

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FISCAL
YEAR 2023 AND THE FUTURE YEARS DEFENSE
PROGRAM**

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES

UNITED STATES SENATE

ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

ON

S. 4543

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2023 FOR MILITARY
ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CON-
STRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF
ENERGY, TO PRESCRIBE MILITARY PERSONNEL STRENGTHS FOR
SUCH FISCAL YEAR, AND FOR OTHER PURPOSES

PART 1

**U.S. STRATEGIC COMMAND AND U.S. SPACE COMMAND
U.S. SPECIAL OPERATIONS COMMAND AND U.S. CYBER COMMAND
POSTURE**

DEPARTMENT OF DEFENSE BUDGET POSTURE

AIR FORCE POSTURE

ARMY POSTURE

NAVY POSTURE

**THE DEPARTMENT OF ENERGY AND NATIONAL NUCLEAR SECURITY
ADMINISTRATION ON ATOMIC ENERGY DEFENSE ACTIVITIES**

MARCH 8; APRIL 5, 7; MAY 3, 5, 12, 19, 2022



DEPARTMENT OF DEFENSE AUTHORIZATION REQUEST FOR APPROPRIATIONS FOR FISCAL YEAR 2023 AND THE FUTURE YEARS DEFENSE PROGRAM—Part 1
U.S. STRATEGIC COMMAND AND U.S. SPACE COMMAND ● U.S. SPECIAL OPERATIONS COMMAND AND U.S. CYBER COMMAND POSTURE● DEPARTMENT
OF DEFENSE BUDGET POSTURE ● AIR FORCE POSTURE ● ARMY POSTURE ● NAVY POSTURE ● THE DEPARTMENT OF ENERGY AND NATIONAL
NUCLEAR SECURITY ADMINISTRATION ATOMIC ENERGY DEFENSE ACTIVITIES

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**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

TUESDAY, MARCH 8, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

**UNITED STATES STRATEGIC COMMAND AND UNITED
STATES SPACE COMMAND**

The Committee met, pursuant to notice, at 9:30 a.m. in room SD-106, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Shaheen, Gillibrand, Blumenthal, Kaine, King, Warren, Peters, Rosen, Kelly, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Cramer, Scott, Blackburn, Hawley, and Tuberville.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. Let me call this hearing to order.

Good morning. The Committee meets today to receive testimony from Admiral Charles Richard, Commander of U.S. Strategic Command, or STRATCOM, and General James Dickinson, Commander of U.S. Space Command, or SPACECOM. Admiral Richard, General Dickinson, I want to thank you for your service to our Nation, and I would like to extend my thanks to the men and women serving under your commands.

Maintaining our nuclear deterrent and preserving our ability to operate in space are fundamental to our long-term strategic competition with Russia and China.

There is a reason we have asked the commanders of STRATCOM and SPACECOM to testify together. Until 2019, Space Command was part of Strategic Command. Now, as SPACECOM stands up as an independent command, I would like to know what gaps or seams remain exposed during this transition and how they can be addressed.

Much has changed since our last hearing in 2021. Russia's ongoing, unprovoked, and illegal invasion of Ukraine has shaken the international order that has maintained nuclear stability for the better part of a century. Vladimir Putin's behavior has been reckless to a dangerous degree. Just prior to its invasion, Russia conducted a large out-of-cycle nuclear exercise, and the Kremlin has

since made a series of escalatory statements. Normally, Russia conducts its nuclear exercises in the fall and the United States conducts ours afterwards in a stable, predictable fashion. Not so this year. More than ever, our nuclear deterrent, the bedrock of our national defense, is being relied upon as we witness the realities of a European conflict involving a nuclear armed nation.

In the past year, we have also seen China develop three missile fields in hardened silos throughout the country. This development, along with China's completion of its nuclear triad and modernization of its nuclear command, control, and communications fundamentally change the nature of Beijing's nuclear doctrine. We need to understand why China is undertaking this expansion, what it means for stability in the Indo-Pacific region, and how we should adjust our own nuclear deterrence to protect our Nation and uphold the fundamental extended commitment to our allies.

Similarly, over the past year we gained a clearer picture of the threat we face in space, which has become a contested domain. In any future conflict, China will quickly extend its capabilities into space in a seamless fashion. Russia, for its part, acted recklessly in November by destroying a satellite in space while building up forces on the Ukrainian border. During today's hearing we will discuss these threats and the nature of conflict we can expect in space in the years to come.

In particular, General Dickinson, I would like to make sure that SPACECOM is fulfilling the space and ground functions you inherited from STRATCOM with respect to missile warning and nuclear command, control, and communications. Ensuring we can accurately warn both Strategic and Northern Commands, and our senior leadership, of a missile attack on the Homeland is of the utmost importance.

SPACECOM is also responsible for integrating and tasking both ground and space sensors for better space situational awareness, essentially becoming DOD's [Department of Defense] "sensor command." General Dickinson, I ask that you share your vision on how to integrate this myriad number of sensors, which range from radars on the ground and at sea to sensors aboard satellites.

General, I would also like to know the progress your command is making during its stand-up and how you are finding and retaining personnel with the specialized skill sets associated with SPACECOM operations.

Admiral Richard, your command is undergoing an intense period of modernization that began with the ratification of the New START [Strategic Arms Reduction Treaty]. This will be the third modernization cycle since 1960, as parts of each leg of our triad age out. I am interested in hearing about the progress of modernizing the entire triad and the implications of altering that plan, especially with respect to our near-peer competitors.

In addition, I would like to know your views on the efforts by the National Nuclear Security Administration to re-capitalize its uranium and plutonium handling infrastructure. Some of these facilities date back to the Manhattan Project and are single points of failure in supporting your mission. It is essential that we understand what impacts this may have on your operations.

Thank you again for appearing today and I look forward to your testimonies.

Ranking Member Inhofe cannot be here today. We anticipate he will return next week. But I would ask that his opening statement be submitted to the record, and without objection, so ordered.

[The prepared statement of Senator James M. Inhofe follows:]

PREPARED OPENING STATEMENT BY JAMES M. INHOFE

Thank you, Mr. Chairman. I also want to welcome our witnesses and thank them for their long service in defense of our Nation.

Admiral Richard, General Dickinson, almost a year ago, each of you appeared before this Committee and offered dire warnings about the need to deter two peer adversaries.

You cautioned us that Russia remains a pacing threat as it expands its nuclear forces, outlined the pacing challenge of a rising China and its massive military modernization effort, and advised us that Russia and China have already weaponized space.

If we have learned anything over the past year, it's that as worrying as your prior warnings were, the reality of what our Nation is facing is much, much worse.

China is expanding its nuclear, missile, and space capabilities faster than any country in history. Its investments are shifting the balance of power in the Pacific—but China is also building its capabilities to extend its reach across the globe.

Putin's unprovoked invasion of Ukraine and his reckless threats of escalation have shattered Europe's security, and, for the first time in decades, forced Americans to face the possibility that nuclear weapons could be used in anger.

Meeting the challenge of Russian and Chinese aggression across all domains means we must invest in the capabilities required to deter these threats, and we need to be realistic about the level of resources needed to make that happen.

The administration's first budget request failed to seriously address these threats, and now we're looking at inflation that will cripple our buying power further—even after Congress acted to increase the budget.

This trend cannot continue if we intend to compete with two peer countries that are clearly focused on overturning the U.S.-led global order.

Both of you are responsible for missions with zero margin for failure. Unfortunately, chronic underinvestment has left us with an undersized, aging nuclear deterrent and a space architecture that lacks the resilience needed to prevail in a multi-domain conflict.

Moving forward, we need to accelerate efforts to right-size our forces to meet the strategic deterrence and space warfighting requirements of the coming decades.

I look forward to your testimony. Mr. Chairman.

Chairman REED. I would also note for my colleagues that there will be a classified briefing immediately following this session in SVC-217 to continue our discussion.

With that let me recognize Admiral Richard.

**STATEMENT OF ADMIRAL CHARLES RICHARD, COMMANDER,
UNITED STATES STRATEGIC COMMAND**

Admiral RICHARD. Chairman Reed, distinguished Committee Members, I am pleased to testify today with my fellow combatant commander, General Dickinson.

Before I begin, given the ongoing and historically significant crisis that is happening in Ukraine right now, I am going to need to defer all questions regarding Russia and a number of questions related to our own forces to the closed session.

I want to thank Secretary Austin, Chairman Milley for their continued support to the strategic deterrence and strategic defense of the Nation as well as their overall leadership under some very trying conditions.

Ladies and gentlemen, right up front I want to assure you that the 150,000 soldiers, sailors, airmen, marines, guardians, civilians

of U.S. Strategic Command, as always, are ready to execute our strategic deterrence mission.

Chairman Milley rightly stated, we are witnessing one of the largest shifts in global geostrategic power the world has ever witnessed. Today we face two nuclear-capable near-peers who have the capability to unilaterally escalate to any level of violence, in any domain, worldwide, with any instrument of national power, at any time, and we have never faced a situation before like that in our history.

Last fall, I formally reported to the Secretary of Defense the PRC's [People's Republic of China] strategic breakout. Their expansion and modernization in 2021 alone is breathtaking, and the concern I expressed in my testimony last April has now become a reality. I had previously emphasized our need to be able to deter two adversaries at the same time. That need is now an imperative.

I have said this before and I think it is worth repeating. Every operational plan in the Department of Defense and every other capability we have rests on an assumption that strategic deterrence is holding, and in particular that nuclear deterrence is holding. If strategic or nuclear deterrence fails, no other plan and no other capability in the Department of Defense is going to work as designed. The Nation's nuclear forces underpin integrated deterrence and enable the U.S., our allies, and our partners to confront aggressive and coercive behavior.

The strategic security environment is now a three-party nuclear near-peer reality. Today's nuclear force is the minimum required to achieve our national strategy. Right now I am executing my strategic deterrence mission under historic stress, crisis levels of deterrence, crisis deterrence dynamics that we have only seen a couple of times in our Nation's history, and I am doing it with submarines built in the 1980s and 1990s, and air-launched cruise missile built in the 1980s, intercontinental ballistic missiles built in the 1970s, a bomber built in the 1960s, part of our nuclear command and control that predates the internet, and a nuclear weapons complex that dates back to the Manhattan era.

We must modernize the nuclear triad, the NC3, the nuclear weapons complex, and supporting infrastructure to meet presidential objectives. While modernization must be the priority, please make no mistake. STRATCOM's forces are ready today.

Thank you, and I look forward to your questions.

[The prepared statement of Admiral Charles A. Richard follows:]

PREPARED STATEMENT BY ADMIRAL CHARLES A. RICHARD

INTRODUCTION

United States Strategic Command (USSTRATCOM) is the global combatant command (CCMD) responsible for Strategic Deterrence, Nuclear Operations, Global Strike, Joint Electromagnetic Spectrum Operations, Analysis and Targeting, and Missile Threat Assessment. In addition, the January 2021 Unified Campaign Plan (UCP) designated the Commander, USSTRATCOM (CDRUSSTRATCOM) as the Nuclear Command, Control, and Communications (NC3) Enterprise Operations lead. It takes a team of dedicated individuals to execute our mission set, and I am honored and privileged to lead the 150,000 soldiers, sailors, airmen, marines, guardians, and civilians dedicated to the DOD's highest priority mission.

I want to thank Secretary Austin and Chairman Milley for their leadership and continued support to the strategic defense of this Nation. USSTRATCOM is committed to Secretary Austin's integrated deterrence initiative and remains dedicated

to his priorities of defending the Nation, taking care of our people, and succeeding through teamwork. I also want to thank Congress for your continued support to ensure USSTRATCOM is equipped with the resources necessary to maintain strategic deterrence on behalf of the Nation, our allies, and our partners.

Since my last testimony, there should be no doubt we are contending with a rapidly changing and dynamic strategic security environment where potential adversary actions challenge us in ways we have not experienced in over 30 years. *In September 2021, I formally declared the strategic breakout of the People's Republic of China (PRC) to the Secretary of Defense. A strategic breakout denotes the rapid qualitative and quantitative expansion of military capabilities that enables a shift in strategy and requires the DOD to make immediate and significant planning and/or capability shifts.* The PRC continues the breathtaking expansion of its strategic and nuclear forces with opaque intentions as to their use. The recent test of an intercontinental ballistic missile (ICBM)-launched hypersonic glide vehicle (HGV) with fractional orbital bombardment (FOB) is just one example of these growing capabilities. Meanwhile, Russia conducted the invasion of Ukraine backing its actions with the coercive potential of the world's largest nuclear arsenal. *The strategic security environment is now a three-party nuclear-peer reality, where the PRC and Russia are stressing and undermining international law, rules-based order, and norms in every domain. Never before has this Nation simultaneously faced two nuclear-capable near-peers, who must be deterred differently.*

I applaud Secretary Austin for his vision of integrated deterrence across the Joint Force, our allies and partners as the foundation of the National Defense Strategy. *Every operational plan in the DOD, and every other capability we have, rests on the assumption that strategic deterrence, and in particular nuclear deterrence, will hold. If strategic or nuclear deterrence fails, integrated deterrence and no other plan or capability in the DOD will work as designed. The Nation's nuclear forces underpin integrated deterrence and enable the U.S., our allies and partners to prevent and, if necessary, confront aggression around the globe using all instruments of national power.*

Our operational requirements exist to execute Presidential directives and decisions we make today will have lasting strategic impacts on our ability to do so. Maintaining and strengthening deterrence for the long-term requires a modern infrastructure and industrial base able to develop credible capabilities necessary for a more challenging security environment. While the command is ready to execute its mission today, we must make threat-informed decisions regarding our nuclear capabilities to provide strategic deterrence well into the future.

STRATEGIC THREAT ENVIRONMENT

Chairman Milley rightly stated that we are experiencing one of the largest shifts in global geostrategic power the world has ever witnessed. *Today, both the PRC and Russia have the capability to unilaterally escalate a conflict to any level of violence, in any domain, worldwide, with any instrument of national power, and at any time.* USSTRATCOM measures the risk of strategic deterrence failure every day considering this reality. The DOD can no longer have the luxury of assuming the risk is always low, particularly during a crisis. Potential adversaries, as they have for years, have the capability to threaten to inflict catastrophic effects on the U.S. Homeland, and on our allies and partners to achieve their national objectives.

Our potential adversaries continue to rapidly advance the capability to conduct these attacks. Their growing capabilities will pose a danger to U.S. They will continue to expand and diversify their nuclear forces over the next decade and the PRC, in particular, will increase the role of nuclear weapons in its defense strategies. The range of their new systems complement growing nuclear stockpiles, and includes the development and modernization of survivable nuclear triads, counter-intervention, and power projection capabilities intended to deter and deny our regional influence.

The Nation faces significant risk as our potential adversaries develop and deploy emerging technologies, such as anti-satellite, hypersonic, and FOB capabilities. They are also pursuing leadership in key technologies with significant military potential including, artificial intelligence (AI), autonomous systems, advanced computing, quantum information sciences, biotechnology, and advanced materials and manufacturing. USSTRATCOM supports Secretary Austin's call for measures to protect critical U.S. capabilities, technologies, and operations as the Nation also faces risks from the threat of foreign theft of U.S. technology, penetration of U.S. information and weapons systems, supply chain disruptions, and cyberespionage campaigns designed to erase United States advantages. Cyber threats from the PRC, Russia, and the Democratic People's Republic of Korea (DPRK) are determined and unrelenting. Even now, Russia threatens cyberattacks against the United States as tensions over

Ukraine increase. To that end, USSTRATCOM implemented a new construct to operationally harden NC3 systems against cyber threats to improve force readiness during competition and crisis. We must mitigate these threats for future programs to field new uncompromised capabilities.

