department and every capability assumes that strategic deterrence will hold.* Therefore, *we must recapitalize the triad to ensure the Joint Force can operate when, where, and as required to defend our national interests.* We have reached a point, however, where end-of-life limitations and underinvestment in our strategic deterrent and supporting infrastructure - coupled with adversaries who are modernizing and fielding increasingly capable forces - leave no remaining margin for capability replacement. *We cannot continue to life-extend our leftover Cold War era weapons and systems indefinitely, and successfully prevail in strategic competition - their credibility will be questioned. I stand ready*

*to offer my best military advice to support Secretary Austin in accomplishing strategic and policy objectives, to ensure strategic reviews on sustainment and modernization are well informed of the impacts to strategic deterrence and stability.*

## **LAND-BASED TRIAD COMPONENT**

The nation's ICBM force is and remains the most responsive leg of the triad. ICBM geographic dispersion presents an intractable targeting problem, complicating adversary strategies. For example, *without U.S. ICBMs China becomes a strategic nuclear peer*. These missiles are capable of holding a wide range of targets, to include emergent and time sensitive targets, at risk. They are survivable to all but a massive nuclear exchange. They are also the least expensive to maintain and possess the highest day-to-day readiness.

### **Requirement for Minuteman III (MM III) Sustainment**

The MM III continues to provide a highly reliable and secure deterrent capability. While Minuteman has successfully served our nation since 1962, delaying needed modernization for the past 20 years resulted in aging components, asset attrition, and declining infrastructure requiring a comprehensive weapon system replacement.

Air Force analysis concluded another life extension would be more costly than recapitalization and would not address future technical challenges and threats. USSTRATCOM supports ongoing sustainment programs necessary to keep the MM III viable and effective until its replacement, the Ground Based Strategic Deterrent (GBSD), begins fielding in 2028 and reaches full operational capability in 2036.

### **Requirement for Ground Based Strategic Deterrent**

USSTRATCOM is confident GBSD will meet requirements, reduce sustainment costs, and maximize day-to-day readiness. It is the best approach to ensure the most responsive leg of the triad remains reliable and credible in response to the evolving strategic environment. During a

recent visit to the GBSD Program Office, I was impressed with the Air Force's pursuit of innovative development approaches to deploy GBSD on time, as it remains a USSTRATCOM priority.

## **AIR-BASED TRIAD COMPONENT**

Bombers are among the most flexible, visible, and versatile leg of our nation's delivery platforms. Bombers offer both nuclear and conventional deterrence and employment options, enhancing force availability and execution. As demonstrated by successful BTF missions, this stabilizing capability provides a wide variety of deterrence options to the President, signals unwavering resolve to our adversaries, and assures the nation's allies and partners.

Over the past year, USSTRATCOM utilized *BTF missions as the iconic example of Dynamic Force Employment*. In doing so, we dramatically increased the operational readiness of the crews, improved integration with the Joint Force, Allies and partners, practiced procedures for nuclear weapons and supporting infrastructure employment, and regularly exercised our NC3 enterprise. Full funding for these strategic aircraft, and associated weapons and communications systems is imperative, as many approach or are beyond their planned service life.

### **Requirement for B-52 and B-2 Sustainment**

**B52:** The B-52H is a 60-year-old platform, projected to remain in service for another three decades. To address both maintenance and operational challenges, it must undergo critical modernization upgrades in response to evolving threats. Its 1960s-era TF-33 engines are scheduled for upgrade through the Commercial Engine Replacement Program (CERP), enabling longer unrefueled range while eliminating parts obsolescence issues plaguing the current engines. The B-52 Radar Modernization Program (RMP) will replace its increasingly inoperative, legacy radar with a digital phased array system to allow continued operations in GPS denied environments. Modernized NC3 systems are also critical to B-52 operations to ensure

communications continuity. Both RMP and NC3 upgrades require continued support and funding to remain on schedule.

**B-2:** The B-2 provides unmatched capability as the only heavy-payload, penetrating stealth bomber in the world able to hold at risk heavily defended, hard, and deeply buried targets. These unique attributes require the execution of planned sustainment programs to ensure survivability, reliability, and mission effectiveness until the B-21 is fielded. Ongoing sustainment activities include planned communication upgrades and low-observable maintenance. In particular, the Air Force must accelerate integration with advanced enabling capabilities to support the B-2 in denied environments.

