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SUBCOMMITTEE ON STRATEGIC FORCES
SENATE ARMED SERVICES COMMITTEE
UNITED STATES SENATE

DEPARTMENT OF THE AIR FORCE
PRESENTATION TO THE SENATE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGIC FORCES
UNITED STATES SENATE

SUBJECT: FY22 Posture for Department of Defense Nuclear Forces

STATEMENT OF: General Timothy M. Ray, Commander
Air Force Global Strike Command

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INTRODUCTION

First and foremost, I want to thank the committee for the opportunity to appear before you and testify on behalf of the 33,700 men and women of Air Force Global Strike Command (AFGSC) that I am privileged to lead. I would also like to take the opportunity to thank the men and women of AFGSC for their successful work in leading and taking care of each other during a time of national crisis. Even in the toughest of times, this command continues to develop the world's most respected and feared long-range strike force, ready to respond anytime and anywhere to ensure the success of the Department of Defense's highest priority mission.

AFGSC plays a central role in delivering a safe, secure, reliable, effective, and affordable long-range nuclear and conventional precision strike force. This is made possible every day because of the amazing people in our command and the phenomenal relationships within the enterprise. After nearly two decades in the counter-terrorism fight, the global context continues to shift. The 2018 National Defense Strategy (NDS) and President Biden's Interim National Security Strategic Guidance acknowledge the reemergence of long-term, strategic competition as a central challenge to our nation's prosperity and security. We are facing an increasing number of nuclear threats from near-peer competitors, as well as new challenges to our legacy weapon systems, leveraged by modern capabilities. We recognize the importance of restoring margin ahead of our competition by developing the right leaders and the right processes to prepare, sustain, and modernize our nuclear weapon systems. Our nation's legacy bombers and Intercontinental Ballistic Missiles (ICBMs) are not aging gracefully. We are behind on modernization with no margin in the schedule. There are no allied bomber forces or ICBM forces, and the only production line for the B-21 is in its infancy. Our command is committed to delivering improved weapon systems as efficiently and affordably as possible by pursuing mature technologies, stabilizing requirements, and owning the technical baseline of our weapons systems; a formula that has proven successful in our acquisition efforts thus far.

Building on our proud heritage, we stand on the shoulders of giants. AFGSC continues this great legacy as we construct the long-range precision strike force our nation needs. In order to create the lethal, competitive force we need in the future, our nuclear enterprise must be driven by innovative leadership underpinned by a dedication to quality of life for our Airmen and families. We owe it to America's sons and daughters to train and equip them with the absolute best we can provide. Furthermore, we must ensure these Airman are part of a larger effort, linking them to their organizations and to their local communities. As we seek to achieve excellence in all our endeavors, we invite Congressional input to advance affordable, cost-effective, and innovative solutions, which ensure our strategic deterrent capabilities meet the challenges of the 21st century.

Our People - Developing Strong Leaders & Communities through Transition

Over the past year and through the most challenging of times, AFGSC has made significant progress in leading transition and improving the quality of life for our Airmen. Through the COVID-19 pandemic our team has risen

to the challenge and adapted our battle rhythm, implementing the necessary measures to ensure the safety and wellbeing of our Airmen and families during times of uncertainty.

COVID-19 MANAGEMENT

AFGSC's nuclear mission is the cornerstone of our nation's defense and the defense of our allies around the world. As the command responsible for two legs of the nuclear triad, we are ready to execute the mission under all circumstances and at any time. Every challenge presents an opportunity and the men and women of AFGSC continually rise to the occasion, displaying exemplary leadership, resilience, and problem-solving prowess in the most challenging situations. Our long-range strike bombers and ICBMs continue to operate and achieve what is needed, when it is needed. With the emergence of COVID-19, we employed the necessary precautions to include the isolation of crews and other mission essential personnel. Missile wings took proactive measures early on to preserve combat capability and guarantee combatant command requirements could be met for the duration of the pandemic. We also took preventative measures to preserve the capacity of our bomber forces and to minimize the potential impact to mission readiness. In fact, our combat mission readiness rates among our bomber aircrews is at its highest in the history of the command.

Recognizing the need for a "whole of community" approach to COVID-19, AFGSC leadership closely monitors the effect of COVID-19 on the AFGSC community, to include clinics, schools, and child care centers. We also work with medical professionals to monitor the health of our Airmen, to assess the impacts on the healthcare network's capacity, and to ensure implementation of preventative measures while continuing efforts to vaccinate our forces. Along with protecting our medical teams and contingency planning, our priorities are focused on sustained 5 to 7-day ICBM alerts, maintaining E-4B National Airborne Operations Center (NAOC) capabilities, coverage of our operational commitments, bomber modernization, and Nuclear Command, Control, and Communication (NC3) sustainment. Looking ahead, we will leverage lessons learned to ensure we employ the best practices for a post-COVID command.