PEOPLE'S REPUBLIC OF CHINA

We should carefully consider the PRC's actions rather than their rhetoric. The breathtaking expansion of land-, sea-, and air-based nuclear delivery platforms, command and control survivability, novel and asymmetric weapons, and supporting infrastructure is inconsistent with a minimum deterrent posture. When I testified last year, I warned that the PRC was capable of executing any plausible nuclear strategy. *I am fully convinced the recent strategic breakout points towards an emboldened PRC that possesses the capability to employ any coercive nuclear strategy today.*

Just three months after my April 2021 testimony, commercial satellite imagery revealed three new nuclear missile fields in western China, each with approximately 120 missile silos. With this discovery, it is clear the People's Liberation Army Rocket Force (PLARF) will soon achieve a robust ICBM capability. The new silos can be equipped with the solid-fueled, road-mobile CSS-10 Mod 2 capable of reaching the continental United States (CONUS). This is in addition to the fixed ICBM arsenal of CSS-4 Mod 2 and multiple independently targetable reentry vehicle (MIRV) equipped CSS-4 Mod 3 ICBMs. While only a developmental concept in 2019, the PRC has already fielded the road-mobile, MIRV-capable, CSS-20 with launch options including silo or rail-mobile basing. Counting both conventional and nuclear-armed missiles, the PLARF employs over 900 theater-range intermediate and medium-range ballistic missiles (IRBM / MRBM), some of which are capable of doing catastrophic damage to United States, Allied, and partner forces in the region. Combined, this formidable arsenal is cause for concern.

Further advancements in the last year include ground-based, large phased array radars and at least one geostationary satellite capable of detecting ballistic missile launches. These capabilities, plus a rapidly expanding silo-based ICBM force, indicate the PRC increased the peacetime readiness of its nuclear forces and seeking a Launch-on-Warning posture, all while the PLARF now rotates its nuclear and conventional brigades to "high alert duty" posture for unspecified periods. Enhancing the survivability of its sea-based deterrent, the third generation JL-3 submarine launched ballistic missiles (SLBM) allows the People's Liberation Army Navy's (PLAN) now six JIN-class ballistic missile submarines (SSBN) to target CONUS from a protected bastion within the South China Sea.

The PRC's pursuit of an ICBM delivered HGV with FOB capability is a technological achievement with serious implications for strategic stability. On 27 July 2021, the PRC's first HGV FOB test resulted in 40,000 kilometers distance flown and over 100 minutes of flight time—the greatest distance and longest flight time of any land attack weapon system of any nation to date. The PRC is investing heavily in HGV and directed energy weapons technology for global strike and defeat of missile-defense systems, anti-satellite, anti-missile, and anti-unmanned aircraft system capabilities.

The PRC is increasing its capacity to produce and enrich plutonium by constructing fast breeder reactors and reprocessing facilities, which may be used to support a growth in China's nuclear weapons stockpile. While the PRC may use a portion of this infrastructure for civilian nuclear technology programs, it is highly likely some infrastructure will support their expanding nuclear weapons program. This accelerated nuclear expansion may enable the People's Liberation Army (PLA) to field over 700 nuclear warheads by 2027. The PRC likely intends to have at least 1,000 warheads by 2030, greatly exceeding previous DOD estimates. Unlike the United States, the growth of the PRC's nuclear arsenal is not constrained by any treaty limits.

Finally, the PLA continues to develop and field precision strike nuclear delivery systems. The dual-capable DF-26 IRBM can range critically important ports, airfields and bases in the western Pacific with conventional and nuclear payloads. Survivable road-mobile transporter erector launchers can deliver the DF-31A ICBM at ranges in excess of 11,000 kilometers. The PLA's H-6N air-to-air refueling-capable bomber, which can carry the nuclear air-launched ballistic missile (ALBM), is entering its second year of operational service. The 2020 Annual Report to Congress, released in November 2021, surmises that the PRC may be building a new conventional- and nuclear-capable stealth strategic bomber with global reach in addition to medium and long-range stealth bombers. These nuclear-related advancements are additive to the PRC's ongoing conventional modernization and expansion

efforts, where they already have a substantive overmatch in regional- and theater-class weapons and capabilities.

Russia

Russia is in its second decade of investing substantial resources to expand their strategic and non-strategic nuclear capabilities. In a recent statement, President Vladimir Putin recounted that in 2000 Russian nuclear deterrent forces were only 12 percent modernized. By late 2020, President Putin stated that 86 percent of Russia's nuclear forces had been modernized, including components from all legs of their strategic nuclear triad, and promised to increase modernization to 89 percent by the end of 2021. Nuclear weapons are an integral part of Russia's national security strategy and Moscow appears to utilize them to demonstrate political stake, deter outside actors, and support resolutions acceptable to Russia. In June 2020, Russia publicly revealed its official nuclear deterrence strategy for the first time, describing threats and conditions for the use of nuclear weapons. Within this strategy, Russia acknowledges it could use nuclear weapons first, including in response to conventional attacks that threaten the "existence of the state."

Russia made extensive efforts to update their ICBM force with single and multiple warhead missiles, including the developmental silo-based SS-X-29 Sarmat heavy ICBM with the capacity to carry ten or more warheads on each missile; the deployed, more capable silo-based variant of the SS-27; and the silo-based or road-mobile "KEDR" ICBM to be fielded by 2030. To support the expansion and modernization of the sea-leg of its triad, Russia plans to complete the production of ten *Dolgorukiy*-class SSBNs and deploy them equally across the Northern and Pacific Fleets by 2028. These SSBNs will carry the new SS-N-32 Bulava SLBM, enhancing Russia's strategic reach while retiring the older Delta IV SSBNs.

Russia also continues to invest in strategic air capabilities, fitting its heavy bombers with a new advanced nuclear cruise missile. On 12 January 2021, Russia accepted delivery of the first of ten brand-new Tu-160M strategic bombers with updated NV-70M radar and NK-32-02 engines. An accomplishment not seen since the Cold War, restarting the Tu-160M production line required cooperative efforts between the Kremlin and the Russian industrial base. The opening of new manufacturing and production lines further illustrates Russia's ability to rapidly increase its industrial production capacity to support its strategic forces.

In my last testimony, I highlighted Russia's novel and advanced weapon delivery systems, many of which are capable of hypersonic speeds and flight path adjustments designed to avoid United States missile defense systems. They pursue these capabilities despite the United States clearly relying on its strategic nuclear forces to deter any large attack by Russian nuclear weapons. The Avangard HGV, Tsirkon hypersonic anti-ship and land-attack missile, and Kinzhal ALBM are operationally fielded now. Meanwhile work continues on the Skyfall nuclear-powered intercontinental cruise missile and the nuclear-armed Poseidon autonomous underwater vehicle. All provide Russia with an even more diverse and flexible nuclear force while posing a challenge for us. Defense Minister Sergei Shoigu asserted that hypersonic weapons will make up the core of Russia's non-nuclear deterrence capability in the future. Russia is not limiting itself to these new systems and claims to have already completed serious research and technological groundwork on pieces of equipment that have no counterpart in the world. They continue to develop additional strategic systems with new hypersonic warheads to expand the range of threats against the United States, our allies and partners.

Russia's stockpile of approximately 1,000 to 2,000 non-treaty accountable nuclear weapons is anticipated to grow. These weapons fall entirely outside of the United States-Russia New Strategic Arms Reduction Treaty (START) and provide Russia with a diverse stockpile of theater and tactical weapons systems employable by naval, air, and ground forces. In a conventional conflict, if Russia perceives an irreparable imbalance of forces, it may escalate to non-treaty accountable nuclear weapons use.

In October 2019, Russia conducted their largest strategic nuclear exercise since the collapse of the Soviet Union. The exercise was notable for the size and scope of the nuclear forces involved and strategic messaging. President Putin participates in these exercises, indicating a high-level of readiness across Russia's strategic nuclear forces and intending to serve as a visible message to the United States and NATO. These major strategic exercises include command and control operations with participation of the entire nuclear triad; an ICBM combat training launch; and long-range aviation cruise missile launches. More importantly, Russia rescheduled and completed the strategic exercise to coincide with the invasion of Ukraine in February 2022.

DPRK

The DPRK remains a strategic security challenge as it continues to conduct activities that threaten regional stability and defy international norms. The DPRK previously tested ICBM-class missiles designed to reach the United States, and they have a large arsenal of theater-class missiles.

The recent missile launches demonstrate their ongoing desire to develop a credible missile threat. USSTRATCOM supports the Department's efforts with regional partners to reduce military tensions and encourages diplomatic efforts to pursue the DPRK's denuclearization. At the same time, USSTRATCOM will continue to contribute to the extended deterrence commitments of the Republic of Korea and Japan.

INTEGRATED DETERRENCE

While deterrence is not a new concept, the emerging security environment necessitates integrated deterrence to leverage all elements of national power, while enabling the Joint Force to synchronize actions across domains and time on an unprecedented scope and scale. *Yet, the foundation of the Nation's strategic deterrent is unchanged: a powerful and ready nuclear force, a survivable NC3 system, and a responsive nuclear weapons infrastructure. Absent this foundation, the credibility of integrated deterrence will not work.*

Sustaining and strengthening our Nation's deterrence is imperative. Our potential adversaries employ coercion or threat of force as a means to challenge U.S. security commitments and undermine the existing international order. To confront aggressive and coercive behaviors of nuclear-capable near-peers, the Nation must leverage all elements of national power with our nuclear enterprise at its foundation. Integrated deterrence orients the DOD toward stability and cooperation, and clearly communicates the folly and cost of aggression and that diplomacy is always the best option.

Alliances and partnerships remain our greatest strength and are enabled by our credible extended assurance and deterrence. Our policies and postures must enable our allies to contribute to collective defenses even in the face of adversary nuclear coercion. We share with our allies and partners a collective of like-minded states who believe a free and open world should be the foundation of the international order. *Our alliances are only as strong as the guarantee of extended deterrence and assurance backed by credible U.S. nuclear forces, which are essential to integrated deterrence.*

WHAT WE NEED TO DO—OUR MISSION

Fundamentally, strategic deterrence relies on credible capabilities backed by a safe, secure, reliable, and effective nuclear enterprise. We no longer face a singular operational problem set but must consider two nuclear-capable near-peers simultaneously. The attributes provided by all three legs of the triad, forward-deployed regional capabilities, a robust NC3, and a weapons complex able to adapt to future threats offers the President flexible options and enhances the credibility of deterrence. Our strategic capability and capacity must evolve with the threat to achieve our National strategy. USSTRATCOM encourages Congress, the Department, and the Service s to continue their decades-long support for these vital national security capabilities.

Land-Based Triad Component

The Minuteman III (MM III) ICBM force has stood on continuous alert every hour of every day for the past 50 years, ready to deliver a responsive and highly reliable strategic deterrent capability—and our potential adversaries know it. MM III represents half of the Nation's day-to-day available deterrent and its geographic dispersion presents an intractable targeting challenge. I previously testified that without the Nation's ICBMs the PRC becomes a strategic nuclear peer. *The discovery of three new ICBM missile fields in the last year demonstrates the value the PRC places on land-based forces. If we choose not to continue investing in the land-based leg of our triad, the PRC will soon have a superior, modernized nuclear force with elevated day-to-day readiness.*

Requirement for MM III Sustainment

The MM III is well beyond its intended 10-year design life, yet still provides a high availability rate, testifying to its robust design, past modernization efforts, and the dedication of the airmen of the U.S. Air Force. Exhaustive Air Force analysis decisively demonstrated that another MM III life extension is more costly than recapitalization, and the debate has moved well beyond funding. We cannot continue

to rely on an aging ICBM force with end-of-life challenges and the inability to pace the threat. We must complete Ground Based Strategic Deterrent (GBSD) recapitalization on time and avoid the “sunset mentality” prevalent when replacing old systems.

Requirement for Ground Based Strategic Deterrent

GBSD is the program of record to recapitalize the ICBM force and is critical for maintaining a strong deterrent posture. GBSD will be able to pace the threat and is integral to our strategy to navigate the three-party nuclear-capable peer reality. Its development, procurement, and deployment are the best approach to ensure the land-based leg of the triad remains effective and affordable. GBSD preserves the MM-III’s key attributes while improving operational effectiveness against a rapidly developing threat. USSTRATCOM encourages continued Congressional support for the Air Force’s ongoing GBSD strategy—pursue mature, low-risk technologies; design modularity; advanced cyber security; open system architecture; and state-of-the-art model-based systems engineering.

Sea-Based Triad Component

The Navy’s *Ohio*-class SSBN fleet, paired with the Trident II D5 Strategic Weapon System (SWS), combines a highly effective, survivable, worldwide launch capability with continuous and virtually undetectable strategic deterrent patrols. Since their first deployment, early in the Cold War, we have relied on our SSBN fleet for a resilient, reliable, and survivable deterrent.

Requirement for Trident Sustainment and Modernization

No single Navy submarine has served longer than 37 years, yet the entire *Ohio*-class SSBN fleet has been life extended to an unprecedented 42 years. USSTRATCOM requires *Ohio*-class sustainment and modernization until completely replaced in 2042 by the *Columbia*-class SSBN. *Ohio*-class sustainment is critical to ensure operational availability of the submarine force to minimize significant transition risk throughout the *Columbia*-class deployment timeline. The *Columbia*-class SSBN remains a high priority strategic deterrent program for USSTRATCOM. The program of record delivers twelve SSBNs, the absolute minimum required to meet at-sea requirements, especially during triad recapitalization and future intensive fleet maintenance periods. Continued Congressional support for the *Columbia* program is vital to strategic deterrence. It must deliver on time to avoid a triad capability gap.

To guarantee uninterrupted SSBN capability, we must continue investing in our SSBN SWS programs. The Navy previously life extended the Trident II D5 weapon system (D5LE) to outfit the *Ohio*-class through retirement and deployment of the first eight *Columbia*-class SSBNs. A second D5 life extension (D5LE2) is required to ensure a viable SSBN deterrent through the 2080s. D5LE2 will continue reliable, high performing D5LE design elements and components in order to mitigate cost and technical risk. Additionally, D5LE2 meets current D5 demonstrated performance while offering added flexibility to support future missions and payloads in response to advancing threat environments.

Anti-Submarine Warfare

Anti-submarine warfare threats continue to evolve rapidly as potential adversaries continuously look for new and innovative ways to gain an advantage in the undersea domain.

The Navy’s Integrated Undersea Surveillance System (IUSS) provides vital information concerning submarine and surface ship operations, and acoustic characteristics of interest. It allows U.S. forces to maintain favorable tactical and strategic positions while supporting deterrent patrol operations. Surveillance performed by IUSS directly contributes to the theater anti-submarine warfare commander’s maritime defense of the Homeland. Advances in Russian submarine stealth and detectability makes IUSS recapitalization a national imperative.

While our submarines are formidable weapon systems, we must address potential adversary’s undersea security advances to ensure our current and future SSBN fleet remains effective and viable well into the future. Evolving submarine quieting, acoustic arrays, and processing capabilities challenge our acoustic superiority and subsequently, SSBN survivability. Advanced modifications of large vertical arrays, advanced materials science and coatings, and other efforts within the Acoustic Superiority Program are vital. Funding for these emerging passive long-range detection/wide area search programs secure our SSBN fleet advantages through the *Ohio* to *Columbia* transition.

Air-Based Triad Component

The bomber fleet is our most flexible and visible leg of the triad. We are the only nation with the capability to provide bombers in support of our allies and partners, enabling the U.S. to signal our resolve while providing a flexible option to de-escalate a conflict or crisis. Bombers support both strategic deterrent and conventional employment options, and execute global strike, nuclear, and conventional deterrent mission sets around the globe to achieve National objectives. USSTRATCOM executed 127 Bomber Task Force (BTF) missions over the past year. BTFs remain the iconic example of dynamic force employment across the entire Joint Force and potential adversaries watch these missions closely. We strongly encourage continued Congressional support for full funding of the bomber fleet.

B-52H Sustainment

The B-52H is a 60-year-old platform with plans to remain in service for another 30 years. Achieving this unparalleled milestone carries maintenance and operational challenges, which require dedicated technical and funding resources. Critical B-52 modernization upgrades include the Commercial Engine Replacement Program (CERP), Radar Modernization Plan (RMP), and survivable NC3. These improvements are necessary to keep the B-52 flying and able to pace the evolving threat. The Air Force recently selected Rolls-Royce to execute CERP to replace the B-52's 1960s-era TF-33 engines, enabling longer unrefueled range with lower emissions while solving supply chain issues afflicting the current engines. The B-52's very low frequency (VLF) and extremely high frequency (EHF) modernization programs will provide mission critical, beyond-line-of-sight strategic connectivity, and must field on time to meet USSTRATCOM's operational requirements.