#### **Requirement for B-21**

The B-21 Raider will be the future bomber force. When fielded, the B-21 will provide warfighters with increased survivability and flexibility to attack high-value strategic targets worldwide. The Raider will deliver both nuclear and conventional weapons in support of national objectives. It is critical this major recapitalization effort remains on schedule and on budget to prevent operational shortfalls within the bomber force structure.

#### **Long Range Standoff (LRSO) and B61-12**

The air-delivered nuclear weapon portfolio enables deterrence of strategic attack via our bomber force. Currently composed of the Air Launched Cruise Missile (ALCM), the B83 gravity bomb, and the B61 family of weapons, this portfolio provides both standoff and direct attack munitions to meet operational requirements. Continued monitoring and stockpile surveillance is necessary to ensure these weapons remain reliable until replaced.

**LRSO:** The LRSO missile will replace ALCM as the nation's only air-delivered nuclear cruise missile. I want to be clear, this capability must be protected as it is vital to USSTRATCOM's ability meet mission requirements. I view LRSO as the most cost-effective

approach to ensure a credible and effective triad. It offers the best opportunity to hedge against operational risks in the event other triad modernization efforts are delayed. It will penetrate and survive against advanced air defense systems to which its predecessor, the ALCM, is losing ground. When fielded it will outpace threat technologies, enhance deterrence and assurance, and achieve a wide array of targeting objectives for the foreseeable future. LRSO allows a single bomber to cover larger geographic areas which would otherwise require additional B-21 bombers, KC-46 tankers, B61 gravity bombs, and decades of supporting infrastructure. Eliminating this critical capability would require additional land and sea based ballistic missiles to hold required targets at risk. A calculated yet rapid transition from ALCM to LRSO is planned to optimize deterrence, service life, and the capabilities of both weapons.

### **Tanker Requirements**

All bomber missions require a robust and reliable tanker force. The KC-46 is planned to replace a portion of the aging KC-135 fleet in the coming years. Despite fielding delays USSTRATCOM strongly supports ongoing Air Force efforts to correct and mitigate manufacturing and technical deficiencies, and efforts to modernize and recapitalize the entire tanker force in response to mission needs.

### **SEA-BASED TRIAD COMPONENT**

The nuclear-powered ballistic missile submarine (SSBN) is the nation's most survivable and enduring nuclear strike platform. The SSBN contributes to deterrence and assurance messaging through partial or full generation of our fleet. With the intercontinental range Trident II D5 missile, our SSBNs patrol the world's oceans virtually undetected, providing an assured response capability in any scenario. This assured second-strike capability address deterrence gaps in ways unique from other legs of the triad. When paired with its survivability, this crucial capability gives the President significant latitude for response options.



### **Requirement for COLUMBIA-class SSBN**

The OHIO-class SSBN cannot be further extended and will begin retiring from service in just six years. This submarine class has already been extended to an unprecedented 42 years (no individual U.S. Navy submarine has been in service longer than 37 years) and will continue to face sustainment and readiness challenges until it is replaced by the COLUMBIA-class SSBNs. While the command could use more, procurement analysis determined *at least 12 COLUMBIA-class SSBNs are absolutely required*. This minimum capability allows USSTRATCOM to meet our at-sea requirement during the most limiting maintenance intensive times throughout its service life. On-time delivery of the COLUMBIA-class SSBN remains the Navy's number one shipbuilding priority.

### **Requirement for Trident Sustainment and Modernization**

Given the importance of an uninterrupted sea-based strategic deterrent, investment in the future SSBN Strategic Weapon System (SWS) is vital. The Trident II D5 weapon system has been life extended (D5LE) to support the remaining years of the OHIO-class SSBN and enable deployment on the first COLUMBIA-class hulls. A second D5 life extension (D5LE2) ensures continued sea-based strategic deterrence through the 2080s. D5LE2 will utilize reliable high performing design elements and components from the first life extension, to mitigate cost and technical risks.

### **SLCM-N**

To enhance flexibility and diversity of our nuclear forces, USSTRATCOM supported the reintroduction of a modern nuclear sea-launched cruise missile (SLCM-N) to address regional deterrence challenges from Russian and Chinese nuclear capability advancements. The SLCM-N complements the low-yield SLBM to provide assurance to our allies through tailored response options in vast operating areas where forward basing may not be possible. Limited and graduated

U.S. response options, such as SLCM-N and low-yield SLBM, provide a more credible deterrent to limited attack against the United States and our allies and partners than relying primarily on the threat of large-scale nuclear responses. Without this capability adversaries may perceive an advantage at lower levels of conflict that may encourage limited nuclear use. An analysis of alternatives (AOA) is underway for SLCM-N. I anticipate that this AOA will inform discussions in the context of an anticipated new posture review.