STRATEGIC NARRATIVE & CONTEXT

Our 2018 NDS and President Biden's Interim National Security Strategic Guidance acknowledge the complex global security environment and the reemergence of long-term strategic competition with China and Russia as a central challenge to U.S. prosperity and security. We must now consider multi-polarity with potentially dangerous adversaries like North Korea, Iran, and extremist organizations. As we think broadly about our current global situation and transition to the future, there are new considerations we must continue to explore, to include how we better equip our Airmen and develop our leaders to prepare for the future fight. This strategic shift in our defensive posture requires us to focus on three critical areas within our mission:

- Improving **quality of life** for our Airmen and families through a culture of community, authentic leadership, innovation, and cross-functional collaboration will ensure our competitive advantage, will maintain adaptability through transition, and will ensure retention of our most important assets – our people. Retention of this talent is an imperative.
- **Sustainment** of our long-range precision strike capabilities and building margin in the force is critical to our role in the NDS. Congressional support will also ensure our budget is driven by strategy and facilitates our ability to execute the critical long-range strike mission.
- Overcoming adversarial challenges in a competitive environment will require sustained **modernization** and improvement, leveraged by enterprise relationships and empirically-driven data that ensures readiness for the future fight.

Future challenges dictate we be bold in our considerations and rethink how we build leaders in an all-volunteer force – retention and development of our talent is our competitive advantage. AFGSC leadership will continue its commitment to retaining talent and improving the quality of life for our Airmen and families.

QUALITY OF LIFE

The importance of this can't be stressed enough. The men and women of AFGSC have proven time and time again that they are up for any challenge and dedicated to the nuclear mission, but to keep them successful we must invest in their futures and that of their families every single day. We owe it to America's Sons and Daughters to support them to the level they support our Country.

FACILITIES

We continue improving the quality of life for our Airmen and our families at each of our wings. With strong advocacy from base leadership, the Air Force secured additional funding for *CY20 Operating and Capital Replacement and Repair* to address the most significant structural issues in our base housing communities. In addition, AFGSC's role in the Air Force-led Child Care Capacity Initiative continues to show great results; a critical component in the everyday lives of many of our Airmen. AFGSC has also improved quality of life for our ICBM force through improved internet connection at our missile alert facilities (MAFs). This past year, our team increased Wi-Fi capability by 1000% for our nearly 630 ICBM personnel to ensure optimal communication while serving in remote alert locations.

HEALTH & WELLNESS

Women comprise 23% of AFGSC. Therefore, we stood up lactation rooms for nursing mothers at each of our units and continue to create the spaces necessary to meet this crucial need for many of our families. In March 2020, we purchased resources to outfit each of our launch control facilities (LCCs) with dedicated lactation areas.

Additionally, over the past year we collaborated with the Air Force Surgeon General and the Defense Health Agency (DHA) to improve policy on Nuclear Enterprise Medical, Behavioral, and Mental Health practices. In FY21, Minot and Whiteman AFBs will add an additional 110 health care professionals to increase accessibility to care, a critical component to suicide prevention, for our Airmen and families.

AFGSC remains focused on our commitment to help Airmen and their family members thrive professionally and personally in order to ensure optimal readiness and steadfast mission execution. We are encouraged by the progress we have made in improving certain quality of life aspects for our people, but we acknowledge this is an ongoing effort and we still have more to do.

SUSTAINMENT – Building Margin in Our Capabilities for the Future Fight

With improved prioritization with in the Air Force Budget, conditions have greatly improved for building margin in our current forces. As the Air Component to United States Strategic Command (USSTRATCOM), we maintain a holistic view of readiness as an ecosystem, encompassing operations, maintenance, equipment, training, weapons, test, and security.

EIGHTH AIR FORCE

Eighth Air Force (8 AF), located at Barksdale Air Force Base, Louisiana, is responsible for the B-1B, B-2A, B-52H bombers and the E-4B National Airborne Operations Center (NAOC). Our bombers provide decision makers the ability to demonstrate resolve to our adversaries through generation, dispersal, deployment, and if directed, employment. While are heavy bombers equipped for nuclear armaments are constrained by the limits set out in the New START treaty, the overall size of the bomber force is driven by the significant contribution to conventional campaigns, now more of a concern in this era of strategic competition.

Based on NDS objectives as ordered by the Secretary of Defense, we have transitioned to the Dynamic Force Employment (DFE) model to help balance readiness and long-range strike capability. Our forces continue to operate globally in alignment with the NDS as Bomber Task Forces (BTFs), executing DFE missions in order to remain operationally unpredictable and strategically predictable. The Air Force has conducted continuous combat operations with 46% fewer aircraft than we had in 1991 while supporting continuous rotations in the United States Central Command (USCENTCOM) and United States Indo-Pacific Command (USINDOPACOM). In addition, 8AF bombers have also provided episodic support to United States Africa Command (USAFRICOM), United States European Command (USEUCOM), and United States Southern Command (USSOUTHCOM) areas of responsibility (AORs). During this period, the demand for bombers increased resulting in a growing toll on Airmen and readiness of the aircraft and equipment. Currently, AFGSC provides bomber forces to the combatant commanders through the Global Force

Management process and BTF operations orders (OPORDs). These opportunities enhance our support to our allies and display our resolve to potential adversaries. We will continue to leverage BTF missions from CONUS in order to meet NDS requirements while building readiness and flexibility for our personnel.

The core of AFGSC assurance and deterrence is our unwavering commitment to USSTRATCOM and our nuclear mission. While the effects of an extremely high operational tempo have reverberated throughout the bomber fleet, AFGSC continues to balance global force posturing with our nuclear mission, ensuring readiness and the health of our fleet.