B-2 Sustainment

The B-2 fleet remains the world's only low-observable bomber, able to penetrate denied environments while employing a wide variety of munitions against high-value strategic targets. The DOD must protect this unique operational advantage as the Air Force transitions from the B-2 to the B-21. The Air Force can only achieve a successful transition with full funding for the B-2 sustainment and modernization programs until the B-21 completes development and certification, both conventional and nuclear missions. A carefully synchronized transition is necessary to mitigate operational risk associated with executing the triad-wide multi-platform recapitalization.

Requirement for B-21

The B-21 Raider will support the nuclear triad with a visible deterrent capability and provide strategic and operational flexibility across a wide range of military objectives. The program is on track to meet USSTRATCOM operational requirements, with five test aircraft currently in development and the first operational aircraft scheduled for delivery in the mid-2020s. USSTRATCOM supports fully funding the Air Force's B-21 strategy to prevent operational shortfalls in the bomber force.

Air-Delivered Weapons / Long Range Standoff

The air-delivered weapons portfolio consists of the Air Launched Cruise Missile (ALCM), the B83 gravity bomb, and the B61 family of weapons providing the right mix of standoff and direct attack munitions to meet near-term operational requirements. The long range standoff (LRSO) weapon will replace the ALCM as our Nation's only air-delivered standoff nuclear capability. It will provide the President with flexible and scalable options, and is capable of penetrating and surviving against advanced air defenses—a key attribute and critical component in all USSTRATCOM operational plans. Without LRSO, B-2 and B-21 bombers will have no option but to fly directly over targets to drop gravity-delivered weapons unnecessarily increasing risk to the mission and the lives of Air Force bomber aircrews.

The LRSO complements the ICBM and SSBN programs as they transition from legacy to modernized weapon systems. The LRSO on-time delivery is important to sustaining strategic stability, as potential adversaries will exploit gaps resulting from technical problems or production delays. Finally, fielding LRSO is cost-effective. Using gravity weapons to deliver similar effects would require ten-times the current bomber allocation and four times the current tanker allocation, with more gravity weapons, or employment of additional triad elements. LRSO full funding is absolutely imperative to reduce operational risks we face during triad recapitalization.

Tanker Support

A robust tanker fleet is essential to sustaining global reach for all USSTRATCOM mission sets. While the KC-135 and KC-10 force has done the yeoman's work for

decades, the Air Force's effort to revitalize the tanker fleet is timely. The likelihood of future concurrent mission sets between strategic, theater, and homeland defense is high, requiring continued tanker modernization and expansion efforts. USSTRATCOM fully endorses and supports the Air Force's effort to modernize and sustain the tanker fleet.

Nuclear Command, Control, and Communications

NC3 provides the critical assured communications link between the President and our nuclear forces. On-going NC3 Enterprise Center (NEC) modernization efforts bridge the gap between legacy and future systems to ensure this critical link does not fail. While aging capabilities provide the nuclear triad with sufficient viable assured strategic communications; today, sustainment issues increasingly compromise the reliability of these stalwart systems. Modernizing our NC3 systems is key to ensuring the nuclear capability of the Nation remains fully positioned to provide an assured response if called upon. Our NEC Next Generation capabilities must pace adversary emerging and future technological developments.

NC3 Next Generation / Modernization

Potential adversaries continue to rapidly research, develop, and field emerging technologies and weapon systems. We are at a point where end-of-life limitations and the cumulative effects of underinvestment in our nuclear deterrent and supporting infrastructure leave us with no operational margin. The Nation simply cannot attempt to indefinitely life-extend leftover Cold War weapon systems and successfully support our National strategy. Pacing the threat requires dedicated and sustained funding for the entire nuclear enterprise and NC3 Next Generation modernization must be a priority.

The DOD operates, maintains, and defends the current NC3 enterprise every single day from cyber threats. In coordination with the Services, USSTRATCOM led an enterprise-wide approach to harden the current architecture until complete fielding of the NC3 Next Generation. As an example, the Air Force is leading the effort to modernize the NC3 data pathways for the Strategic Automated Command and Control System (SACCS), replacing legacy telephony to sustainable and secure modern technology with upgraded at-risk cryptographic devices.

The NEC and DOD stakeholders fielded the NC3 Next Generation Increment 1 capabilities, including the Family of Advanced Beyond Line of Sight Terminals (FAB-T) to replace antiquated survivable satellite communications equipment. The NEC, the National Security Agency (NSA), and the Services also began replacing outdated encryption equipment with newer, upgraded capabilities. The NC3 Enterprise continues segment upgrades to legacy telecommunications capability from analog to digital working closely with the Defense Information Systems Agency. This conversion is the first step to standardize our enterprise-wide terrestrial communications highway. Additionally, the NEC collaborated with U.S. Cyber Command (USCYBERCOM) to execute a cybersecurity pilot program to provide real-time, persistent monitoring across various NC3 networks to detect, characterize, and mitigate adversary network actions.

The NEC, Navy, and Air Force completed the first step in a digital high frequency (HF) demonstration to enable advanced beyond line-of-sight communication between our command centers and operational forces. USSTRATCOM developed, installed, and deployed a mobile communications suite providing an alternative communications capability supporting continuity of operations and force direction. This new capability will enable USSTRATCOM to rapidly create requirements and field systems in the future.

The NEC is undertaking several efforts to more rapidly develop and deliver NC3 enterprise capabilities. The NEC established a digital modeling and engineering environment (DMEE), a collaborative platform in the standard development of and test engineering specifications for the NC3 enterprise. The NEC and the University of Nebraska-Lincoln, through a Partnership Intermediary Agreement (PIA), established the Nebraska Defense Research Corporation (NDRC). The PIA fosters collaboration between commercial entities, defense industry, academia, Federally Funded Research and Development Centers (FFRDCs), and other government agencies. The NDRC is already prototyping of future NC3 Next Generation Incremental capabilities. All of these efforts are currently ongoing and will posture delivery of NC3 Next Generation Increments and provide increased operational margin within our NC3 Enterprise.

NC3 Cybersecurity, Technological Improvements, and AI / Machine Learning (ML)

USSTRATCOM continues to realize the benefits from the investment in our world class Command and Control Facility, the DOD's newest NC3 command center. Confidence in our ability to protect, defend, and execute the nuclear deterrent mission

in the face of advanced cyber threats remain high. The relative isolation and the redundancies of the systems comprising the Nuclear Command and Control System (NCCS), combined with ongoing cybersecurity enhancements, ensure our ability to respond under adverse cyber conditions. To preserve our critical information and command and control advantages, USSTRATCOM is investing in cybersecurity protections that exceeds the DOD baseline standard while looking for opportunities to improve that posture.

Near-term efforts to enhance cybersecurity of the NC3 enterprise include: the establishment of quarterly cybersecurity reporting for all NC3 information technology (IT) systems; ongoing efforts with USSTRATCOM system program managers to correct cybersecurity shortfalls; piloting of a persistent cyber sensing and monitoring capability for NC3 IT systems; and the development and execution of Defensive Cyber Operations (DCO) Internal Defensive Measures (IDM) to harden and defend the NC3 cyber terrain. As the threat evolves; however, the DOD must continue to fund and rapidly implement required cybersecurity capabilities. CyberSecurity Service Provider (persistent cyber defense); persistent sensing and monitoring across the NC3 enterprise; and cryptographic modernization will ensure the confidentiality of our information and decision making capabilities. A responsive cyber Command and Control construct will enable the rapid dissemination of defensive cyber operations orders, facilitate action, and enable follow-up reporting. These efforts will ensure continued readiness of the nuclear deterrent mission and set conditions for the success of our conventional forces.

Deep learning and advanced data management concepts are also fueling new demands for infrastructure that can scale to capacity on demand. Acting on the guidance of the Deputy Secretary of Defense and recommendations from the National Security Commission on AI, USSTRATCOM implemented the Command Data and AI Center (CDAI) to solve the command's most intractable problems through the application of advanced AI/ML methods. The command is recruiting a highly skilled workforce to build and maintain a resilient and scalable cloud and on-premise infrastructure to provide the capabilities to maintain information advantage over our potential adversaries.

We will do this in ways consistent with the DOD Ethical Principles for Artificial Intelligence, while continuing to lead in developing best practices for the development and application of AI and ML technologies to ensure their use is safe, secure, reliable, and consistent with our values. In an effort to "go faster," USSTRATCOM completed a 90-day pilot to assess opportunities to leverage commercial industry and use of non-traditional unclassified data sources to solve some of our most challenging problems. I strongly endorse Deputy Secretary of Defense Hicks's AI and ML initiatives in this critical focus area.

USSTRATCOM continues to collaborate with USCYBERCOM, the Services, and agencies to leverage technologies in development, security, and operations (DevSecOps), code delivery, cloud computing, and data analytics to accelerate the development and delivery of new capabilities. Initiatives in these areas will jumpstart development of frameworks and governance necessary to pace the threat. Likewise, these new areas require stable, consistent, and on-time funding.

Nuclear Weapons and Supporting Infrastructure

The Nation faces a confluence where triad delivery platforms, weapons, and infrastructure must modernize simultaneously. As with DOD programs, the Department of Energy (DOE) and the National Nuclear Security Administration (NNSA) fill a vital role providing the weapons and components required to maintain the Nation's strategic deterrent mission. The NNSA's programs of record must be prioritized and executed on schedule to ensure the DOD retains a credible and modern triad. The NNSA's ability to sustain the Nation's nuclear weapons stockpile is underpinned by a resilient and responsive production infrastructure and robust science and technology programs. All of these elements are critical to maintaining a safe, secure, and effective deterrent force. The objective is to restore the weapons complex to a resilient, responsive and modern condition; capable of sustaining the health of the Nation's stockpile and keeping pace with the evolving threat environment.

Nuclear Weapons and Stockpile Challenges

While today's stockpile is safe, secure and militarily effective, I am increasingly concerned with reliability and performance degradations in the majority of our systems. We must execute stockpile modernization programs on time to reverse this trend. In compliance with national policy, the NNSA has done an excellent job reducing the weapons stockpile. As we shift focus beyond life extension to modernizing our remaining weapons, we must overcome obstacles that delay program execution. Failure to do so results in accumulation of operational risk from continued deferral

of necessary modernization programs and aging weapons in the stockpile decades longer than intended. For example, both the B61 life extension and W88 alteration programs were delayed 24-months and are now late-to-need. The W80-4 program is a just-in-time modernization for airborne standoff capability, and any program delay incurs operational impacts.

Stockpile modernization programs take 10 to 15 years to execute. Without a concerted effort to reduce these timelines, today's issues will continue to manifest as the Nation undertakes more complex ballistic missile modernization programs. Specifically, W87-1 is the "pathfinder" weapons program for modernizing our land- and sea-based ballistic missile systems and will develop the infrastructure and technology processes needed in the future. Any W87-1 program delays will cascade through each follow-on program, beginning with the W93/Mk7. W93/Mk7 must deploy on time to reduce our over-reliance on a single SSBN warhead type, avoid future simultaneous SLBM modernization and support the United Kingdom's modernization to its deterrent force.

Weapons Complex Infrastructure

The DOE, NNSA, and DOD work closely to ensure the nuclear weapons infrastructure complex is postured to ensure the stockpile remains safe, secure, and militarily effective. However, today's Manhattan Project-era infrastructure is in poor condition, challenging NNSA's ability to successfully meet basic sustainment needs. Long-term deferred infrastructure investments have significant impacts, and there are heightened concerns with every major site providing critical stockpile capabilities to include uranium, tritium, high explosives, lithium, radiation-hardened electronics, testing, experimentation, and weapon assembly/disassembly. Infrastructure modernization must be accomplished to prevent delays in fielding required capabilities. Prioritizing crucial NNSA infrastructure modernization programs is the best and only option to pace projected threats and sustain strategic deterrence.

In 2021, it became clear the production complex would not meet the Nation's plutonium pit production requirements, necessitating pursuit of less optimal approaches to meet stockpile modernization programs in the 2030s. Pit production shortfall is a leading indicator of how our current infrastructure is unable to execute the needed and planned stockpile modernization strategy. The atrophied condition of the infrastructure, coupled with delays in fielding necessary state of the art capabilities, significantly increases operational risk in sustaining a safe, secure, and effective nuclear deterrent.

Science, Technology, and Engineering Base

The science, technology and engineering (ST&E) base is essential for nuclear weapon and production complex modernization. Our ability to attract and retain the best and brightest scientists, engineers, program managers and technicians to work in the strategic deterrence mission set rests on ST&E efforts. In 2021, ST&E programs continued to advance our understanding of nuclear weapons. For example, the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL) made a major technological advance, to expand the range of experiments directly relevant to stockpile modernization. This achievement will enable high fidelity testing to address challenging nuclear survivability requirements in the future.

The ability of NNSA to backstop an aging stockpile and infrastructure with advanced science and technology programs has enabled the Nation to sustain the deterrent well beyond projected lifetimes. As our potential adversaries rapidly advance their nuclear programs; however, this edge in science and technology is beginning to erode. The Nation must aggressively sustain and advance these critical resources to improve our understanding of nuclear weapons performance and mature technologies to allow us to confidently move forward with stockpile and production modernization programs. I have formally reported this to the Secretary of Defense.

Nuclear Weapons Security / Force Protection

Nuclear weapons security remains a top USSTRATCOM priority and I am encouraged by the Department's continuing efforts to enhance and improve our security posture and capabilities. The security systems that protect our nuclear weapons must evolve as potential adversaries seek to exploit vulnerabilities. We must remain committed to protecting the investments in and fielding of the capabilities required to maintain the high security standards this mission demands and continue to adapt as the threat evolves.

MH-139A Grey Wolf Replacement Helicopter

The Air Force continues to make progress toward replacing the aging UH-1N helicopter fleet with the MH-139A Grey Wolf. The Grey Wolf will close our UH-1N limitations in speed, range, endurance, payload and survivability, and provide a

rapid lethal response to address security vulnerabilities. We look forward to the Air Force completing Grey Wolf FAA certifications and getting aircraft “on the ramp” as we move toward full operational capability across all three ICBM wings in fiscal year 2028.

Countering Small Unmanned Aircraft Systems

USSTRATCOM requires an effective integrated set of Countering Small Unmanned Aircraft Systems (C-sUAS) capabilities to defend strategic locations and assets across the threat spectrum in a rapidly advancing and technically challenging environment. As technology advances, so must our access and authorization to use both kinetic and non-kinetic capabilities in C-sUAS engagements to protect our nuclear assets. I strongly support the Services’ efforts to develop and field effective protection systems and encourage continuing Congressional support as we deploy C-sUAS capabilities to reduce the threat.

Countering Underwater Unmanned Vehicles

USSTRATCOM requires an integrated Counter-Unmanned Underwater Vehicle (C-UUV) capability for protection of strategic naval assets. The underwater environment has become an uncontested entry point for UUV systems, threatening our strategic assets. The effectiveness of traditional undersea detection and protection methods must be enhanced and new capabilities developed to ensure we retain strategic advantage in response to this emerging threat. It is imperative we seek and employ non-traditional layered protection measures to maintain the safety and security of our waterfronts and strategic assets.

Weapons Generation Facilities

The future Weapons Generation Facilities (WGF) are a DOD program priority and will consolidate weapon maintenance and storage functions to support ICBM and bomber missions. These functions reside in 1960s and 1970s era Weapons Storage Areas (WSA) that exceed their intended service lives. Emerging threats expose WSA vulnerabilities, driving the need for a cost effective approach to restore weapon security and storage; however, the uncertainty of consistent stable funding, supply chain concerns, and pandemic repercussions affect overall confidence in construction schedules.

Conventional Hypersonic Weapons

Hypersonic weapons development remains a top USSTRATCOM priority. Hypersonic weapons will provide a highly responsive, non-nuclear global strike capability against distant, defended, and/or time-critical threats when other forces are unavailable, denied access, or not preferred. Conventional hypersonic weapons will enhance our overall strategic deterrence posture by providing the President additional strike options to rapidly project power and hold high-value targets at risk without crossing the nuclear threshold. USSTRATCOM will be ready to command and control hypersonic weapons the day they are fielded, as these weapons directly contributes to the Command’s Strategic Deterrence and Global Strike missions. We appreciate and encourage continued Congressional funding as we quickly develop, procure, and field this enhancement to our strategic deterrence portfolio.