### **Integrated Undersea Surveillance System (IUSS)**

To ensure the viability of our current and future SSBNs, it is imperative to address security threats in the undersea domain. Advancement in Russian submarine stealth and detection necessitates continued Integrated Undersea Surveillance System (IUSS) recapitalization efforts. This capability is vital to maintaining advantages in the undersea domain, ensure survivability of our sea-based strategic deterrent, and protection of the homeland.

### **NUCLEAR COMMAND, CONTROL, AND COMMUNICATIONS (NC3)**

NC3 is the critical link required to provide assured communications between the President and the forces. In 2018, the Secretary of Defense consolidated and delegated lead NC3 responsibility to the Commander, USSTRATCOM. As the NC3 Enterprise Lead, I execute increased authority for operations, requirements, systems engineering, and integration oversight through the NC3 Enterprise Center (NEC). The NEC, operating as a separate but aligned organization, oversees and manages NC3 to ensure mission readiness through data-driven, risk-informed operations, while propelling accelerated development and delivery of a threat-informed “next generation” NC3 enterprise.

Substantial progress has been made in the two years following designation, in what has been a team effort across the entire Department. Specifically, the NEC improved the ability to ensure NC3 supports the nation’s Nuclear Command and Control (NC2) at any time, by

improving operational reporting and building a culture of readiness. The team laid the groundwork for the future enterprise by directing investments in NC3 programs and cyber defense, creating an engineering framework for designing and testing new architectures, engaging industry on best practices and technology, and advancing a broad intelligence community focus.

The enterprise focus for the coming year remains on sustaining readiness while pursuing the next generation of NC3 by capitalizing on integrating concepts, revolutionary changes in technology, innovative practices, and cyber resilient and protected capabilities.

### **Strategy to Modernize NC3**

The NEC is developing the next generation NC3 system by executing a multi-pronged strategy approach, organized by four vectors. The first focuses on programs of record encompassing budget and acquisition lifecycle processes to deliver, modernize, and sustain future core capabilities. The second assesses demonstrations, experiments, and tests aimed at enhancing discovery and development of innovative technology approaches, to transform existing NC3 programs and operations. The third reviews and revises policies, postures, Tactics, Techniques and Procedures (TTPs) to streamline enterprise guidance and efficiently achieve operational outcomes. The fourth expands the use of critical technology enablers such as artificial intelligence, digital engineering, and modeling and simulation.

It is important to understand NC3 modernization is not a product or a “thing” with a long service life like a delivery platform or warhead - rather it is a process of rapid continuous, incremental network capability improvements. The first evolution is referred to as “NC3 Next Generation Increment 1” and represents currently funded programs of record. This first increment improves our posture in space, improves hardness to emerging cyber and cryptographic threats, shifts our dependency on unsustainable legacy systems, and increases resilience by enabling dynamically reconfigurable architecture.

### **Survivable NC3 Legacy Modernization**

USSTRATCOM and the NEC are aligned with the Services to modernize our survivable legacy NC3 systems integrated with our aging airborne C2 platforms such as the E-4B National Airborne Operations Center (NAOC) and E-6B Airborne Command Post (LOOKING GLASS)/Take Charge and Move Out (TACAMO) aircraft. Other efforts include our space-based protected satellite communication (SATCOM) capabilities such as Advanced Extremely High Frequency (AEHF) that provides survivable communications for Presidential voice conferencing and nuclear force direction.

Upgrading Very Low Frequency (VLF) and Low Frequency (LF) survivable communications is also necessary to provide extended range, greater protection, and more rapid transmission times in response to emerging adversarial threats. Current efforts seek to modernize and transform traditional VLF/LF systems to state-of-the-art capabilities which are interoperable across Service lines and infuse improved protection features for tactical and strategic applications. The challenge is rapidly incorporating VLF/LF architecture enhancements to ensure robust and layered communication services from the President to fielded forces during all phases of conflict.

### **NC3 Cybersecurity**

*I want to be clear, I am confident in today's NC3 enterprise cybersecurity posture and resilience.* However, as recent events demonstrate, the adversary continues to seek new avenues of attack on our nation's critical infrastructure. USSTRATCOM is aligned with USCYBERCOM, USSPACECOM, NSA, and the Service components to respond to and operate through adverse cyber conditions. We are taking actions to enhance cybersecurity resilience for systems under development by adopting advanced technologies and best practices, and designing in cyber protections from the start. This forward facing cyber protection approach enables persistent defense throughout the lifecycle of these systems.