B-1B LANCER

The B-1 remains a critical component of long-range strike as we transition to the B-21. Based at Dyess AFB, Texas and Ellsworth AFB, South Dakota, the B-1 is the most versatile, conventional-only, multi-mission weapon system and carries the largest payload of guided and unguided weapons of all three bombers. Multiple wartime deployments, high operations tempo, and harsh environmental exposure have proven the aircraft's combat effectiveness, but have taken a toll on aircraft availability. The B-1 has flown beyond its certified designed service life without full-scale fatigue testing to extend it. We must preserve the remaining structural life to maximize aircraft availability as we transition to the 2-bomber fleet (B-52 and B-21) of the future.

The B-1 was built as a low-level penetrator and was engineered for flight profiles different than the close air support profiles flown in support of USCENTCOM. The stand-off weapons currently employed by the B-1 today include the Joint Air-to-Surface Standoff Missile (JASSM), the Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER) and is the only Air Force delivery platform of the Long-Range Anti-Ship Missile (LRASM). This long-range precision strike capability plays a critical role for the B-1 in assuring our allies and deterring potential adversaries now and into the future.

Seventeen years of steady deployments characterized by repeated max-weight takeoffs, heavy-weight landings, and heavy-weight areal operations in the close air support role has stressed the B-1 beyond its designed structural limits. Consequently, this resulted in the need for increased structural inspections and repairs and an unwavering commitment by the B-1 community to successfully restoring fleet health and operational capability over the past year. Innovative maintenance practices such as Condition Based Maintenance Plus (CBM+) sustainment processes will help the Air Force achieve the service life goal for the B-1. This predictive approach to identifying aircraft subsystem degradation has minimized scheduled down time for the B-1 fleet. By concurrently making deferred repairs and by changing near end-of-life components, unscheduled breaks can be avoided, resulting in improved aircraft availability. Furthermore, in FY20, AFGSC stood up a dedicated depot-level structural inspection and repair line at the Oklahoma City Air Logistics Complex to assure the highest standard of aviation safety.

Another way we have preserved structural integrity of the B-1 is through the termination of low

altitude-high speed (LAHS) flight profiles. Over time, LAHS maneuvers have over-stressed the Forward Intermediate Fuselage (FIF) causing significant fatigue damage and shortening the remaining structural life of the aircraft. Terminating LAHS flight operations reduces this stress, delays the need for certain structural repairs, aids in the preservation of service life, and extends B-1 operations as a bridge to B-21 employment. In shaping this decision, we conferred with all Joint Force Air Component Commanders (JFACCs) and determined LAHS operations were no longer a priority for the B-1. However, we maintain the ability to return to this flight profile if and when it is needed.

B-1 upgrades and improvements are planned to ensure relevance, lethality, and survivability, making it a viable platform until retirement. Avionics and weapons upgrades are critical. The Integrated Battle Station includes the repair infrastructure of the upgraded Central Integrated Test System, Fully Integrated Data Link, Vertical Situation Display, and flight simulator upgrades. These capabilities provide aircrew with a more flexible, integrated cockpit and achieved full operational capability in September of FY20. In addition, mandatory upgrades to Radio Cryptographic Equipment, Identification Friend or Foe, and Link-16 will ensure the B-1 remains assimilated with the Joint force.

In 2019, the 412th Test Wing at Edwards AFB, California, along with AFGSC and industry partners, held an expanded carriage demonstration to showcase the feasibility of increasing B-1 weapons capacity and integrating future advanced weapons. External Carriage and Long Bay options were successfully tested in CY20 and proved the modifications would increase the bomber's magazine capacity for munitions and add larger, heavier munitions, such as hypersonic weapons. Increased weapon carriage allows for fewer overall sorties, reduces air refueling requirements and flying hour costs, while increasing aircraft availability for follow-on missions. Additionally, these expanded carriage options will gap on our maintenance and aircrew shortfall by requiring fewer combat sorties to get the same effect. Current estimates to enable initial expanded carriage on the B-1 is 160 million dollars.

Sustainment and limited B-1 modernization remains on the critical path as we transition to the B-21. We are carefully balancing structural repairs and fleet health with needed combat capability while we continue the retirement of 17 structurally challenged B-1s in FY21. Retiring 17 B-1s in FY21 frees an estimated 1.2 billion dollars in operations, maintenance, sustainment, and modernization costs, allowing the Air Force to concentrate resources on the remaining force, set the right conditions for B-21 transition, and invest in other NDS required capabilities. These efforts build margin by striking a balance between sustainable B-1 improvements while working toward a more manageable fleet.

Lastly, reducing 17 B-1s in FY21 will not result in the closure of any squadrons nor cut any maintenance manpower. We intend to sustain readiness through limited aircrew reassignments, improve the maintainer-to-aircraft ratio in the near-term, and posture sufficient maintenance personnel for initial B-21 retraining in the long-term. This divestiture plan will shape the B-1 fleet so it remains healthy and effective, provides margin across the

bomber transition, and incurs cost savings to reach the future B-21 force faster.

B-2 SPIRIT

For 30 years, the B-2 has served as the nation's only stealth bomber capable of penetrating air defenses anywhere in the world. Based at Whiteman AFB, Missouri, the B-2 holds targets at risk with a variety of nuclear and conventional weapons that no other platform can execute while providing deterrence against our enemies and stability for our allies. The B-2's conventional accomplishments are numerous and incontrovertible. The bomber provided precision attacks during the Kosovo and Iraq Wars, strikes on the Taliban and Al Qaeda in Afghanistan, and strikes on forces in Libya.