JOINT ELECTROMAGNETIC SPECTRUM OPERATIONS (JEMSO)

USSTRATCOM and the Joint Force are critically dependent on the EMS. Across the competition continuum, the Electromagnetic Spectrum (EMS) will be congested, contested, and constrained. Potential adversaries are pursuing technology to deny our ability to use the EMS successfully across our range of missions and operations, to include targeting critical NC3 architecture. To ensure freedom of maneuver in the EMS, we must continue to develop and integrate EMSO across the DOD and with select allies.

USSTRATCOM is implementing operational aspects of the DOD EMS Superiority Strategy (EMSSS) I-Plan Goal 5, Establishing Effective EMS Governance, in coordination with DOD Chief Information Officer (CIO), OUSD, Joint Staff, Combat Support Agencies, CCMs, and Services. To support this goal, USSTRATCOM will establish a 2-Star Direct Report Organization called the Joint EMS Operations Center (JEC). The JEC will enable execution of proposed amended UCP responsibilities for JEMSO operational lead reporting directly to CDRUSSTRATCOM and we intend to achieve IOC this year.

USSTRATCOM is leading the development of JEMSO Cells (JEMSOC) across the Joint Force to support joint planning, coordination, and control of the EMS. The USSTRATCOM JEMSO staff in lockstep with DOD CIO, is driving the require-

ments for a JEMSOC Electromagnetic Battle Management (EMBM) system to achieve EMS superiority.

USSTRATCOM's Joint Electromagnetic Warfare Center (JEWEC) established the first-ever Joint EMS Information Analysis and Fusion capability to provide spectrum-specific data for electromagnetic battle management and CCMD JEMSO cells. Our task is to raise the aggregate readiness of the Joint Force to prevail in a complex EMS that has become key terrain in nearly every military action we undertake.

MISSILE DEFENSE

Missile defense (MD) remains an essential element of our strategic deterrence approach, raising the stakes of rogue actors and regional adversaries and denying the benefit of attack against our protected assets as part of an integrated deterrence framework, both for the Homeland and for the regional CCMDs. The active missile defense mission begins with launch detection, attribution, warning, and tracking, all of which face significant challenges as potential adversaries develop and deploy hypersonic systems, increase ballistic, cruise missile availability, and lethality. Technology developments continue at an unrelenting pace and employment techniques—operating at lower altitudes, higher speeds, and with greater maneuverability—continue to challenge our missile defense systems. We must develop and deploy additional missile defense systems with advanced capabilities into the existing architecture to address the rapidly changing threat environment. USSTRATCOM is engaging with CCMDs, the Services, and agencies to advocate for and deliver global integrated missile defense capabilities and capacity in an operationally relevant timeframe.

As we move beyond legacy interceptor-based “hit-to-kill” technologies, we must expand our approach to active defenses and appreciate the funding of such critical sensors as the Hypersonic and Ballistic Missile Space Tracking Sensor (HBTSS) and the Space Development Agency's Tranche 1 MD Tracking Layer. As the Department develops capabilities that complement our existing Ground-Based Interceptor (GBI) systems and regionally-focused systems such as, Aegis, Terminal High Altitude Area Defense (THAAD), and Patriot, we must examine novel, cost effective options to adapt and overcome emerging threats. Finally, we should consider modifications to existing systems to defend against emerging threats, while remaining fiscally responsible—for example, fully integrating existing space- and terrestrial-based sensors in an attempt to identify and track ballistic, maneuvering, hypersonic, and cruise missile threats, as well as unmanned aerial systems.

USSTRATCOM continues to work with our allies and partners to further integrate our capabilities to meet common threats. Led by the Joint Force Component Command-Integrated Missile Defense, the 24-nation missile defense policy campaign, NIMBLE TITAN 20, culminated with a senior leader event in Amsterdam in November 2021 and was successfully completed despite the limitations of the ongoing pandemic. We have begun planning our next campaign, NIMBLE TITAN 23, to deepen the exchange of MD policy views and insights and collectively explore operational concepts in this challenging environment.

OUR PEOPLE & PARTNERSHIPS

It has been 30 years since this Nation has had to seriously consider the implications of competition through crisis and possible conflict with a nuclear-armed opponent let alone two nuclear-capable near-peers. USSTRATCOM holds the bulk of the last remaining strategic and operational deterrence expertise in the DOD. Thus, our people and partnerships are a vital element to the national strategic deterrence mission. Even against the challenges of the continuing pandemic, the personnel of USSTRATCOM remain operationally resilient. Because of our people, we continued the mission during this unforeseen crisis.

People

The Command remains committed to improving our workforce and our competitive advantage. We are growing our intellectual and deterrence theory capital through industry and academic partnerships such as USSTRATCOM's Strategic Fellows and Deterrence Education Programs. We continue to pursue Diversity, Equity, and Inclusion in line with DOD guidance through Human Capital initiatives. The Command emphasizes and distributes Service and agency focused resources to provide greater visibility to individuals within the Command. We offer opportunities for our military and civilian workforce to pursue additional diversity leadership training and certificates, opportunities to participate in Heritage Councils to help celebrate DOD-recognized special observances, and Directorate-level diversity councils to promote healthy culture and provide direct feedback on workforce and personnel

guidance and processes. Additionally, we provide and monitor active feedback mechanisms to report on health and culture within the Command and provide tools to address diversity issues.

Academic Endeavors

This Nation faces an intellectual challenge, requiring us to leverage the intellectual capacity of the U.S., our allies and partners. USSTRATCOM is making a concerted effort to reinvigorate research in strategic deterrence. Since the establishment of the Academic Alliance in 2014, over 70 academic institutions and industry partners have focused on USSTRATCOM's challenging mission set while building the next generation of national security professionals. Although the Alliance is currently developing the deterrence-focused curricula, it is only a fraction of what is needed to reinvigorate research and analysis for deterrence concepts. In August 2021, I further challenged the Academic Alliance, FFRDCs, and think tanks to provide new ideas on strategic deterrence in the 21st century by establishing USSTRATCOM's first ever analytic agenda. The response from these institutions is so promising that I am integrating some of the concepts and ideas into USSTRATCOM plans and operations.

While this is a good start to understanding deterrence in the 21st century, good will, and the Academic Alliance will only take the Department and our Nation's capacity to think through deterrence challenges so far. USSTRATCOM collaborates with the National Strategic Research Institute (NSRI) and the University of Nebraska to research key topics in my analytic agenda. This initiative only scratches the surface to truly understand the implications of strategic deterrence in the 21st century and requires additional engagement with our academic partners.

Wargames

Exercises, wargames, tabletop exercises (TTX), and rehearsals of concept continue to refine how we demonstrate joint capacity, capability, and interoperability across the globe. Last year, USSSTRATCOM conducted over 360 nuclear command, control, and communications-focused exercises and wargame events focused on coordination with other CCMDs and the interagency, integrating advanced weapons, and improving processes and procedures to leverage every advantage from our nuclear enterprise.

CONCLUSION

Potential adversary actions are challenging us in ways we have not experienced in over 30 years. USSTRATCOM will continue to deter strategic attack and employ forces as directed by the President to guarantee the security of the Nation, our allies, and our partners. We must remember deterrence is not a static concept—it evolves—and the current evolution of the world's strategic security environment will result in three nuclear-capable near-peers. *The PRC and Russia actively seek to change the international rules-based order, while the United States, with our allies and partners, seek to defend it.* Our military can contribute to an integrated whole-of-government approach only if we make clear-eyed and threat-informed decisions regarding the capabilities needed to protect and defend the Nation. The Nation's nuclear force is the backstop of integrated deterrence. Today, we stand ready to execute our assigned missions. Failure to pace the threat from potential adversary technological advances today may inhibit our ability to do so in the future. To execute a National strategy resistant to adversarial coercion, we need modern, effective, and reliable capabilities. *Above all else, USSTRATCOM will continue to provide strategic deterrence, underwriting every U.S. military operation around the world and deterring great power conflict. Peace is our Profession . . .*

Chairman REED. Thank you very much, Admiral. General Dickinson, please.

STATEMENT OF GENERAL JAMES DICKINSON, COMMANDER, UNITED STATES SPACE COMMAND

General DICKINSON. Good morning, ladies and gentlemen, and thank you, Chairman Reed and members of the Senate Armed Services Committee. As always, I am honored today to represent the approximately 18,000 men and women of the United States Space Command. We are a joint and diverse team of professionals who value the honorable service of everyone within our ranks.

Today we are not only in full support of our joint forces globally and NATO in Europe but we remain hard at work building the command toward full operational capability. We are steadily building the capability and capacity in our headquarters, and its composition reflects our joint, combined, and partnered approach to executing our critical mission. As of this month we have over 1,000 members assigned to our headquarters, including civilians, contractors, Active Duty personnel from all services, representatives from the interagency, and servicemembers from the National Guard and Reserves.

We also recognize the vital importance of our allies and partners through the contributions of an assigned international general office and two international liaison officers on our staff. We are pleased to have all of them on our team.

Responding to the threats to the U.S. and allied interests in space demands the teamwork and expertise of every one of our people. We are prepared to execute our unified command plan missions and responsibilities, yet acknowledge that the challenges from our competitors in the domain are substantial and, in fact, growing.

China remains our pacing challenge. Current PLA [People's Liberation Army] development is directed towards creating a joint, versatile, professional, and lethal force capability of power projection globally, and the space layer is critical to their efforts. In 2021, the PRC increased on-orbit assets by 27 percent. This increase brings their on-orbit satellite total from just over 100 satellites 10 years ago to more than 500 satellites today. Their recent counter-space capability demonstrations include the DN-1 and the DN-2 direct descent anti-satellite tests and a hypersonic glide vehicle test.

In October of 2021, the PRC launched their SJ-21 satellite, described as a, quote, "space debris mitigation," end quote, satellite. In January, the SJ-21 docked with a defunct PRC satellite and moved it to an entirely different orbit. This activity demonstrated potential dual-use capability in SJ-21 interaction with other satellites and builds on the previous demonstrations in late 2016 of potential dual-use capability that we saw in the SJ-17.

Over the past 2 weeks we have witnessed Russian aggression in Europe on a significant scale. Space is not a sanctuary from similar behavior. Russia is actively working to regain its prestige as a space power. The destructive direct ascent test just this last November is an example of their activity. Space is no longer a sanctuary, and U.S. Space Command stands ready to protect and defend the space assets of the United States and our partners and allies.

U.S. Space Command is committed to deterring the use of any space capabilities for nefarious purposes within the framework of the Department of Defense Integrated Deterrence Strategy. Key to all of this is U.S. and allied space superiority informed through space domain awareness, or SDA, capabilities. SDA helps us analyze, not just identify, what is occurring in space, which when combined with the information from our intelligence agency helps develop an understanding of why things are happening, characterize intent, and provide decision advantages to our leaders. Our SDA

capabilities are part of a broader resilience space architecture that enables command and control and provides the tools to sustain freedom of action in the space domain.

Within this broader resilience space architecture, SDA remains my top mission priority for U.S. Space Command. SDA provides the backbone of U.S. Space Command's strategy for accomplishing our mission. That strategy sets the conditions to understand and attribute activities in space. This enables our mission to deter first, and when called upon, to defend space capabilities and to deliver combat power for the United States and our allies.

Our strategy has three main areas of focus: first, countering competitive influence; second, strengthening relationships and attracting new partners; and third, building and maintaining a competitive edge. With continued support from Congress, U.S. Space Command will do all of that and more. U.S. Space Command is postured to protect and defend the space domain while ensuring continuous space effects are delivered to our joint and combined force.

I assure you, here today, that U.S. Space Command is ready. So on behalf of the most critical resource in our command, the soldiers, marines, sailors, airmen, guardians, civilians, and families of the command, thank you, Chairman Reed and members of this Committee, for your support of our mission to conduct operations in, from, and to space.

I submit my statement for the record, and I look forward to your questions.

[The prepared statement of General James H. Dickinson follows:]

PREPARED STATEMENT BY GENERAL JAMES H. DICKINSON

INTRODUCTION

Space is vital to our modern way of life and our people remain our most critical asset. China and Russia are developing new space and counterspace capabilities to achieve national goals and deny the United States, our allies and our partners the advantages from space. United States Space Command (USSPACECOM) is focused on providing support to warfighters from space as well as defending the space domain as a necessary part of our national security, especially in light of the rapid evolution of the threats we face, and the importance of deterring potential adversaries from challenging or attacking U.S., allies', and partners' space systems.

In August 2021, I informed the Secretary of Defense and publicly announced that USSPACECOM had reached Initial Operational Capability (IOC). My IOC declaration represents a measured assessment that USSPACECOM is able to execute key Unified Command Plan-assigned tasks, including normalizing USSPACECOM's command and control of Operation Olympic Defender; successfully demonstrating at combatant command-level exercises our warfighting acumen; and adding to the Command's space data sharing agreements that now total more than 100. Today we are capable of delivering strategic effects, providing the National Command Authority with space domain options for achieving national objectives. We are ready to address threats and take advantage of opportunities across the spectrum from competition to conflict.

However, there is much more work to be done to build capacity as USSPACECOM continues driving toward Full Operational Capability (FOC). We are increasing our capacity within the framework of the President's Interim National Security Strategic Guidance and the U.S. Space Priorities Framework. In line with this guidance, the Unified Command Plan, and the Secretary of Defense's approach to Integrated Deterrence, we are implementing USSPACECOM's strategy. Our strategy sets the conditions to deter, and to win when compelled to fight. It does this in three ways: (1) Countering Competitor Influence; (2) Strengthening Relationships and Attracting New Partners; and (3) Building and Maintaining a Competitive Advantage. My focus on these three efforts within our strategy will achieve our desired end state: a team of professionals, Active, Guard, Reserve, civilians and contractors, who out-

think and outmaneuver our adversaries, operate with our allies and partners, and when necessary, win through space combat power.

COUNTERING COMPETITOR INFLUENCE

The challenges to maintaining a safe, secure and sustainable space domain are increasing. On November 15, 2021, Russia tested a ground-based Direct Ascent Anti-Satellite (DA-ASAT) missile and successfully intercepted and destroyed one of its own defunct satellites. While Russian aggression remains visible on the global stage, we must also keep our eye on the pacing challenge – the People's Republic of China (PRC). Both the PRC and Russia continue to develop and test sophisticated anti-satellite weapons to hold U.S. and allied and partner space assets at risk. In 2007 the PRC, similarly, conducted their own destructive ASAT test. These debris-creating events threatened the lives of those onboard the International Space Station (ISS), and other commercial and space-faring nations' satellites in low Earth orbit. Additionally, the PRC conducted the first fractional orbital launch of an ICBM with a hypersonic glide vehicle from China on July 27, 2021. This demonstrated the greatest distance flown (~24,850 miles) and longest flight time (~100+ minutes) of any PRC land attack weapons system to date.

These events demonstrate how the PRC and Russia have tested counterspace weapons across multiple domains as a way to blunt United States influence, deter, and counter a possible U.S. response during conflict or crisis, and across the board reduce U.S. and allied military effectiveness in the future. Our competitors are also developing and proliferating satellites and satellite attack capabilities to hold our space and strategic capabilities at risk. These counterspace capabilities include cyber, electronic warfare (EW), directed-energy weapons, anti-satellite missiles, and space-based weapons, which enables our competitors to achieve a range of effects. These effects range from degrading space services temporarily to damaging or destroying satellites permanently in and through space that jeopardize our capabilities in other domains.

To negate the growing EW and cyber threat, we are partnering with the U.S. Intelligence Community to explore a testbed to assess new jam and spoof resistant waveforms for all satellite telemetry, tracking, and command. The PRC has operational ground-based missiles in their fielded forces intended to destroy spacecraft in low-Earth orbit, and ground-based lasers likely created to blind or damage sensitive space-based optical sensors on satellites in low Earth orbit. Our competitors have counterspace capabilities and operational military doctrines that extend warfighting to space. They are continuing to modernize their space attack capabilities. Today, space is a warfighting domain because our competitors have made it so.