Cybersecurity must be a prioritized investment to ensure ongoing modernization initiatives remain operationally relevant. When cyber protections are complemented with dedicated enterprise-level sensing and monitoring capabilities, they provide a holistic cybersecurity posture enabling timely, data-driven responses to emerging threats.

## **NUCLEAR WEAPONS AND SUPPORTING INFRASTRUCTURE**

I look forward to working with the Department of Energy (DOE) and National Nuclear Security Administration (NNSA) to ensure our weapons complex and supporting infrastructure remains viable into the future. Although safe, secure, reliable, and effective today the nuclear weapons stockpile and supporting infrastructure are rapidly aging into obsolescence. Today the majority of our weapons exceed or will soon reach their planned retirement dates. Projected modernization efforts provide a path to maintain a reliable and effective force, but are not expected to complete until well into the 2040s. Failure to execute these programs will continue to transfer programmatic risk to the DoD as operational risk to fielded forces, adding to the risk the nation already faces. If this trend is not reversed, I am concerned the command will be unable to meet national-level policy objectives.

### **Infrastructure Improvements**

Stockpile modernization depends on the Nuclear Security Enterprise (NSE) infrastructure. Annual budget deliberations increasingly elevate concerns about the ability of the NNSA to meet the nation's nuclear force requirements. After the closure of the Rocky Flats Plutonium pit fabrication facility in the early 1990s, the nation no longer had the capability to produce key components, turning instead to limited warhead refurbishments to sustain the stockpile. As a result, component and materials manufacturing needed to produce new nuclear weapons effectively stopped and much of the infrastructure atrophied. Then, shifting budget priorities over the past 30 years delayed needed weapons and infrastructure modernization programs,

contributing to erosion of critical nuclear force capabilities and capacities. Today's NSE infrastructure, which the command relies on to sustain strategic deterrence, continues to decline and requires investments for sustainment and immediate modernization. Facility condition, loss of key capabilities, and constrained capacities also limit the NNSA's timely response to unforeseen technical, geopolitical, programmatic, or operational developments. As such, the NNSA is now challenged to simultaneously complete one limited refurbishment (B61-12 LEP) and one maintenance activity (W88 Alteration). This is concerning as recapitalizing the remaining force will require the capacity to concurrently execute up to four modernization programs to meet operational requirements.

Progress has been made with close NNSA collaboration and budget transparency, but much of the damage to the infrastructure and personnel has already been done. As a result, many of the modernization and sustainment efforts (which typically require 10-15 years to execute) have zero remaining schedule margin and some are already late-to-need. ***If the nation does not continue to address these concerns, no amount of money will be able to adequately mitigate operational risks associated with key stockpile and infrastructure capability losses.*** Long lead times needed to field modern replacement infrastructure require continued investments in future and enduring facilities and capabilities.

Today's nuclear complex relies on single production points and vendor sources, putting at risk our plutonium and uranium processing, high explosives manufacturing, and production of radiation hardened electronics. This provides few to no alternatives in the event of an unplanned production facility or vendor shutdown. In such an event, recovery of those production efforts could take many years.

Plutonium pit production is the biggest stockpile modernization issue - pits have not been produced at scale since Rocky Flats ceased production in 1989. As a point of comparison, our

adversaries produce new pits in modern facilities at a rate many times greater than 80 per year; while most of our stockpile depends on pits that are, on average, over 50 years old and well past their design life. Accurately predicting aging plutonium performance with today's facilities and modeling capabilities is limited at best. We cannot study our way out of this problem. If we fail to recapitalize plutonium pit production now, we risk catastrophic failures given an infrastructure incapable of responding in a timely manner. Bottom line, re-establishing plutonium pit production is a "must do" and is foundational to stockpile modernization.

Additionally, while uranium component processing limitations are being remedied by the Uranium Processing Facility (UPF) project, we must also address facilities needed for manufacturing uranium components and radiation cases, producing lithium, and manufacturing trusted non-nuclear components.

### **Updated Stockpile Strategy**

I applaud NNSA's initiatives to execute programs of record and W76 modification efforts. Their investment in advanced diagnostics, and key research and development activities reduce operational risks resulting from technical issues. Most warheads in today's stockpile are now scheduled to remain in service well beyond original design lives, thanks to engineering feats, ingenuity, and NNSA stewardship.