B-2 modernization efforts are addressing a nuclear command and control need by bringing a survivable very low frequency communication capability to the aircraft. Additionally, with the proliferation of anti-access/area denial threats, we must ensure the B-2's ability to penetrate enemy defenses until the fielding of the B-21 bomber. Moreover, the B-2 is being upgraded to carry the JASSM-ER and the B61-12 nuclear gravity weapon. These upgrades are critical to ensuring the bomber leg of the nuclear triad remains a viable and relevant warfighting capability.

Small fleet dynamics continue to challenge our sustainment efforts primarily due to vanishing vendors and the diminishing supply chain. There is an ongoing effort to maintain the proper balance of fleet modernization and sustainment while maintaining combat readiness. Lessons learned from the difficulty of sustaining and modernizing the B-2's small fleet, and an ever-decreasing technological advantage, are critical drivers for B-21 requirements.

B-52 STRATOFORTRESS

The B-52 may be the most universally recognized symbol of American airpower. Based at Minot AFB, North Dakota and Barksdale AFB, Louisiana, the B-52 is able to deliver the widest variety of nuclear and conventional weapons and boasts the best aircraft availability and mission capable rates of all three bomber platforms. The B-52 will remain a key element of our bomber force until the 2050s. Therefore, it is paramount we continue to invest resources into this aircraft. The modernization and sustainment of the B-52 should not be based on how long it has been in service, but rather, based on its capacity to remain in service. AFGSC is looking at B-52 modernization holistically in order to optimize, prioritize, and deliver affordable, on-time modernization.

Modernization programs will be prioritized and integrated in an effort to make deliberate decisions on timing for concurrent programs. Integration of the existing programs with smart and efficient development and test schedules is critical to deliver affordable, lethal combat capability. Current modernization programs include the B-52 Radar Modernization Program has entered execution in the pre-Milestone B phase. The Air Force is

also funding an effort to integrate and deploy replacement B-52 engines. A successful commercial engine replacement will realize significant savings in fuel and extend the aircraft's range while improving reliability and sustainment. Additionally, B-52 training simulators require integration of various programs such as Combat Network Communications Technology (CONECT), Internal Weapons Bay Upgrade (IWBU), data link capabilities, air refueling, and information technology refresh. Supporting the revitalization of these critical training tools will create high fidelity training environments in-line with Air Force priorities such as Pilot Training Next, and directly increase the readiness of B-52 crews in support of nuclear and conventional missions.

Another initiative is the 1760 IWBU, which increases B-52 smart weapons capacity by 67% and adds JASSM and JASSM-ER capability. There are also 75 B-52s that have been converted to the new CONECT configuration completed in FY19. CONECT moves the B-52 into the digital age for the first time, providing an on-board local area network allowing the aircrew to share a common battlespace picture. CONECT is also integrated with the Advanced Targeting Pod to provide Digitally Aided Close Air Support; a robust enhancement available to combatant commanders today. Communications remain the cornerstone of our long-range strike capability as the ability to re-task or retarget bombers while in route to the battlespace is a powerful force multiplier. The addition of Link-16 and Joint Range Extension Applications Protocol-ALPHA (JREAP-A) has enhanced the B-52's operational picture allowing it to integrate with the Joint force from beyond line-of-site ranges in real-time.

Multiple B-52 test activities are expected to begin in FY23. The B-52 enterprise, in coordination with the 412 Test Wing, conducted an in-depth capacity analysis to determine the most efficient method to test B-52 modifications while tailoring aircraft available to Combatant Commanders. Modifying aircraft in a common production flow manner (multiple modifications during a single modification window) will allow the most cost efficient and timely option to get these critical capabilities tested and field.

E-4B National Airborne Operations Center (NAOC)

The E-4 is a key component of the National Military Command System for the President, the Secretary of Defense and the Joint Chiefs of Staff. Based at Offutt AFB, Nebraska, the E-4 provides a highly survivable command, control and communications center to direct U.S forces, execute emergency war orders, and coordinate actions by civil authorities. The E-4 operates throughout all phases of the threat spectrum and retains the ability to respond to national emergencies despite the destruction of ground communication centers. In addition, the E-4 provides overseas travel support for the Secretary of Defense and his staff to ensure Title 10 command and control connectivity.

The E-4 fleet undergoes continuous modifications and modernization at home station. The small fleet dynamics make it challenging to maintain combat readiness while supporting operational test and evaluation (OT&E) requirements. The operational units accomplish OT&E with no additional manpower that necessitates

a delicate balance between operational missions, quality of life considerations, and modernization and sustainment efforts. The DOD must recapitalize this critical capability with a more robust and sustainable platform.

TWENTIETH AIR FORCE (20 AF)

Twentieth Air Force (20AF), headquartered at F.E. Warren AFB, Wyoming, is responsible for the Minuteman III (MMIII) ICBM, the UH-1N and MH-139 helicopters, the Kirtland Underground Munitions Maintenance and Storage Complex at Kirtland AFB, New Mexico, and the ICBM Flight Test Squadron at Vandenberg AFB, California. The 450 dispersed and hardened Launch Facilities (LFs), are controlled, maintained, defended, and supported by AFGSC Airmen each and every day, providing the bulk of our day-to-day nuclear alert force. The ICBM forces presented to USSTRATCOM preserve strategic stability by providing the nation a credible and responsive nuclear option in a contested environment. The responsiveness of these weapons present adversaries a near insurmountable obstacle should they consider a disarming attack on the United States. AFGSC's ICBM forces remain compliant with all U.S. obligations under the New START treaty.