Consequently, the number one need for the Command is to enhance our understanding of the congested and complex space operational environment, to include what is occurring and when, and the intent behind those engaged in such actions. This critical task requires a deep understanding of space objects and capabilities regardless of their national origin. This is why my priority request to Congress is to authorize and fund Space Domain Awareness (SDA) programs that enable us to monitor the domain effectively and provide combat-relevant indicators and warning of potential threats to U.S. Government, allied, and partner space systems. SDA encompasses identifying, characterizing and understanding objects to enable real-time assessments of potentially threatening activities in space and developing appropriate options for a response. Through SDA, USSPACECOM can better protect and defend our vital space assets when there may be only minutes to respond.

Our SDA capabilities will be part of a broader, resilient space architecture that enables command and control and provides the tools to sustain freedom of action in the space domain. Within this broader, resilient space architecture, SDA remains my top priority. Our space posture must not be predicated on a static defense. Domain awareness enables us to observe, orient, decide, and act. SDA is foundational to effective and proactive maneuver; this is essential to ensuring proliferated architectures are resilient architectures. This Command depends on the SDA capabilities fielded by all of the military Services as well as the commercial sector.

The Pacing Challenge—The People's Republic of China

The PRC poses a major security challenge and remains a long-term strategic competitor to the U.S. Its government views the international environment and the PRC's relationship with the U.S. as increasingly contentious. The PRC continues its decades-long military modernization campaign in order to build what it terms a "world-class military" by the end of 2049. Chinese Communist Party (CCP) leaders characterize their long-term military modernization program as essential to achieving great-power status. In 2020, the CCP's People's Liberation Army (PLA) added a new 2027 milestone to accelerate the integrated development of "mechanized,"

“informatized,” and “intelligentized” armed forces to provide CCP leadership more credible military options. The PLA believes the fundamental precepts for modern “informationized” and future “intelligentized” warfare—including their use and advancement of machine learning and artificial intelligence (ML/AI)—include space superiority, the ability to control the information sphere, and denying adversaries the same.

In the next 5–10 years the PLA’s Strategic Support Force (SSF) will field a range of counterspace weapons with a mature space and counterspace infrastructure to directly challenge United States’ space superiority and threaten the United States in all orbital regimes. PLA modernization focuses on improvements in long-range precision strike, cyberspace, electronic warfare, counterspace, and a modern, effective nuclear deterrent that collectively make the PLA a combat-capable global joint force. To enable this transformation, the PRC’s Central Military Commission established the SSF in 2015 to integrate cyberspace, space, information operations, psychological warfare, and EW capabilities into joint military operations. The SSF’s space activities focus primarily on satellite launches and operations to support PLA intelligence, surveillance, and reconnaissance (ISR); navigation; and communication requirements. An increasingly capable and lethal PLA joint force will almost certainly be able to hold U.S. and allied forces at greater risk.

The PRC’s rapidly growing space program is second only to the United States in the number of operational satellites it maintains. The PRC completed 55 launches throughout the year, surpassing the United States’ 51 launches. At the end of 2021 the PRC had 508 assets on-orbit, an increase of 27 percent from the end of 2020. In the last 5 years the PRC has placed over 350 satellites into orbit.

The PLA owns and operates about half of the PRC’s ISR systems, which support monitoring and tracking of U.S. and allied forces worldwide, especially throughout the Indo-Pacific region. Moreover, the PLA is making improvements to existing systems, including space launch vehicles and satellite navigation constellations. To that end, China’s Beidou navigation system is now globally operational. Operated collectively, these capabilities provide their military the ability to command and control their forces globally, enhance their situational awareness, and monitor and track force movements.

The PRC has developed robust and capable space services, including space-based ISR. Today, the PRC’s ISR satellites are capable of providing electro-optical and synthetic aperture radar imagery, as well as electronic intelligence and signals intelligence data. From September 2020 to September 2021, China placed 26 Yaogan-series Earth observation satellites into orbit, bringing the number of orbiting Yaogan-series satellites to 84. Beijing claims the Yaogan-series satellites are for remote sensing and electromagnetic environment detection services; however, these satellites could also be used for reconnaissance.

The PRC actively seeks space superiority through space attack systems and is developing a broad complement of jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and DA–ASAT missiles that can achieve a range of effects. PLA analysis of U.S. and allied military operations states that “destroying or capturing satellites and other sensors” would make it difficult for the PRC’s opponent to use precision guided weapons. Moreover, PLA writings on doctrine and strategy suggest that reconnaissance, communications, navigation, and early warning satellites could be among the targets to attack, a strategy designed to “blind and deafen the enemy.” Notable PRC counterspace programs include their DA–ASAT. In 2021, the PRC continued development and testing activities to advance the DN–1 and DN–2 DA–ASAT weapons to further refine their space attack capabilities. Other potential counterspace capabilities include Shijian-17 and Shijian-21, which are satellites with robotic arm technology. Space-based robotic arm technology could be used in a future system for grappling and disabling other satellites. The PRC also has multiple ground-based laser systems of varying power levels that could blind or irreversibly damage satellites. On July 16, 2021, the PRC conducted a sub-orbital test of a reusable space vehicle that can land in a similar fashion as an airplane. The PRC’s space plane could carry a payload designed to disable or capture a satellite while in orbit. In October 2021, the PRC launched the SJ–21, which the PRC Ministry of Defense described as a space debris mitigation technology, but its dual-use capability could have military applications.

Russia seeks to degrade U.S. space capabilities in order to prevail in future conflicts

Russia is an advanced and persistent threat to the United States, and its military is designed to maintain Russia’s influence over the states within its sphere of theater and strategic influence. In 2021, Russia conducted a kinetic, DA–ASAT weapons test, exhibiting unsafe and irresponsible behavior in space. Further emphasizing our need for adequate space domain awareness capabilities, the November 15, 2021

Russian DA-ASAT missile demonstration created nearly 1500 additional pieces of trackable space debris we must now monitor to ensure the safe operation of satellites and the ISS in that orbital regime. In partnership with the other combatant commands, their assigned component commands, the services (U.S. Army, U.S. Navy), and the Missile Defense Agency, USSPACECOM was able to rapidly characterize the nature and extent of the Russian DA-ASAT weapon and notify civil and commercial partners via standing reporting agreements for the safety of human life and satellites in low earth orbit. After admitting to the test, Russia received condemnation from the United States and our allies and partners in the United Kingdom, Australia, Canada, France, Germany, the Republic of Korea, Japan, the North Atlantic Council, the European Union, and the European Space Agency.

Russia believes space is integral to winning modern wars, and it consequently reorganized the Russian 15th Aero Force in 2015 to incorporate space operations and counterspace capabilities. This new force is the Russian military command that conducts space launches and operates the ballistic missile early warning system, the satellite control network, and the space surveillance network. Russia's defense minister stated that the change was prompted "by a shift in the center of gravity ... toward aerospace sphere" and to counter the U.S. Conventional Prompt Strike doctrine. Moscow concluded that gaining and maintaining space superiority has a decisive effect on the outcome of future conflicts and is developing space attack systems to hold U.S. and allied space assets at risk.

Russia considers the U.S.'s dependency on space that enables our military and economic power as an exploitable vulnerability. As a result, Moscow has developed a suite of counterspace capabilities including electronic warfare and directed energy weapons that can deny, degrade, and disrupt communications, navigation, and space-based ISR. These counterspace capabilities enable Russia to deny, damage, and defeat U.S. space-based systems in order to reduce U.S. military effectiveness and control conflict escalation if deterrence fails. Russia has several ground-based, low-power lasers designed to blind U.S. missile warning and imagery satellites temporarily, as well as high-power lasers developed to damage other U.S. satellites permanently.

PRC-Russia Space Cooperation

The PRC and Russia rapidly increased their space cooperation throughout 2021. In March, the PRC and Russia signed a memorandum of understanding to coordinate their moon exploration programs within the framework of a future PRC-Russian-led International Lunar Research Station. According to the China National Space Administration, the facility is intended for "multi-discipline and multipurpose scientific research activities, including exploration and use of the moon, moon-based observation, fundamental research experiments, and technology verification with the capability of long-term, unmanned operation with the prospect of subsequent human presence."

Russia possesses valuable experience from previous space program missions and operations. However, shortfalls in funding, qualified personnel, and other resource inadequacies have hampered continued Russian progress. Meanwhile, Beijing has a space program with ample financial and personnel resources, but lacks Russia's decades of operational space experience. Beijing and Moscow might try to combine their respective strengths on joint projects in some areas, especially as their relations with Western space partners wane and their common aversion of the United States drives them together. Consequently, while the PRC and Russia cooperate, the U.S. must continue to work with our allies and partners to protect our collective interests in space throughout all phases of strategic competition.

BUILDING AND MAINTAINING COMPETITIVE ADVANTAGE

Improving the Ability to Provide Domain Safety, Security, and Sustainability

The PRC and Russia recognize the advantages afforded by our space systems and seek to change the dynamic by developing or refining their own space and counterspace capabilities. USSPACECOM is entrusted to protect and defend our nation's most critical space assets. The UCP assigns me the responsibility to "protect and defend U.S. and, as directed, allied, partner, and critical commercial space operational capabilities." Executing this responsibility requires acknowledging the space operating environment changed and that we cannot operate as in the past. Thus, in partnership with the Missile Defense Agency and the other combatant commands and services, USSPACECOM is actively integrating non-traditional sensors such as the Army-Navy Transportable Radar Surveillance-2, Sea-Based X-Band Radar, and Aegis radar platforms under our Global Sensor Management umbrella to provide improved domain awareness. With respect to a potential conflict in space, the

strongest tool for deterrence is our competitors' knowledge that the U.S. possesses both the means and resolve to protect and defend its space systems. A key component of reaching FOC for USSPACECOM is maturing Combined and Joint force solutions and appropriately posturing scalable combat capabilities to detect, attribute and respond to threats to U.S., allied, and partner space systems. This further enables a credible deterrence posture to preserve the full-range of options for the President and guarantee U.S. and allied freedom to operate in space.

Non-kinetic, reversible solutions—to include space electronic warfare and cyberspace capabilities are critical in achieving space superiority and controlling conflict escalations. They directly affect our ability to deter malign behavior, and to complicate our competitors' ability to threaten our space assets. Of particular importance, non-kinetic engagements do not create debris. Layered, non-kinetic effects are a critical force multiplier that directly affect the success of joint and allied forces.

Scalable joint warfighting options—and the underlying policies that allow for the strategic messaging of these capabilities—are inherent across the competition spectrum. USSPACECOM in collaboration with our mission partners, continues to pursue increased resources and capabilities to provide space domain awareness for warning, assessment, and attribution; to provide space domain environmental monitoring, missile warning and tracking; and to protect and defend U.S., allied, partnered, and commercial space capabilities. In full compliance with our international legal obligations and commitments, the U.S. needs to develop and field resilient capabilities necessary to shape the strategic environment and advance our ability to protect and defend our nation. Such capabilities are essential to accomplishing the full range of my UCP responsibilities effectively, from deterring conflict to winning that conflict if necessary.

Maintenance and Hardening of Critical Infrastructure

Our Area of Responsibility (AoR) begins 100km above the surface of the earth, and extends outward from the planet indefinitely. Our operating domain, however, extends around the globe itself, and encompasses all three elements of our space systems: the on-orbit asset, the link, and the ground segment. Of particular concern is our ground segment. Our satellites cannot fly and provide mission critical information to our joint forces without fully-operational mission control and relay stations on the ground. Similarly, our Missile Warning mission relies heavily on ground-based radar systems. None of these missions would be possible without the talent our people bring along with proper facilities and infrastructure.

The facilities and infrastructure supporting USSPACECOM assets were not built when the command stood up; they were inherited, with many of the facilities and infrastructure reaching ages well beyond 60 years. It is becoming increasingly difficult to maintain the necessary power, heating, and cooling for our assets, let alone the resiliency, redundancy, survivability, and endurance required for our critical space missions. I am thankful for Congress's continued support to ensure these facilities can evolve to support USSPACECOM's no-fail missions.

Commercial space systems are an essential component of U.S. critical infrastructure and vital to our national security. USSPACECOM, through the Department of Defense, will work with interagency partners and commercial space system stakeholders through the Critical Infrastructure Partnership Advisory Council framework to improve the security, resilience, and cybersecurity of commercial space systems.

Cyber Integration

Digital superiority ensures that USSPACECOM and its subordinate components have resilient, reliable, and secure systems to command and control its forces worldwide, throughout all phases of conflict and in all domains. Countries like the PRC and Russia continually advance their agendas by launching persistent cyberspace attacks against both government resources and our defense industrial base. There is no space operation that does not rely on cyberspace. These two domains are inseparably linked – a failure with cybersecurity will almost certainly result in a failure in space. Therefore, current and future cybersecurity efforts must have the ability to secure and defend both our intellectual property and the products of those advancements—namely space mission systems. As a result, cybersecurity funding is critical to maintaining dominance, not only in the space domain, but all domains.

We must maintain laser focus on implementing “zero trust architecture,” to shift toward a more comprehensive IT security model allowing us to restrict access controls to networks, applications, and environments without sacrificing mission capability and performance. It will also allow us to capitalize on industry advancements in ML/AI to cyber-harden current and future systems. This hardening will improve our cyberspace – secure and defend posture – which will increase our decision-making speed against time-sensitive asymmetric threats across all domains. Moreover,

our close coordination with, and the coherence, speed, and agility of National Security Agency/U.S. Cyber Command integration is critical to our ability to operate freely in space. To facilitate this, I embedded a Joint Integrated Space Team (JIST) at U.S. Cyber Command to help synchronize our planning efforts. Future years will require a steadfast resourcing approach to accomplish these objectives in order to ensure the U.S. can compete and mitigate evolving and expanding cybersecurity threats posed by our competitors.

Maintaining digital superiority is an enormous part of our ability to outthink and outmaneuver our adversaries, and if necessary, prevail through sustained & comprehensive military space power. To this end, we optimized the command to leverage our architecture, data streams, and ML/AI applications fully. We aligned our information-related capabilities, with our Joint Cyber Center to more efficiently and effectively provide the command with information assurance while also enabling our efforts to achieve and sustain information advantage throughout the continuum of competition. As part of our internal realignment, we established a Data Council that synchronizes the Command's data enterprise to focus our requirements, prioritize data as a strategic asset, in order for the Command to achieve decision advantage. By harnessing current and emerging technologies, leveraging commercial innovations, and applying interoperable and secure data, we created an integrated platform for success. Continuous innovation for competitive advantage and investing in game-changing technologies enables both digital and space superiority.

Cyber Resources

USSPACECOM is pursuing a number of initiatives centered on integrative platforms that maximize artificial intelligence, modeling, and simulation to inform space domain awareness, planning development and assessments, requirements development and leadership support. In short, this entails achieving decision dominance for digital superiority and establishing a campaign analysis capability to inform operations, planning, and requirements. Specifically, through this modeling and simulation initiative, the Command will develop a cutting-edge lab environment to identify, analyze, and assess capabilities and requirements informing key warfighting processes and decisions through digital engineering tools. These tools will include visualization, analysis model management, model interoperability, workflow, collaboration, and customization of modeling techniques to help execute the Command's unified command plan responsibilities. To help reach FOC for this capability, USSPACECOM needs an integrated platform with fully trained modeling, simulation, and analysis personnel, with in-place hardware and software tools, with resources required to provide high performance computing across all classification levels. This lab will help USSPACECOM perform unbiased and timely assessments.

Exercises

USSPACECOM has successfully demonstrated our capabilities and processes through coalition-integrated global exercises such as GLOBAL LIGHTNING 21 and PACIFIC SENTRY 21. We do this through a multi-service, multi-domain, and globally integrated approach to national security objectives, nested within the Chairman of the Joint Chiefs of Staff's Joint All-Domain operations directive.

In 2022 and 2023, we will move from baselining the Joint Force's understanding of space capabilities to achieving a credible, globally-integrated deterrence posture for joint and combined space operations appropriate to contend with space threats that are growing in both scope and lethality. In particular, USSPACECOM will conduct exercises that integrate with coalition partners, multiple combatant commands, and the Joint force. Examples of these exercises include SPACE THUNDER 22, SPACE LIGHTNING 22 and SPACE CHALLENGE 22. In these exercises we will train with our Joint force, allies, and partners to protect and defend our space assets while providing effects in, from, and to space. Additionally in these exercises, USSPACECOM and its components will continue to develop and test capabilities to protect and defend on-orbit assets and provide support to terrestrial forces. In future exercises, USSPACECOM will continue to integrate holistically across regions and domains to protect and defend U.S. and allied space interests globally.