USSTRATCOM appreciates Congressional actions to fund NNSA's Fiscal Year 2021 Stockpile Management and Production Modernization programs (fully funding B61-12 life extension, W88 alteration, W80-4 life extension, W87-1 modernization, and W93 development). I specifically want to emphasize the importance of the W93 warhead modernization program. While the command could use it earlier, the W93 is a "just-in-time" development program to mitigate risk to the triad's sea leg. USSTRATCOM identified operational requirements including a modern warhead with reduced mass properties that improves operational flexibility and enables

more efficient loading on COLUMBIA with fewer numbers of missile tubes. Currently fielded SLBM warheads will begin to simultaneously age-out in the late 2030s, putting the DoD and NNSA in a position of having to modernize the entire SLBM warhead stockpile at the same time. To avoid this convergence, starting the W93 program now is key to maintaining our sea leg capabilities. It is also vital to our long-standing cooperative relationship with the United Kingdom.

## **NUCLEAR WEAPONS SAFETY AND SECURITY**

### **MH-139A Helicopter**

I appreciate Air Force efforts to deliver the MH-139A Grey Wolf. With support from Congress, the Air Force is poised to replace the existing UH-1N helicopter fleet with improved speed, range, endurance, and payload capabilities to ensure safe convoy escort and Emergency Security Response to the ICBM force.

### **Counter-unmanned Aircraft System**

Rapid proliferation and growing technological sophistication of small unmanned aircraft systems (sUAS) are an increasing threat to the nation's nuclear enterprise. Technology trends easily transform sUAS into increasingly capable weapons in the hands of state and non-state actors, and criminals with hostile intent. The Department continues to field counter-sUAS capabilities and are refining tactics, techniques, and procedures to address this developing threat.

## **GLOBAL STRIKE**

Hypersonic weapons show promise to be the conventional complement the nuclear force needs to continue deterring adversaries and offers an opportunity to take further steps to reduce the number of nuclear weapons in our national security strategy. Developing and fielding hypersonic weapons has long been a USSTRATCOM requirement and a Department priority.



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Conventional hypersonic weapons will fill an important role by providing options to hold high-value, time-sensitive and other targets at risk without crossing the nuclear threshold. They will enable responsive long-range, conventional strike options against distant and defended threats when other forces are unavailable, denied access, or not preferred.

Programs such as the Army Long Range Hypersonic Weapon (LRHW), Navy Conventional Prompt Strike (CPS), the Air Force Air-launched Rapid Response Weapon (ARRW), and the complementary intelligence, surveillance, and reconnaissance (ISR) field a family of hypersonic weapon systems in the early-to-mid 2020s. I am pleased with the progress to field a capability in the near-term and encourage continued commitment to accelerate production and fielding.

USSTRATCOM is prepared to command and control conventional hypersonic weapons immediately at initial operational capability. We will leverage existing planning organizations to integrate and synchronize hypersonic capabilities with other joint fires across all domains. Maturing concepts of operation, mission planning, and other system enablers are underway to ensure this transformational warfighting capability supports the NDS.

### **MISSILE DEFENSE**

Missile defense endures as a critical component for comprehensive strategic and tailored regional deterrence. USSTRATCOM executes its responsibilities for coordinating global missile defense planning and operations support, including advocacy for capabilities and enhancements, and joint training and education in coordination with other Combatant Commands, Services, and Agencies. 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. Potential adversaries continue to improve threat system capabilities and capacities, blurring missile defense operations across

traditional regional boundaries. Mitigating trans-regional threats with increased range and lethality requires more than just active missile defense. Navigating this environment requires a broad approach and renewed emphasis on leveraging opportunities to negate missile threats prior to launch, during all phases of flight, and after impact.

Challenges remain in the Department's efforts to integrate limited defense resources and architectures for allied and partner interoperability. These critical assets protect against missile attacks on deployed U.S. forces, preserve freedom of action by countering adversary anti-access/area denial tactics, and assists allies and partners to better defend themselves through traditional and asymmetric means. USSTRATCOM's NIMBLE TITAN wargame with participants from 24 countries and three international organizations, continues to advance multinational collaboration and operational integration efforts aimed at enhancing deterrence and defense concepts against potential attack.

## **NEW MISSILE WARNING FRAMEWORK AND REQUIREMENTS**

Two essential elements of strategic deterrence are detection (early warning of ballistic and advanced missile threats) and integrated global planning. We are challenged to fully achieve these with current or planned terrestrial-based radar architectures alone due to geographic constraints and characteristics of future missile threats. Advanced Russian platforms challenge our sensor networks and are designed to operate without regard for the boundaries between U.S. combatant command areas of responsibilities. Therefore, it is essential to move beyond regional approaches to addressing adversaries and challenges that are increasingly global in nature.