MINUTEMAN III INTERCONTINENTAL BALLISTIC MISSILE (ICBM)

AFGSC is committed to the sustainment of MMIII ICBM, its NC3 systems, and its support equipment until replaced by the Ground Based Strategic Deterrent (GBSD). To sustain the existing fleet of large missile maintenance vehicles, the Transporter Erector Program (TERP) and the Payload Transporter Replacement (PTR) remain a priority. This support equipment is critical to the eventual MMIII deposture and the transition to GBSD. In the meantime, MMIII Launch Control Centers (LCCs) will be equipped with modernized communications systems to improve reliability and replace technologically obsolete systems. The LCC block upgrade, expected to deploy in 2021, is a modification effort that replaces multiple LCC components to include modern data storage, a weapon system console printer, and oxygen regeneration units. A significant security upgrade to the remote visual assessment capability at our LFs will also increase situational awareness and security. This program began deploying in FY20.

Minuteman III weapon system effectiveness is a function of key performance parameters: accuracy, availability, reliability and survivability. A comprehensive, scientifically rigorous test and evaluation program, driven by DOD requirements, continually assesses the system against each performance parameter's threshold and drives sustainment efforts to maintain compliance. Nevertheless, indefinite sustainment is impractical, unaffordable, and ineffective due to age-related deterioration, the evolution of the industrial base, and the expanding technical capabilities of our adversaries.

To further improve the nuclear capability of our ICBM force, the ICBM Programmed Depot Maintenance program began in FY16, but only offers 80% coverage due to parts availability. The program

places operational LFs and LCCs on an 8-year depot-level maintenance cycle that increases ICBM effectiveness by ensuring sustainment is executed in an engineering-based, systematic manner. Successful prototyping of the program was accomplished in FY16 and from FY16 to FY18, 100 LFs and 15 LCCs went through the first maintenance cycle with an additional 57 LFs and 6 LCCs in FY20. This program is key to ensuring MMIII viability through the GBSD transition.

UH-1N HELICOPTER

The Air Force's UH-1N helicopter supports several critical missions: security of our ICBM fields, transport missions in the National Capitol Region, Fifth Air Forces (Japan), and critical Continuity of Operations missions. Additionally, the UH-1N fleet supports Air Force survival training with helicopter and hoist familiarity, vectoring training, and rescue operations. They also participate in the Defense Support of Civil Authorities program with units across the country and are frequently called upon to conduct search and rescue activities for missing or injured civilians.

AFGSC developed a comprehensive sustainment plan for the UH-1N while transitioning to the MH-139. The UH-1N will continue to operate in AFGSC through the mid-FY20s and within the USAF until the mid-FY30s. AFGSC is responsible for the life-cycle of all UH-1Ns in the USAF and some modernization will be necessary for the aircraft to remain effective. Currently, all future modifications will be completed in early FY20s and will only apply to a limited number of UH-1Ns selected for longer life spans. This modernization strategy will ensure mission effectiveness until platform retirement while remaining fiscally responsible.

The planned acquisition of 80 total MH-139 helicopters to replace the aging UH-1N fleet will be a significant shift in acquisitions and missile field security capabilities. With an estimated cost avoidance of $1.7 billion, the selection of a modified civilian helicopter using the current generation of technology will bring a significant increase in payload, speed, and endurance, ensuring compliance with all DoD and USSTRATCOM security requirements.

NUCLEAR COMMAND, CONTROL, AND COMMUNICATIONS (NC3)

As the NC3 lead for the Air Force, AFGSC supports CDRUSSTRATCOM's priorities of sustaining current NC3 systems and replacing legacy systems with next generation NC3 technology to ensure NC3 capabilities to the President and our nation's warfighters.

Sustaining current NC3 systems includes developing maintenance performance indicators to track the reliability of communications systems and to predict maintenance actions and spare parts needs. Unfortunately, many components suffer from diminishing manufacturing sources and material shortages across the NC3 enterprise; such as the decades-old Miniature Receive Terminal (MRT) on the B-52. The B-52 MRT receives Emergency Action Messages (EAMs) over Very Low Frequency (VLF). Given the importance of the MRT, and

considering its high rate of failure, AFGSC sought out a commercial vendor capable of manufacturing unique band-pass filters required to sustain MRT receivers. Now, there are enough band-pass filters in supply to sustain the aging system until replaced.

Continuing its sixth decade as the backbone of the nation's bomber fleet, the B-52 was funded in FY20 for installation of a VLF receiver that leverages the technology recently installed on the B-2 fleet and provides NC3 receive-only capability. To further modernize VLF capability across multiple platforms, we are moving forward with development of a Common VLF Receiver (CVR) capable of using emerging waveforms for improved EAM reception. We envision employing this receiver on both airborne and ground-based weapons systems. The Space Force develops, and the Air Force integrates, the Family of Advanced Beyond line-of-sight Terminals (FAB-T) and the Force Element Terminal (FET), which will enable the B-52 access to the Advanced Extremely High Frequency (AEHF) satellite network. AEHF will also be integrated into the ICBM's LCCs, further enhancing NC3 redundancy in the force. At this time, we are assessing options to leverage other programs' investments in AEHF technology to enable rapid fielding across bombers and supporting tanker aircraft.