Personnel

USSPACECOM is a joint organization comprised of representatives from all military branches, Active and Reserve, the National Guard, Government civilians, and contractors. Currently, we have 45 percent of our authorized end strength in place, augmented by 50 Reserve and Guard personnel, and a 300-person contractor force to fill in the skill and capacity gaps.

Facilities

As our workforce grows, so too do our requirements for dedicated facilities capable of hosting our command and control suites while providing the required level of physical and cyber security to protect our personnel and mission. I am proud to tell you that over the past year we have made significant progress thanks to strong Congressional support. Specifically, Combined Force Space Component Command moved into their new headquarters at Vandenberg Space Force Base. We will break ground on the new Combined Space Operations Facility at Schriever Space Force Base which will house the Joint Task Force Space Defense and the National Space Defense Center. Numerous other efforts to renovate and provide modernized facilities to the women and men of US Space Command have also been accomplished. I look forward to your continued steadfast support as progress continues on the Combined Space Operations Facility over the coming years.

STRENGTHEN RELATIONSHIPS AND ATTRACT NEW PARTNERS

USSPACECOM's Role in Developing Tenets of Responsible Behavior in Space

Interim National Security Strategy guidance calls for the U.S. to lead “in promoting shared norms and forge new agreements on ... space.” As the United States Space Priorities Framework states, “As space activities evolve, the norms, rules, and principles that guide outer space activities also must evolve. The United States will lead in the responsible, peaceful, and sustainable exploration and use of outer space.”

In this regard, U.S. national security space operations will continue to comply with applicable international law and demonstrate leadership in both the responsible use of space and stewardship of the space environment. To accomplish this, USSPACECOM is also working with key stakeholders across the Department of Defense to develop specific DoD behaviors that further define the Secretary of Defense's five Tenets of Responsible Behavior in Space. The intent of these behaviors is that all Department of Defense space operators will follow them under normal circumstances and throughout competition in order to enhance the security, safety, stability, and long-term sustainability of the space domain and reduce the risk of miscalculation and escalation.

USSPACECOM's efforts will enable Department leadership to inform broader U.S. positions regarding specific actions in space for upcoming interagency, commercial, and international engagements. As the Secretary of Defense has stated, “it is incumbent on the Department of Defense to continue space leadership through demonstrating and acknowledging responsible behavior in space.”

USSPACECOM is strengthening alliances and attracting new partners, while improving coalition capabilities and space domain awareness

Mutually beneficial alliances and partnerships provide a critical asymmetric advantage that our adversaries cannot match, contributing to our collective space security. Our partners bolster U.S. operational reach and increase our strategic flexibility in all domains. USSPACECOM's alliances and partnerships are a key strategic edge in the competitive environment of space. Strengthening and expanding our relationships into mature space defense partnerships allows for burden-sharing that can decrease costs, accelerate coalition development, increase information sharing, and leverage partner capabilities to maintain a safe, secure, and sustainable space environment. To this end, we continue to expand our network of partner nations, international organizations, and commercial entities that bring situational awareness, mutual support, and technological innovation to the space enterprise. In the past year alone, we welcomed a General Officer from the United Kingdom as our Deputy Director of Strategy, Plans, and Policy, and added liaison officers from both France and the United Kingdom, and we have plans for more from several allied nations. Moreover, our allies and partners continue to prioritize the space domain, exemplified by both Germany and the United Kingdom establishing their own Space Commands in 2021.

Throughout 2021, USSPACECOM expanded space related data sharing agreements, including new partnerships with Colombia, Greece, and Ukraine. To date, USSPACECOM has agreements with 30 nations and two intergovernmental organizations. Last year, I also met with the Indian Chief of Defense and Chief of Defense Staff to discuss our relationship on space operations, exercises, and information sharing. Additionally, USSPACECOM established a security cooperation program that assists partner nations in developing space capabilities and capacities. Coordination between USSOUTHCOM and USSPACECOM delivered tangible growth and development of the Brazilian, Chilean, Colombian, and Peruvian military space capabilities and produced strategic opportunities for the United States to counter

problematic PRC influence and access in Latin America. USSPACECOM also reinforced and expanded partnerships through direct cooperation with more than 20 international partners through the Global Sentinel campaign series. Global Sentinel improves multinational collaboration in the domain to support shared space domain awareness, and posture core international space operations expertise for future combined missions.

Lastly, through the Command's Defense Personnel Exchange Program, we expanded agreements to support exchange and liaison personnel assignments with Australia, Canada, France, Germany, Japan and United Kingdom.

Global Integration with other combatant commands

USSPACECOM continues to advance space integration with the other combatant commands and establish normalized relationships to coordinate, integrate, and synchronize operations extending beyond earthbound geographic areas of responsibility. To facilitate cooperation, interoperability, and unity of effort, USSPACECOM created Joint Integrated Space Teams (JIST) comprised of space professionals and intelligence planners working within every combatant command headquarters. These teams have evolved from a plans-focused effort to include operational integration, intelligence collaboration, and exercise support. These multi-functional JISTs provide space expertise to each combatant command's campaign plan and operation plans development, bolster security cooperation with space engagement activities, and integrate space capabilities to strengthen exercise planning activities. Additionally, JISTs coordinate, integrate, and de-conflict global space operations in direct support of each combatant commander. To solidify this integration further, we also engaged in Warfighter Talks with United States Cyber Command and United States Space Force in 2021.

INTEGRATING COMMERCIAL INTERAGENCY, AND ACADEMIC ORGANIZATIONS

USSPACECOM continues to support NASA's Commercial Crew Program for contingency rescue operations for crewed flights to and from the International Space Station as part of our Human Space Flight Support role. USSPACECOM is committed to assuring the safe exploration of space and is supporting NASA's planned lunar missions by providing crew and spacecraft recovery for the upcoming Artemis program and associated training events. To that end, USSPACECOM's space domain awareness capabilities also help support NASA's planetary defense mission to ensure we maintain space as a source of American innovation and opportunity.

USSPACECOM also has partnerships with four academic institutions and over 100 commercial satellite owners, operators, and service providers. By providing advanced information and services to space-faring partners, we display American leadership in the space domain, promote transparency in the responsible and professional use of space, and support the eventual transition of civil and commercial spaceflight safety services to the Department of Commerce.

To address new challenges for space traffic coordination, from proliferated low earth orbit mega-constellations to intentional debris-causing events, we fully support the Department of Commerce's immediate establishment of a space traffic management capability. This includes space situational awareness – understanding the proximity of space objects to other satellites, and warning of potential conjunctions. This partnership with Commerce will allow USSPACECOM to focus on the inherently military functions of our space domain awareness mission, especially characterizing objects and actions on orbit to identify potential threats.

Additionally, the Command must improve its ability to tap into research and development, both through our government resources and our FFRDC partners in particular. Ongoing efforts within the Office of the Secretary of Defense Research and Engineering modernization strategies as well as work within the service laboratories, the Space Development Agency, Missile Defense Agency, Strategic Capability Office, Rapid Capability Offices, NASA, National Laboratories, and many others are absolutely essential to meet our critical challenges in maintaining our technological lead. We need to increase collaboration with the domestic and international commercial space industry in order to leverage their technological advancements, entrepreneurial innovation and investments to enable new and emerging capabilities at a decreased cost and an accelerated pace to counter threats to U.S., ally, and partner capabilities. We also need to improve our ability to develop rapid commercial space launch capabilities from multiple locations and integrate commercial space capabilities that provide both near and far-term advantages.

CONCLUSION

USSPACECOM preserves U.S. freedom of action and provides the National Command Authority strategic options in the increasingly competitive space domain. The Command strives to attain FOC as soon as possible and continues to accelerate the pace of its operations to deter aggression; defeat adversaries; deliver space power; and defend U.S., allied, and partner interests. To do so, we must begin with the first task of increasing our space domain awareness, and request Congress's support to ensure we have the best possible capabilities to sense and evaluate the critical and increasingly complicated space environment. The Command achieved IOC last year, and has developed our roadmap and strategies for getting to FOC, deepening our relationships, and continuing to provide the most advanced space capabilities in the world. On behalf of the most critical asset in our command, the soldiers, marines, sailors, airmen, guardians, civilians, and families of USSPACECOM, thank you for your support in our mission to conduct operations in, from, and to space in order to ensure there is *never a day without space*.

Chairman REED. Thank you very much, General Dickinson, and Admiral Richard, I concur with your assessment that we should reserve questions regarding Ukraine and Russia to the closed session, so I will do that.

But let me begin with a question regarding the modernization of the triad and also the capabilities at the National Nuclear Security Administration. You have said in the past that we are at a point of no return, so can you please elaborate a bit, particularly with respect to Minuteman-III ICBMs [intercontinental ballistic missile] and the pit production capability at NNSA [National Nuclear Security Administration].

Admiral RICHARD. Chairman, one, I am pleased to report, based on what services and agencies are reporting, that the overall recapitalization of the triad is on track. No margin is left, but right now all of those programs are proceeding the way that is necessary for them to deliver capability on time to meet my requirements.

The weapons complex is a different story, and we have crossed one of those points of no return that I referred to previously in that we now know we will not get 80 pits per year by 2030, as is statutorily required, and even unlimited money at this point will not buy that back.

So there is active work underway inside the Nuclear Weapons Council to understand exactly how much of a delay we are going to have, how much of it can be addressed by funding. The fundamental question we have to answer to Congress is to certify NNSA's budget.

I want to make another point here, which is we are not mitigating this problem. We have shot all the mitigation to get us to this point. It is the fourth time the Nation has tried to recapitalize its pit production infrastructure. Now the question becomes how much damage have we done and what are the consequences of that, and we are working to better understand that, sir.

Chairman REED. Thank you very much, Admiral. Also, we are working on a Nuclear Posture Review. I know you are deeply involved that. A key element is our declaratory policy, what is our intention in terms of use, in terms of our strategy. What is your assessment of our extended deterrence commitment to our allies, particularly in light of current hostilities, and any perception of changes in the declaratory policy?

Admiral RICHARD. Senator, what I will offer is that I have testified to this committee and others as to my recommendations with

regard to possible changes to declaratory policy. Those have not changed. That was a part of my input into the Nuclear Posture Review. As you know, that ultimately will be decided by the President.

We received very clear feedback from the allies in terms of their opinion and the harmful effects on extended deterrence and assurance that changes would have. That is one factor of many to be considered.

I do think right now we are getting a very vivid example, real-world, of the importance of extended deterrence and assurance, that if we want our allies to assist us in standing up to aggression we have to provide that assurance to them such that they are in a position to go after our mutual goals.

Chairman REED. Thank you, Admiral.

General Dickinson, in some respects you have been promoted to Sensor Command as well as Space Command, because one of your first major tasks is to link sensors both in space, on the earth, and below the seas. Can you give us an idea of what it will take to perform this integration and where you might be now?

General DICKINSON. Thank you, Chairman. So we have made a lot of progress over the last 2, 2½ years with identifying and incorporating sensors that we traditionally did not use for space domain awareness, missile warning, or missile defense in the global perspective. We have really identified radars such as TPY-2s around the world as well as BMD [ballistic missile defense], ships afloat, and Aegis Ashore sites as well. Our goal is to link these sensors together from a terrestrial perspective.

We add to those. We add the UEWRs [Upgraded Early Warning Radar] that we have traditionally used for NC3 [Nuclear Command, Control & Communications] around the world for early warning and brought all those terrestrial capabilities to bear, if you will, in terms of understanding what we see in the space domain.

In addition to that, we are linking our space-based assets in addition to that, bringing them into a common operating picture. We still have work to be done with regards to that, but we have made some good progress over the last 2 years, 2½ years, and we are working towards that, the ultimate piece, where we have one operating picture that has those sensors fused into it. That really kind of pulls in some of the work that the Department of the Air Force is doing with JADC2 and some of those ABMS [Advanced Battle-field Management System] efforts that are going on right now.

As you can imagine, Chairman, that has a massive data burden, if you will, that has to be properly synthesized, properly organized, making sure that it is cyber protected so that you have a database and you have information that is authoritative and available at the speed of relevance.

Chairman REED. The backbone of this is constant, uninterrupted, encrypted communication between all your assets. Is that one way to look at it?

General DICKINSON. That is one way to look at it, yes, Chairman.

Chairman REED. Are we getting there?

General DICKINSON. We are getting there. We are getting there, and like I said, those are sensors, many of those sensors, TPY-2s, BMD, Aegis BMD ships, those sensors traditionally were not re-

quired or expected to have a capability looking up in the space domain, but what we are finding out is those exquisite radars do have capability. What capability we need to add to that we are identifying those gaps in requirements now at U.S. Space Command, and then putting that demand signal back onto those specific assets.

Chairman REED. Thank you very much, gentlemen.

Senator WICKER, please.

Senator WICKER. Thank you very much, Mr. Chairman, and General Dickinson and Admiral Richard, thank you very much for your service on a very, very vital part of our national defense strategy.

Admiral Richard, the United States is currently engaged in negotiations with Iran on the Iran nuclear deal. Can you tell me, are you being consulted about those negotiations?

Admiral RICHARD. Senator, I am not, and that is appropriate. My forces do not play a role in terms of where that treaty and our overall desire to avoid Iran from getting a nuclear weapon.

Senator WICKER. So your experience in making our nuclear policy work is not deemed important to those who are negotiating how we go forward with Iran?

Admiral RICHARD. Senator, as you know I do not enter into treaties or agreements. That is a Department of State function. What I do is provide technical expertise. For example, I had my deputy commander as a part of the New START negotiation team so that that team had immediate access to any operational implications of what they were doing. While I am certainly available to do the same thing for those negotiations, currently that is not needed.

Senator WICKER. Okay. Well, I may not get an answer to this question but it is a question that is on the minds of Americans today. We are told, with relative certainty, that the talks are going on and that Russia is a part of the nuclear discussions between the United States and Iran about reentering this nuclear deal.

Let me just say, Russia is led by the dictatorship and the kleptocracy of Vladimir Putin, a serial international war criminal. It is astonishing to me that they would be anywhere near the negotiating room in a process that might lead us to making concessions to Iran that we would not otherwise have made. You probably do not want to comment on that, I guess, Admiral.

Admiral RICHARD. Senator, what I would look forward to commenting in the closed session, is an overall assessment of threats to the Nation and how we are going to defend and deter against those.

Senator WICKER. Okay. Let me leave it at that, but I would simply say, Mr. Chairman, and to my colleagues and to my fellow Americans that it is highly troubling, I think to most Americans, that Vladimir Putin would have anything at all to say about any decision the United States would make about what is best for our people and our national security, considering the fact that he is, without a doubt, a serial war criminal.

The distinguished ranking member of this committee, Mr. Chairman, has suggested a question or two, which I would like to submit on his behalf.

Russia has a nuclear arsenal larger and more modern than the United States, and currently threatened nuclear escalation during

the invasion of Ukraine. Admiral Richard, we have heard for a long time how critical it is that we rebuild our Nation's nuclear deterrent, but we are still years away from fielding any new systems. How important is it that we accelerate the U.S. nuclear modernization plan as quickly as possible?

Admiral RICHARD. Senator, I would offer three points on that, and again can go into more detail in the closed session. It is very clear that the absolute minimum that we need to do is to recapitalize the triad, the nuclear command and control, and the nuclear weapons complex.

But there are two other questions we need to be asking ourselves along the way with that. The threats are changing in a way that we have not seen in 30 years. We do not know the endpoints of where either of those other two are going, either in capability or capacity. We are just now starting to work out what three-party stability looks like, what three-party deterrence dynamics works out.

On top of that, we are learning a number of lessons in real time on how actual crisis deterrence works. It is different from steady-state deterrence that most of us have experience in.

Those two questions, I think, need to be asked much more frequently than we have needed to in the past, followed with what is the capability, capacity, and posture we require from our strategic forces moving forward.