The command in coordination with USSPACECOM, USNORTHCOM, and the Services continues to examine, evolve, and exploit advanced technical and operational concepts, and break down institutional barriers inhibiting information flow. The command is focused on increasing decision space through a resilient joint all-domain architecture capable of correlating data from

any sensor and using the best C2 system to employ the best-positioned shooter. This highly distributed and resilient architecture leveraging future space-based sensors, may be able to provide end-to-end detection, tracking, and discrimination of hypersonic glide vehicle, cruise and ballistic missile threats globally.

### **Layered Missile Defense**

I applaud Congress's continued support for active defense capabilities to pace the threat and exploration of new capabilities like the Hypersonic Glide Phase Interceptor, high energy laser, and other directed energy technologies. As the Department pursues development of complements to existing Ground-based interceptor (GBI) capabilities, work continues using novel, cost effective options to counter the ICBM threat. The intercept of an ICBM by an Aegis ship utilizing the SM-3 Blk IIA missile in November 2020 highlights one opportunity to recapitalize existing technology. Additional examples include integrating existing sensors for tracking ballistic, hypersonic, unmanned aerial systems, and cruise missile threats.

### **Missile Defense Review – Progress**

In accordance with the 2019 Missile Defense Review (MDR) the Department updated policies, responsibilities, and procedures for missile defense research, development, test and evaluation, procurement, operations, and sustainment. USSTRATCOM, working with the community of interest re-wrote the Warfighter Involvement Process (WIP) to incorporate MDR findings. Revisions align with the Department's budget process to maximize warfighter input to capability development and acquisitions, and seek timely delivery of missile defense capabilities. USSTRATCOM will continue to advocate for missile defense requirements through capability and utility assessments, and ensure operational tests and evaluations meet warfighter demands.

### **Joint Electromagnetic Spectrum Operations**

USSTRATCOM's responsibility for Joint Electromagnetic Spectrum Operations (JEMSO)

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includes advocacy for electromagnetic warfare capabilities, contingency support, and joint planning and training for electromagnetic spectrum (EMS) operations. The Spectrum is an infinite battleground enabling all warfighting domains and functions. Adversaries like China and Russia have observed our use of and dependence on the EMS, and seek to challenge us by investing heavily in counter radar, navigation, communications, and data link technologies to erode our advantages. To counter this threat, the United States must regain technological advantages for our EMS systems and execute capabilities through dedicated organizational elements.

USSTRATCOM coordinated with the Secretary of Defense's Electromagnetic Spectrum Operations (EMSO) Cross Functional Team, in developing the EMS Superiority Strategy Implementation Plan to "Establish Effective EMS Governance." We are actively engaged to strengthen support and build an EMSO proponent organization for the Department. Efforts include establishing JEMSO Cells at Combatant Commands, creating an electromagnetic battle management (EMBM) system, and integrating fused data into the EMBM through a DoD enterprise database. The Joint Electromagnetic Warfare Center (JEWEC) at USSTRATCOM established the first-ever Information Analysis and Fusion capability necessary to provide specific data for combatant command operational JEMSO cells to conduct battle management in spectrum operations. Continued Congressional support and sustained investments are critical to these initiatives.

## CONCLUSION

As a global warfighting command, USSTRATCOM integrates strategy and capabilities to achieve strategic deterrence in today's dynamic threat environment. The command will continue to pursue success using globally integrated plans and operations within the Department, the whole of government, and with our allies and partners. I look forward to working with Secretary Austin

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to continue to maintain a safe, secure and reliable nuclear force into the future, and to ensure we strengthen strategic stability.

USSTRATCOM is home to the majority of the Department's Strategic Deterrence workforce intellectual capital. These professionals are dedicated to our national defense and we must continue to foster and grow this resource. With continued Congressional support and stable funding, USSTRATCOM will continue pacing the growing threats and develop the future force needed to execute the Department's top priority mission.

Efforts to sustain and modernize deterrent forces must continue. Our strategic forces underpin every military operation around the world, and *we cannot afford to delay given the increasing threats facing our nation*. Today, we are at a tipping point where the cost of modernizing our strategic forces is negligible compared to the cost we will likely incur if our triad and supporting infrastructure are allowed to age-out completely. Strategic force modernization is an every-other-generation responsibility...today is our generation's turn to lead.