Communications upgrades to the E-4 National Airborne Operations Center (NAOC) will ensure a reliable, airborne NC3 platform for senior leaders. The Low Frequency Transmit System (LFTS) replaces the existing dual trailing wire antenna and reduces aircraft weight by almost a ton. The Survivable Super High Frequency (SHF) system provides reliable and sustainable voice and data capability in scintillated and jammed operational environments. Tactical UHF radios will be upgraded to Mobile User Objective System (MUOS) capability to meet CJCS requirements. Finally, the FAB-T Command Post Terminal (CPT) is being installed on the E-4B fleet and will enable Presidential National Voice Conferencing (PNVC) that replaces legacy MILSTAR capability and provides connectivity to the AEHF satellite network.

As the E-4 is modernized, the nation must look ahead to replacing the aging aircraft within the National Military Command System. The joint-service NAOC, Executive Airlift (EA), Airborne Command Post (ABNCP), and Take Charge and Move Out TACAMO (NEAT) Analysis of Alternatives (AoA) is completed and the results received a Sufficiency Review from the Office of Secretary of Defense Cost Assessment and Program Evaluation (OSD CAPE) in November 2020. The AoA evaluated whether mission realignments could improve the operational value of the airborne layer and examined potential synergies in acquiring a common platform. The AoA results, endorsed by the Joint Requirements Oversight Council (JROC), determined a common platform for the twelve missions performed by the three aircraft was not feasible, mission realignment was not recommended, and the Air Force should begin the E-4 replacement program known as the Survivable Airborne Operations Center (SAOC). The SAOC program is postured to pave the way forward to achieve a FOC in early-mid 2030's. Additionally, after researching potential changes to Doctrine, Organization, Training, materiel, Leadership and Education, Personnel, Facilities and Policy (DOTmLPF-P), we will transition to experimenting and prototyping in order to drive technological solutions to enable a more effective NC3 system. This effort is dedicated to

integrating future NC3 into Joint All-Domain Command and Control (JADC2) utilizing technologies embedded in the Advanced Battle Management System (ABMS).

Planning efforts to develop the next generation of NC3 systems, 30 years from now, have started. In order to better manage the transition from legacy systems to the NC3 weapon system of the future, AFGSC directed a significant change in the way we steer our NC3 modernization efforts. A brand new NC3 Concept of Force Development will explore and demonstrate how and where the modernization capabilities will enable the Joint All-Domain Command and Control (JADC2) battlespace of the future. Air Force NC3 experts are analyzing the threats and risks inherent in our current NC3 systems and recommending mitigating actions to achieve assured nuclear communications for the future.

SECURITY

Security is one of the most fundamental competencies the nation demands of the military. Ensuring security is more than just placing Defenders at our gates. It is about the safety of our nuclear arsenal to include preparing for hostile unmanned aerial systems, cyber-attacks, and other potential threats across multiple domains. Warfighting domains continue to expand, challenging the nation's collective understanding and application of warfare, national defense, and theories of victory. Emerging and existing cross-domain threats hold AFGSC nuclear and conventional power projection platforms and our bases at risk. AFGSC continues to cultivate innovative teams to determine the best ways to secure our installations and assets.

"FIGHT THE BASE" CONCEPT

Over the past year, applying the Fight the Base concept has allowed us to realize AFGSC's vision of ensuring the uninterrupted production of long-range strike from its installations when sanctuary is not guaranteed. Moreover, AFGSC has made significant strides in the counter-unmanned aircraft systems (C-UAS) security initiative. This includes improved detection capabilities near critical resources and the fielding of necessary capabilities such as fixed-site, mobile vehicle-borne, handheld, and portable C-UAS systems. These capabilities provide a necessary added layer of security to ensure continued weapons systems safety and operability. The command also initiated a friendly forces blue-unmanned aircraft systems (B-UAS) pilot program. Originally intended for use in testing against our defenses, these B-UAS will also be used to enhance battlespace awareness and assist in meeting emerging threats. C-UAS is a rapidly developing technology and will require an ongoing evolution to utilize this capability and defend against the threat.

2020 SECURITY FORCES ENTERPRISE PLAN

In line with AF initiatives to reconstitute the health of our security forces, AFGSC remains focused on establishing requirements, updating policy, and advocating and programing for necessary resources in order to

restore full spectrum readiness and retain our tactical advantage. Over the past year, AFGSC worked to reinvigorate our Security Forces culture, specifically taking deliberate steps to improve recruitment, equipment, continuum of learning, career development, and policy. Our efforts successfully implemented 15 officer and 500 enlisted funded Security Forces positions annually. These efforts also enabled the assessment and approval of female body armor, the accelerated fielding of the M18 and M4A1 weapon systems, and the creation of a new Defender training curriculum. Lastly, the implementation of the new Security Force Development Tours at nuclear units have increased overall manning to 100 percent and have contributed to the decrease in the number of disciplinary issues within certain units.

These are a few examples of how AFGSC is taking Security Forces training and operations in a more relevant, realistic direction. These efforts continue to ensure the robust integration of existing and developing technologies to provide cost effective and robust battle space awareness to AFGSC defense forces.