Senator WICKER. Mr. Chairman, if you would indulge me for another moment with regard to a question that the ranking member has asked repeatedly and which deserves to be asked today.

Admiral Richard, you have testified that you do not believe it is in the national interest of the United States to change our policy with regard to no-first-use or sole purpose nuclear declaratory policy. Would you explain why that has been, and is it still your position?

Admiral RICHARD. Well, Senator, I have testified to that and my position is unchanged. That, of course, will be decided along with a number of other factors and we will see what the answer is in the Nuclear Posture Review. But fundamentally I can go into a lot longer answer, but is, one, your adversaries will not believe you so it does not enhance deterrence in any way, but your allies will believe you and it is highly corrosive to your extended deterrence and assurance commitments.

Senator WICKER. Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Wicker.

Senator Gillibrand, please.

Senator GILLIBRAND. Thank you, Mr. Chairman. General Dickinson, I am concerned that our lack of international agreements barring conventional weapons in space has led to a space arms race that threatens our civil and commercial systems in space. How much of a role is SPACECOM playing in developing international norms about the use of weapons in space?

General DICKINSON. Thank you, Senator, for the question. In my job as the SPACECOM Commander I work very closely with the Department of Defense, and in particular the policy folks in the Department of Defense in terms of working through those types of issues. What I have been charged to do, by the Secretary of De-

fense back in July, was he gave me a memo that outlined the five tenets of responsible behavior for the Department of Defense. Right now we are working through how we implement that within the department.

But to your point is that with those tenets become our base plate, if you will, that we talk with the Department of Defense, and then subsequently they would start talking with Department of State.

So we have kind of an indirect role that we start kind of from the combatant command up through the department in that regard. But those tenets of responsible behavior, there are five of them, and I think they are very good in terms of outlining what we would expect not only for the Department of Defense in terms of responsible behavior but for our allies and partners. We have had a lot of good discussions on that in several different forms.

Senator GILLIBRAND. Given the lack of codified norms in space, what, in your view, constitutes an armed attack in the domain and how would you deal with a proportionate response?

General DICKINSON. Well, Senator, I would say that, you know, these tenets, I think, outline kind of what we would think as responsible behavior in space, and as we look through that, how do we make sure that we are able to understand that. I think the first thing we have to look at is how well can we understand what is happening in the space domain.

As I mentioned in my opening remarks, my number one priority for the command, or top priorities is to be able to increase my space domain awareness so I can interpret and understand what those norms of behavior or those tenets are in space.

Senator GILLIBRAND. The "valley of death" in acquisition references the transition from innovative, small-scale projects to full-scale funded programs, which is often stunted with budget challenges, risk mitigation, and integration problems leading to immense waste. Innovative technology and the ability to quickly field the warfighter in space is critical to matching China's competencies.

In your view, is the use of other transaction agreements or OTAs by the DOD being effectively implemented, and do we need more emphasis on non-Federal acquisition regulation contracting solutions?

General DICKINSON. So Senator, in my role right now I am a customer, if you will, for the United States Space Force and some other agencies, and I would categorize myself as a demanding customer. I think we have to move very quickly in terms of building new and better capabilities for the space domain. I know that the Space Force and the Department of the Air Force are looking right now in terms of how do they streamline those processes in order to deliver capabilities to me on a much faster timeline.

Senator GILLIBRAND. Thank you. Admiral Richard, JADC2, over the past several years DOD has worked on developing JADC2 architecture to speed sensor to shooter responses and integrate communications across the services. In your view, how should DOD prioritize competing communications requirements for its future work, and what role, if any, will artificial intelligence play in future non-nuclear command and control decision-making systems?

Admiral RICHARD. Senator, I would like to point out that, one, I am responsible for nuclear command and control from an operations requirements and systems integration piece, and in that responsibility I am very familiar with what JADC2 is doing in conventional command and control, and in fact was very pleased that a subset of what JADC2 is doing is for nuclear command and control. The two systems have to be overlapped to a great extent, so that we can have integration.

So we are headed in the right path to make sure we take full advantage of the investments we are making in conventional command and control, while recognizing that certain portions of nuclear command and control have to serve at a higher standard than we ask regular command and control, and making sure we identify those and meet those requirements.

Senator GILLIBRAND. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you very much, Senator Gillibrand.

Senator Tuberville, please.

Senator TUBERVILLE. Thank you, Mr. Chairman. Thanks for being here today with all the problems going on.

General Dickinson, Space Command is designated a geopolitical command. How do you plan to synchronize efforts with other geographic commands in a time of conflict? I mean, I am sure you have worked on that?

General DICKINSON. Thank you, Senator. Absolutely. We do that every day. In particular, we have exercised it through many different exercises over the last couple of years. I think we have had five major exercises.

But to your point, we do that each and every day, and the way we do that is when the U.S. Space Command was stood up in 2019, we identified a gap, if you will, within each of the combatant commands in terms of space expertise. One of the first things we did as we stood up was we immediately started putting what we call joint integrated space teams, or JISTs, within each of the combatant commands, and we kind of started that with INDOPACOM, EUCOM, CENTCOM, and we are working through the other 10 combatant commands now.

But these elements, at the beginning we thought would have a planning-only function within these commands. What we found out, through day-to-day operations and through exercises and real-world events, is that it is more than just planning. It is planning. It is operations. It is intelligence. It is the integration of those capabilities within each of the combatant commands that provides that regional combatant commander space expertise and the ability to leverage the space domain in order to meet their requirements for their either day-to-day operations or their op plans.

Senator TUBERVILLE. Thank you. Pretty complex, especially being new.

Admiral, last year you said, quote, "For the first time in history the Nation is facing two potential strategic peer, nuclear-capable adversaries at the same time." But our nuclear posture, my understanding, has been not about two threats. So in your best military advice, should the U.S. consider changes to the size of its nuclear force in order to account for having now two peer threats?

Admiral RICHARD. Senator, first, I have already repostured it, and I will be happy to give you some details of what we have done in the closed session. The answer is yes. We do not necessarily have to match weapon for weapon, right. The key is do you have enough capability to execute your strategy. But it is clear what we have today is the absolute minimum, and we are going to have to ask ourselves what additional capability, capacity, and posture do we need to do, based on where the threat is going. It is not all strategic. There is a significant class of theater threats that we are going to have to rethink potentially how we deter that.

You have to deter them all the time. I do not get the luxury of having a priority to one and lesser to the other. You have to do them all at the same time. We are learning a number of lessons in crisis dynamics, because we have had so few times in our history we have been in that, that those will need to be applied too, sir.

Senator TUBERVILLE. How does the hypersonic missile, now that we are seeing online, how does that change us in terms of your thoughts on the time frame of a threat, how quick we have to respond?

Admiral RICHARD. I look at hypersonics in two ways. One is the threat that it presents to us, and that fundamentally is a warning problem. In fact, the chairman mentioned seams opening up with the establishment of Space Command. Actually, it has worked the exact opposite of that. We mentioned the sensor commander, which is what I like to call it. Technically in DOD it is sensor manager, but sensor commander sounds better.

The way Jim is integrating across missile defense, missile warning, and space situational awareness, he is producing a better outcome than what we had in the past, and I am actually getting a better service because of his efforts in that. That is defensive.

Offensive, I will be ready to put online the first day any service makes it available a hypersonic capability. I have work for it right now. We have had requirements dating back to 2016 and earlier, and I will put that to good use the first day any service makes it available in defense of the Nation.

Senator TUBERVILLE. Thank you. Now that we do have hypersonics, just from my information, I am sure were changing protocol for our President, because it takes a pretty good while to get all the factors done to get to a point where a President can make a decision. Please tell me we are changing those protocols to answer a first attack.

Admiral RICHARD. Senator, one, I think it will be important that as a hypersonic capability comes into the Department of Defense that we not label it as strategic or theater or tactical. We already have examples of platform. My bombers are an example. I can use it strategically down one command and control decision path that you talked about. I can use them conventionally down another. I can give them to a geographic combatant commander for that commander's use. I think we are going to want an equivalent, flexible, command and control structure for hypersonics.

Senator TUBERVILLE. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Tuberville.

Senator King, please.

Senator KING. Thank you, Mr. Chairman. Before beginning my questions I wanted to respond to Senator Wicker. We have a national interest in Iran not obtaining a nuclear weapon. Russia has a national interest in Iran not obtaining a nuclear weapon. If, in this particular case, we have an identity of interest it would seem to me to make sense to have both parties at the table. We are not negotiating with Russia. We are negotiating with Iran. If they can add weight to those negotiations, as they did in the initial negotiations, it seems to me that serves our national interest.

Let me turn to General Dickinson. ISR [intelligence, surveillance, and reconnaissance] is very important generally, but I want to talk about a war that is not Ukraine. It is the war that is killing our people in Maine, two a day, and I refer to the international trade of narcotics. The question is, do we have sufficient space assets that can provide ISR and monitoring of drug shipments that can assist us in interdicting those drug shipments and preventing the death of our people? This is a war that is killing Americans in a large number every single day, and to say we cannot afford to watch what is going on with those shipments, particularly from Latin America and the Caribbean, it seems to me is a dereliction of our duty to defend the country.

General DICKINSON. Senator, up front I would say that is a little bit maybe out of my purview as a combatant commander in the Department of Defense. However, I would say to you that watching the—to answer your question, I think when you look at the explosion in the commercial market in terms of ISR, and quite frankly some of the things that we have just seen in the Ukraine situation over the last couple of weeks with regards to—we are all watching TV and we see those images, you know, many of those, if not all of those are coming from a commercial company.

[Additional information provided by General Dickinson to follow:]

General DICKINSON. “Space-based ISR is an important portion of space operations, but some of the specific assets you described for counterdrug operations fall under the purview of agencies outside the DOD. While we partner extensively with those organizations on our respective missions and responsibilities, USSPACECOM’s defined Area of Responsibility begins at 100km above mean sea level and extends out indefinitely. The national space-based ISR assets you described are governed by the U.S. Intelligence Community as described in Title 50 of the United States Code and Executive Order 12333 (as amended). Although we do not directly control these capabilities, USSPACECOM is focused on their defense through Joint Task Force Space Defense and the National Space Defense Center.

In direct support of the Drug Enforcement Administration, USSOUTHCOM, and other agencies on the front lines of countering the international narcotics trade, USSPACECOM provides enduring and secure satellite communications, overhead persistent infrared sensor coverage, and precision navigation and timing. When combined with overhead ISR platforms operated by the National Reconnaissance Office, a Title 50 organization, these capabilities ensure the ability of our partners to detect, track, and interdict narcotics traffickers from multiple points across the globe. As we continue building Joint Integrated Space Teams to all of the combatant commands to enable further alignment and mutual support, USSPACECOM is committed to ensuring USSOUTHCOM has the appropriate mix of space operations, planning, and intelligence expertise on site to continue the close integration of Department of Defense space capabilities into all facets of operations.”

What is interesting is how much that commercial market has expanded, exploded if you will, to provide us additional capabilities. In other words, I think we have a big enough commercial market that can satisfy that demand signal, and really for us, in U.S.

Space Command, with that augmentation we are able to use our military type of ISR assets to do some other things.

Senator KING. I hope you are right, but the word that disturbed me in your answer was one of your first words, which was “not in my purview.” That is my problem. It does not seem to be in anybody’s purview. We have got DEA [Drug Enforcement Administration], we have got DHS [Department of Homeland Security], we have got the military, and we have got people dying. I would hope that you would consider discussing this question to me. If this were an attack by another adversary on our country that was killing thousands of people a day, it would be within your purview. I am suggesting it is within your purview, and I hope that you will review that.

Let me ask a second question on your satellite capability. There has been a lot of discussion about resilience and redundancy. How are we in terms of cyber resilience, in terms of our space assets, blocking of signals, stealing of information coming from satellites?

General DICKINSON. Senator, so when we stood up the Command in 2019, we made a very deliberate effort to make sure that we did not add cyber onto the equation as we grew. We built it in from the very beginning as we looked at our organization. From an organizational perspective we have got cyber expertise and capabilities built within the Command that is in particular in the headquarters.

So in the headquarters that I mentioned I have got about 1,000 people now. Within that headquarters itself I have got—I just established my joint cyber cell within the Command that is under my J3 operations directorate. We have got an integrated planning element from Paul Nakasone, CYBERCOM, embedded with us. Two of my five service components are dual-hatted as not only Space Command but also CYBERCOM. So that is kind of the structural piece.

Senator KING. I would urge you to add to that structure a red team. Ask Paul Nakasone to attack it and see how it goes. Admiral Richard, I would make the same suggestion.

Admiral Richard, in the view seconds I have left, a major sort of strategic question. How would we respond, under our current nuclear posture, to a Russian use of a tactical nuclear weapon in Ukraine?

Admiral RICHARD. Senator, I would be happy to answer that question in closed session.

Senator KING. I thought that might be your answer, and I will ask the question in closed session. Thank you.

Thank you, Mr. Chairman.

Senator Reed. Thank you, Senator King.

Senator Rounds, please.

Senator ROUNDS. Thank you, Mr. Chairman, and, gentlemen, first of all let me begin by saying thank you for your service to our country.

Admiral Richard, I would like a clarification if I could with regard to Senator Gillibrand had asked a question concerning command and control, and specifically command and control between conventional weapon systems versus command and control for nuclear weapon systems, and you mentioned an overlay of the two

with regard to JADC2. Could you clarify a little bit the separation between the two that I think we always try to keep, between command and control of conventional versus nuclear weapon systems?

Admiral RICHARD. Senator, first, we do not always try to keep separation between conventional and nuclear command and control. We cannot. We never have and we will never be able to achieve that. Strategic platforms are still platforms. They have to interoperate with other platforms to accomplish their mission, even for simple deconfliction purposes. So one, we have to be able to tell an airplane where the other airplanes are, even if they are not on a similar mission. So you have to have some overlap to do that.

Two, it is to our benefit, where appropriate, to use our conventional command and control to add redundancy and resiliency to our nuclear command and control. You could not afford to build two completely separate systems if we tried to achieve that in the real world.

The final piece, though, there is always a piece of nuclear command and control that has to go to a higher standard. Nuclear command and control has to be able to withstand the worst threats that we can postulate against it. Regular command and control does not, and that is why we separate it out. We have always done that, and we are going to do it to an appropriate degree going into the future.

Senator ROUNDS. The reason for my question, with regard to clarification, is that I know that we are very sensitive to where other nations may try to impact our ability to command and control our nuclear weapons systems. We have the same concern about interacting with other nations' command and control.

Can you talk a little bit about the clarification between the two in terms of the interest in making sure that others are not put on alert because it appears that we are impacting theirs, and the same reason that we would have a concern about them impacting our ability, and what that does with regard to stability?

Admiral RICHARD. Senator, first I think it is important that I say here—and I would be happy to go into a lot more detail in closed session—the cause of, I would call it apprehension and valid concern over the security of our nuclear command and control, particularly the cybersecurity, is our Nation's nuclear command and control has never been in a stronger, more protected, more resilient lineup than it is today, based on some very good work operationally done over the last 6 to 8 months, and I would love to go into more detail as to why I say that.

As to your concerns about the strategic implications of threatening another nation's nuclear command and control, and vice versa, that is very well understood. That is very well factored in as we think through the overall effects that we are trying to achieve.

I do want to put one more caution out in terms of, we tend to use terms, at least back at STRATCOM, in strategic stability. Our basic definitions of strategic stability are probably out of date. They date back to the Cold War. They are two-party dynamics pieces. They tend to think of nuclear as the only major effect that has to be considered. When you move this into a three-party problem it

is a completely different set of effects, dynamics that I think we need a lot of work to get into to understand how that works.

Senator ROUNDS. Thank you, sir. General Dickinson, in our ability to achieve and maintain a competitive edge in space relies heavily on a rapid capability and development in eliminating acquisition bottlenecks. Can you discuss how you are partnering with commercial and interagency organizations to expand our space capabilities at the pace that we need them to be expanded, and what steps have you taken to improve your acquisition process in order to onboard new capabilities at a faster pace?