MODERNIZATION – Maintaining the Competitive Edge

The rapid rate of technology advancement requires us to maintain the competitive edge through smart acquisitions, strong industry relationships, and owning the technical baseline. Led by cross-functional teams, modular and adaptable systems with established digital engineering has proven foundational in our efforts to modernizing our forces and ensuring the critical capabilities required to meet future challenges of the Great Power Competition.

THE BOMBER ROADMAP

The 2018 National Defense Strategy and the updated Defense Planning Guide predicated the need to update the 2017 bomber vector. AFGSC updated the plan to reflect current conditions, ensure continued support to operational plans (OPLANs), and facilitate the transition from the current 3-bomber fleet to a 2-bomber fleet of 175 B-52Hs and B-21s.

In the analysis of how we best transition to the two-bomber fleet of 175 – aside from a successful B-21 program – we determined there are two interrelated critical elements; effective and on-time B-52 modifications and sustainment of a sufficient number of B-1 and B-2 bombers until an adequate number of B-21s are available.

B-21 RAIDER

The nation needs at least 100 B-21 Raiders to support the nuclear triad, deter aggression, fight and win in a contested environment, and replace our aging B-1 and B-2 bombers, and in my best military judgement many more B-21s could be used to mitigate risks. The B-21 will form the backbone of the bomber force in both conventional and nuclear roles for the decades to come, providing an unmatched ability to penetrate future

air defenses and support joint military operations using long-range strike capabilities, large and mixed payloads, and survivability. The B-21 Raider will also outpace future threats and provide combatant commanders with operational flexibility. Its open systems architecture will enable rapid, innovative and affordable technology insertion as threats evolve.

The Air Force is preparing to base the B-21 at three existing bomber bases. In March 2019, following a deliberate process that sought to minimize mission impact, maximize facility reuse, minimize cost, and reduce overhead, the Air Force announced Ellsworth AFB, South Dakota, Whiteman AFB, Missouri, and Dyess AFB, Texas as preferred locations for B-21 Main Operating Bases. The selection of the preferred basing locations leveraged the strengths of each base to optimize the B-21 beddown strategy while simultaneously meeting warfighter demands for bomber airpower. The final basing decision for the first location is expected in 2021, following compliance with the National Environmental Policy Act (NEPA) and other regulatory and planning processes.

Enacted FY21 funding of $2.8B maintains our ability to deliver initial capabilities in the mid-2020s and assures the Air Force commitment to an Average Per Unit Cost (for 100 aircraft) of $550M. The program is a national security imperative and ensures the Air Force can provide both the conventional and nuclear capabilities the National Defense Strategy demands.

Long Range Stand-Off Missile (LRSO)

The LRSO is the replacement for the aging Air Launched Cruise Missile (ALCM). The ALCM is currently 29 years past its design service life and has significant capability gaps that will only worsen through the next decade. The LRSO will be a reliable, flexible, long-range, and survivable weapon system that complements the nuclear Triad. LRSO will also ensure the bomber force (B-52 and B-21) can continue to hold high value targets at risk in an evolving threat environment.

LRSO was designed with a focus on reliability and manufacturing as foundational tenets of the acquisition strategy. This strategy sets the LRSO apart from previous cruise missile programs that focused on achieving reliability after Initial Operational Capability (IOC). The structure of the LRSO program drove industry competition through preliminary design review (PDR) and acted as a forcing function which encouraged industry behavior to yield desired results.

LRSO has completed the Technology Maturation and Risk Reduction (TMRR) phase and is on track for Milestone B. This Milestone will begin LRSO's engineering and manufacturing development phase. To date the contractor's use of digital engineering has resulted in a pioneering first use of factory produced missiles for testing purposes. Consequently, the program is on schedule, and properly staffed. Flight test events have begun and the first powered flight is scheduled for Aug 2021 to support warhead Baseline Design Review. Following a successful engineering manufacturing and development phase, production should begin in 2026.

Enacted FY21 funding ensures future LRSO development and enables the schedule to meet a planned IOC of 2030 while ensuring the Air Force commitment to an Average Procurement Unit Cost (APUC) of $4.9 million per LRSO (1020 total missiles).

GROUND BASED STRATEGIC DETERRENT (GBSD)

To ensure continued lethality and affordability of the most responsive leg of the triad, GBSD successfully awarded a $13 billion engineering and manufacturing development (EMD) contract last September. The EMD contract is a nine year effort with five years of development and four production options. Program analysis has revealed GBSD is the most effective strategy to mitigate capability shortfalls, enhance future warfighting effectiveness, replace aging infrastructure, and is designed to stand alert for multiple decades. A focus on developing a competitive edge is evident in the leveraging of Model Based System Engineering (MBSE) where there is an estimated potential to save several billion dollars of acquisition and lifecycle costs that are difficult to accurately model due to the uniqueness of our approach. This is possible due to MBSE's decreased design cycle timelines ensuring and fully realizing design modifications subsequent impacts without the need for traditional prototypes or extensive paperwork reviews.

Furthermore, the key acquisition tenet of modular design reduces the need for specialized or comprehensive system overhauls throughout the 50-year operational lifecycle. The value proposition of this program is unprecedented – the Air Force will save money on maintenance, operations, and personnel. Physical access and modularity of the designs makes GBSD simpler and provides more affordable sustainment than any of its predecessors. The security requirements will change dramatically; there will be fewer convoys on the roads, fewer open launcher configurations, and fewer defenders needed to guard the site during maintenance. Additionally, there is collaboration with the Department of Engergy's National Nuclear Security Administration (NNSA) and the W78 warhead replacement program, the W87-1. As of this calendar year, that program is in development. The replacement warhead will use the MK21 aeroshell and will deploy on GBSD after FY30.

Continued Congressional support will mitigate risk for the transition from MMIII to GBSD. Maintaining GBSD schedule momentum and reducing schedule risk is critical to avoiding capability shortfalls to warfighter requirements during transition.

MH-139 GREY WOLF

AFGSC is the lead command for the Air Force's newest helicopter fleet, the MH-139. The MH-139's revolutionary predictive maintenance database, logistics, and parts distribution are taking the Air Force into a new era using civilian processes and technology to enhance military weapon systems. The MH-139A is a multi-mission helicopter tasked with nuclear security at our ICBM bases, transportation of our nation's leaders within

the National Capitol Region and Fifth Air Force (Japan), and rescue and training support at the USAF Survival School.

In order to continue supporting critical national missions and fully comply with DoD and USSTRATCOM requirements, the Air Force is committed to replacing the UH-1N fleet, as the legacy platform falls short of missile field operational needs; notably speed, range, endurance, payload, and survivability. The acquisition of 80 MH-139 helicopters to replace the aging UH-1N fleet is a significant shift in both acquisitions and missile field security capabilities, and is needed to help modernize our force.

The timely fielding of this platform will enable the Air Force to meet nuclear security requirements and fully support missions in the national capital region.

WEAPONS GENERATION FACILITIES (WGF)

Our Weapon Storage Areas (WSA) are no longer considered just storage facilities. Renamed Weapons Generation Facilities (WGFs), these dedicated areas support rapid generation of nuclear aircraft and routine maintenance operations for the ground-based and air legs of the nuclear triad while significantly improving security. WGFs facilitate the growth of new technology and bombers, while also sustaining our current fleet. Deliberate recapitalization of weapons storage capacity via the WGF construction program is critical to ensuring the safety, security, and effectiveness of strategic capabilities in the future.

In 2019, AFGSC organized a cross-functional team to re-examine the design plans and identify more affordable options. The team identified options that allowed for the recapitalization of existing facilities where possible and were able to identify and challenge outdated or irrelevant processes and operating instructions. As a result, we were able to bring down the cost of new facilities from 599 million to 228 million dollars while improving the necessary security requirements. We were able to accomplish this only because our external partners went through the process with us and had buy-in. The result is a fiscally responsible but modern and secure facility for the country's nuclear weapons.

Two ICBM wings are planned to receive modernized WGFs. Bomber WGFs are needed to accommodate mission growth and improve current capacity, and with the right number, will provide national leadership more strategic decision space. WGFs at B-21 bases will enable nuclear capability in the future, while the WGF at Barksdale ensures B-52s remain viable and competitive. Of note, because WGFs only ever contain non-deployed nuclear warheads, and not heavy bombers or ICBMs, they do not meet the "facilities" definitions under the New START treaty (NST), and are not subject to declaration or inspection under the treaty. Therefore, the standup of WGFs at ICBM and bomber bases will not impact NST implementation.

In May of 2019, F.E. Warren Air Force Base in Wyoming broke ground on the first WGF. In August 2019, AFGSC briefed the Acting Secretary of the Air Force and received approval on the way ahead for bomber WGFs, subject to budgetary decisions within the Air Force, Department of Defense, and the Office of Management

and Budget.

B-21 WGF construction will be timed to coincide with projected B-21 acquisition and fielding timelines, but location and funding decisions are not yet final. Locations that do not have existing facilities capable of recapitalization, the design characteristics have been scaled back for more affordable construction. A more detailed update will be available after a final decision is made on the plan for bomber WGFs.

CONCLUSION

AFGSC remains committed to affordable modernization and sustainment of our nation's nuclear triad and conventional weapon systems, and the development of our Airmen to lead in the long-term strategic competition ahead of us. As the world's most lethal, respected, and feared long-range strike professionals, we are dedicated to improving near-term readiness. Predictable, reliable, and flexible budgets, leveraged with the right authorities, have proven successful in sustaining and modernizing our long-range strike force while ensuring proper mission focus within the NDS.

We have reoriented, reinvented, and reimagined our organization in order to build expanded capacity down to our operational wings as we innovate in the space that remains. Inspired by our Striker heritage, and driven by the speed of relevance, authentic leadership and cross-functional collaboration remains at the heart of our efforts as we build the nuclear force our nation needs. In light of the COVID-19 pandemic, we are thankful for the support we have received from our senior military, community, and civic leaders in prioritizing the health and wellbeing of the great Airmen of AFGSC.

Our defense committees understand the significance of maintaining our competitive edge as we face the threats that great power competition presents to our national interests. We are grateful for the opportunity to partner with Congress, our combatant commanders, and the Office of the Secretary of Defense to move forward with affordable, cost-effective, and innovative solutions to ensure our ICBM, bomber, and NC2 capabilities are ready for 21st century challenges. We are thankful for the continued support and advocacy from Congress and I look forward to updating the committee on our progress.