General DICKINSON. So that has really been one of the highlights with the Command over the last couple of years is really the partnership we have with the commercial industry. Two examples of that. One is the two main areas that we work closest with the commercial partners right now, but we are expanding that, is satellite communications and the other one is space domain awareness. Satellite communications capability with our commercial industry has really been out at Vandenberg Space Force Base for years, but has expanded. We have got 10 commercial partners right now as part of our commercial integration cell out at Vandenberg Space Force Base, and that is a great relationship in terms of how do we expand our capabilities and capacity in the satellite communications domain or enterprise and how we do that.

The second one is space domain awareness, and really that has been a rather new, about a 1½ or 2 years old. We have got a cell in Colorado Springs that works for my Joint Task Force Space Defense and a commercial integration cell that really what it does is it provides to us what commercial space domain awareness capabilities can see around the world. So they are looking up, looking in the space domain for us, telling us what they see, and we utilize that in addition to what we are doing with our exquisite sensors.

So the integration of those two enterprises, space domain awareness and SATCOM, has been very, very powerful. It is growing so much now that we have had to develop a new commercial framework by which we can bring those partners on board and expand it even more.

Senator ROUNDS. Thank you, sir. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rounds.

Senator Kaine, please.

Senator KAINE. Thank you to each of you for your service, and Admiral Richard, let me begin with you. You talked about how some of our defense concepts are a little bit outdated in your realm because they were based upon kind of a two-party dynamic and now we have to grapple with a three-party dynamic. I think it is even more complicated than that because two of the three parties are now cooperating in ways that they had not.

I have often asked questions in this committee and in the Foreign Relations Committee about growing cooperation between Russia and China, and usually folks on your side of the table tell me that I do not need to worry about it much because there is so much historical animosity between Russia and China that they are not likely to cooperate. I think we are finding that actually not to be the case. Whatever the past is, they are cooperating a lot more now.

So I would like you to each tell the committee in your domain how are you planning to take into account the increasing cooperation between Russia and China in either the STRATCOM or SPACECOM areas?

Admiral RICHARD. Senator, first I would say I am not going to tell you that I am not concerned about that. I am very concerned about what opportunistic aggression looks like. I am worried about what cooperative aggression looks like, and so, one, this gets back to I have to deter all of them, all of the time, which means every day we are thinking about their decision calculus and what we have to do to influence so that basically they say, "Not today."

Right now you have to look at what is happening in one place and then walk over and see what that does to change decision calculus and change your messaging potentially, change your posture, and that is just in the opportunistic frame. Then do you have the plans ready to understand what cooperative looks like? So we do that every day, Senator.

Senator KAINE. Great. General Dickinson?

General DICKINSON. Senator, we look at it each and every day, just as Admiral Richard does, but in the space domain we just have to look and see how much more capability development that they have done just on orbit. We can go back to November to look at the Nudol tests, and then as I mentioned in my opening statements, the SJ-21, in particular.

So just individually, the growth of their capabilities on orbit is of concern. When you look at from the civil perspective, the Chinese and the Russians have entered into a lunar station agreement that they are going to build a station on the moon. So it is not just the military that we are looking at carefully. It is also kind of their civil piece as well, by both those nations.

Senator KAINE. General Dickinson, you have segued into my next question, the civil dimension. There has been news recently that was sort of interesting news, kind of in a way positive news. Elon Musk has been getting some press for his role in providing ground stations and internet coverage to Ukraine with the Starlink satellite connection. So that is positive. Russia has been trying to jam the signals and block coverage. That has made me wonder, hmm, there are non-state actors in space too that can enter into contested environments. Describe the legal framework for commercial capability in space, and the SPACECOM war game scenarios where private actors become involved in contested situations.

General DICKINSON. We do look at that, Senator, and really, to begin with, I think what we are seeing with Elon Musk and the Starlink capability he is providing is really kind of showing us what a mega-constellation or proliferated architecture can provide in terms of redundancy and capability. But to your point, we work very closely in our commercial integration cells with that very issue.

Senator KAINE. Admiral Richard, one last question for you. I met last week with General Von Ovost of TRANSCOM, and we talked about future tanker requirements. It is my understanding that the airborne tankers that support the bomber leg of the triad have a varying degree of EMP, electromagnetic pulse hardening, to include the KC-46. So talk to us about STRATCOM's role in shaping re-

quirements for future tanker programs to ensure that EMP hardening is part of the DNA.

Admiral RICHARD. Senator, you hit on a key point, as I am one of the customers of the tanker fleet, and in that I have certain requirements, EMP protection, electromagnetic pulse, being one of those. So one is to clearly articulate the requirements. Two is go see what we can do in terms of employment of our force to reduce that demand signal. A great example I would point to, and I would give credit to the Air Force, is the re-engining of the B-52s. The engines on those date back to the '60s and they burn a lot of gas. Re-engine, less fuel required, less tanker demand. What other efficiencies can we achieve while still maintaining the flexibility and the signaling capability of the air leg, which is one of its prized attributes.

Senator KAINE. Thank you. I appreciate. Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Kaine.

Since a quorum is present I would now ask the committee to consider the following civilian nominations: the Honorable Robert P. Storch to be Inspector General of the Department of Defense, Dr. Lester Martinez Lopez to be Assistant Secretary of Defense for Health Affairs, Mr. Christopher J. Lowman to be Assistant Secretary of Defense for Sustainment, Mr. Peter Beshar to be General Counsel, Department of the Air Force, the Honorable Frank R. Parker to be Assistant Secretary of the Navy for Manpower and Reserve Affairs, Dr. Agnes G. Schaefer to be Assistant Secretary of the Army for Manpower and Reserve Affairs, and Mr. Frank Calvelli to be Assistant Secretary of the Air Force for Space Acquisition.

We have reviewed these nominations with Senator Inhofe and he concurs. Is there a motion to favorably report these seven nominations to the Senate?

Senator WICKER. So moved.

Chairman REED. Is there a second?

[Multiple seconds.]

Chairman REED. All those in favor, say aye.

[Chorus of ayes.]

Chairman REED. The motion carries. Thank you very much.

Now let me recognize Senator Tillis, please.

Senator TILLIS. Thank you, Mr. Chairman. Gentlemen, thank you for being here and for your service.

Admiral Richard, have you recognized any tangible operational changes resulting from Putin's announcement that they need to increase nuclear readiness, and have you seen any posture changes on the part of Russia or the PRC with respect to that?

Admiral RICHARD. Senator, I would like to go into detail in answer to that question inside the closed session, but if you will allow me to make a broader point that I think relates.

The scenarios that we are seeing right now, potential escalation, limited unclear use in a conventional aggression scenario, STRATCOM has been preparing for this for years, along with other combatant commands. General Dickinson's command has been doing that, and so we have rewritten deterrence dynamics theory over the years. We have new analysis that we are using. We got criticized for that. We got told that it was highly improbable or

somehow self-serving for us to think our way through this, but we ignored that such that to this point nothing has happened that we did not anticipate, we had not thought about, and had not prepared for.

Senator TILLIS. Thank you for that. With Belarus indicating their willingness to have nuclear assets deployed within their territory, how does that rethink our forward-deployed capabilities in Europe?

Admiral RICHARD. Senator, again I respect your indulgence to allow me to answer that in closed session.

Senator TILLIS. Thank you. General Dickinson, I want to talk a little bit about end strength. I think you are somewhere around 45 percent of goal, augmented by Reserves, civilians, and Guard, but you are relatively new. So what is right timeline to get up to the desired end strength, and what kind of strategies are you putting together to make sure that we get there?

General DICKINSON. Yes, thank you for the question, Senator. You are correct. We are at 45, 50 percent strength with an augmentation of contractors that get us over, like I said in my opening statement, to about 1,000. So our strategy, quite frankly, is to get to the end strength as quickly as I can. We have worked with the Department very carefully in terms of how do we bring manpower from certain fiscal years back to the left so that I can be at a reasonable strength here in a couple of years.

But that is where we are going, and what we are trying to do right now is attract that talent that we need in the command, and that is both a balance between civilian as well as military. The civilian force that I have is Department of the Air Force civilians, and we are working very closely right now in how to attract them. We have got some programs out there in terms of internship programs, to bring young adults into the command with STEM [Science, Technology, Engineering and Mathematics], technical type of degrees.

I have been very pleased with the military presence that we have had within the commands from all the services. The two biggest services that I have represented in the command right now is, quite frankly, as you would expect, the Space Force and the Army. Bringing them into a joint command, building them to full operational capability, utilizing exercises, and, quite frankly, real-world operations. So we have had a couple of events over the last couple, 3 years, if you will, that have really driven us to be very proficient in what we do.

I will just take the Nudol event, for example, back in November. That, for us, when I declared initial operational capability last August, was a direct result of having that talent and expertise within the command, rehearsed through processes and procedures and techniques that the joint world knows and recognizes, to the point where we can actually provide a strategic effect for our national-level leaders. That is really the strategy going forward. Right now we have got an initial operational capability which means we can provide those effects, but we are building out the capacity within the command so that I can do that more robustly.

Senator TILLIS. Do you have sufficient authorities to be able to get to where you need to be with end strength or resources?

General DICKINSON. I do. I have the right authorities right now.

Senator TILLIS. Admiral Richard, just really quickly, with advances, particularly with respect to China and hypersonics and other capabilities, is our current strategy mapping up against their emerging threats, or do we need to rethink maybe how we counter threats 10 years, 20 years from now, differently?

Admiral RICHARD. Senator, I am conscious of the fact that the Nuclear Posture Review and national defense strategies have not been promulgated, but I am confident that we are going to have a good strategy. The question is going to be capability, capacity, and posture, and to acknowledge those will not be static and we are going to have to think through those much more frequently than we have needed to in the past because of the very threats you are referring to.

Senator TILLIS. Thank you. Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Tillis.

Senator Kelly, please.

Senator KELLY. Thank you, Mr. Chairman. Admiral Richard—and good morning to you both. Thank you for being here, Admiral and General. Admiral Richard, we have all been following reports of Russian attacks on Ukrainian nuclear plants and other very concerning developments in this conflict, and Russia is now targeting civilians, probably out of frustration. This should be—you know, I think is viewed as escalatory. It is clearly a war crime.

I am concerned about further escalation, and I understand the United States military has established a hotline or direct communication channel with the Russian military, particularly because Russia media and cyber actors have sought to spread disinformation, making reliable information hard to assess in real time. It is my view that this direct military-to-military communication is critical to avoid misunderstandings that could lead to a dangerous military escalation between two nuclear powers.

As this committee knows well, in a crisis decision time, time to respond to a nuclear threat is only a matter of minutes. Admiral Richard, I understand the hotline will be run out of United States European Command. Can you elaborate on how STRATCOM will remain in the communication loop of this hotline?

Admiral RICHARD. Senator, a couple of points if I could. Actually, you do not have to respond to threats, nuclear or otherwise, in minutes. In fact, I am not allowed to put the President in the position that he only has—or her—minutes to respond. So I want to make sure everybody understands, this Nation always has the time to make a fully informed decision on any action that it takes.

Second, for strategic purposes, we have long had hotlines between the United States and Russia. They date back to the Cold War. They are still there, they are tested every day, and those are still available to us. We are a long way from needing to use anything like that right now. I will go into more detail on the rest of your questions in closed session, sir.

Senator KELLY. All right. Thank you.

General Dickinson, we are currently seeing reports of commercial satellite systems, you know, very effectively being used, you know, information for the Ukrainians, also for us, and these satellite systems are likely to be of interest to Russia too and how should they ultimately counter them in the context of this invasion. Russia's

and China's anti-satellite capabilities have received a lot of attention in years with a couple of anti-satellite tests, one before one of my space shuttle launches in around 2008.

But I want to spend a little time today discussing Iranian and North Korean anti-satellite capabilities that tend to get less airtime, especially North Korea, who obviously has an intercontinental ballistic missile capability. Iran hopes to develop one. One concern is that ICBMs can be used to create a debris cloud in low-Earth orbit, and that could impact U.S. satellites.

General Dickinson, can you expand on how United States Space Command is viewing both the North Korean and the Iran capabilities, and how do you assess their willingness to target and impact United States satellites in space?

General DICKINSON. Thank you, Senator. First of all I would just say that you identify a big problem, if you will, within the space domain. We just saw it a couple of months ago when the Russians destroyed—they had conducted their Nudol test that left about 1,500 pieces of debris in low-Earth orbit that, quite frankly, we are tracking every day now and we will continue to track that for years to come.

To your example, back before your flight, when the Chinese did that test, we still track objects today from that very test that, quite frankly—and sir, you are an expert on this—could be threatening to the International Space Station. We do a lot of work each and every day very closely with NASA [National Aeronautics and Space Administration] to make sure that we look at that and make sure that the astronauts on the International Space Station are safe.

With regard to both Iran and North Korea, I would like to expand on that, if I could, in the closed session.

Senator KELLY. All right. Thank you, and I yield back the remainder of my time.

Chairman REED. Thank you, Senator Kelly.

Senator Blackburn, please.

Senator BLACKBURN. Thank you, Mr. Chairman, and to each of you I thank you for your service and thank you for being here today with our questions.

Admiral Richard, I do want to come to you first. I fully understand that there are sensitive matters that affect our government and STRATCOM, and we all understand that many times public comment is not appropriate or productive. However, we have to keep in mind that silence is also a message, and a very strong one, and you have been an excellent, outspoken commander of STRATCOM, and you have been a wonderful advocate in the public venue for why we need to modernize our nuclear forces. I think you have been the commander we need at the time that we need him, and we thank you for that.

So I am disappointed by the lack of clarity on answers that you have today, and many of these are appropriate in an unclassified sphere, and I was disappointed in the weekend's cancellation of the Minuteman-III test, because we only have four of those a year, and I was disappointed to learn that STRATCOM has put out a schedule of tests to consider others for cancellation.

I appreciate—I think we all do—that you have to be careful, especially at a time like this, because of the message that our actions

could send to Moscow. But this message of silence coupled with inaction, in my opinion, does not project one of strength. It is not a message of deterrence. I would probably venture to guess in your opinion, your professional opinion, it would question the judgment of such actions.

We have to be ready to respond to any threat, any place, any time, and I think that we are facing two nuclear-capable adversaries at this point. So let us say speaking hypothetically, entirely hypothetically, what message does cancellation of a prescheduled, routine test send to our adversaries?

Admiral RICHARD. Senator, let me offer first that the test has been rescheduled, not cancelled, and it will be important for us to go do that test. I want to acknowledge up front that is an Air Force service weapons test. It is done under their authorities.

But it is very important to me, and to the Air Force. That is a 50-year-old rocket that we are talking about, and as it ages, our ability to understand its performance is very important both for my operational planning as well as the effort the Air Force has to have to sustain it until we can get a replacement system.

My fundamental recommendation is that we maintain our normal set of operations. Day-to-day we very carefully craft a series of operations, activities, and other evolutions that are designed to show our readiness, it is designed to maintain that readiness, and it is designed to give us confidence in our forces. In general, that is my recommendation under these conditions.

Senator BLACKBURN. Okay. Then let me take it this way with you. Then what impact does delay or reduction in funding, how does that affect the modernization and the implementation efforts that you need?

Admiral RICHARD. Ma'am, any delay or interruption in funding is one of the most corrosive things that we can do in order to enable those programs to stay on schedule such that we do not have a diminishment in the capabilities required to execute our strategy. So not only does it have a practical effect in terms of potential delays and the dates that we can have these systems, it is also a signal of a lack of will on our part, fundamentally to defend ourselves.

Senator BLACKBURN. So you would see that as diminishing and not improving our abilities, capabilities?

Admiral RICHARD. Yes, ma'am.

Senator BLACKBURN. Okay. General Dickinson, I do have some questions for you but I am running out of time. I am going to send these to you for answer, because I want to explore a little bit more the commercial opportunities that you have and how we can build off of some of the commercial advancements that are going to affect the space and your command.

So thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Blackburn.

Senator Warren, please.

Senator WARREN. Thank you, Mr. Chairman, and thank you Admiral Richard and General Dickinson for being here.

So Admiral Richard, last year you testified before this committee that you hope the nuclear policy review would include looking at the wide array of capabilities we have in our arsenal, including

space and cyber. In other words, our ability to deter adversaries is not only about nuclear weapons that we have, it is also about conventional weapons and other areas of strength. It sounds like the adoption of integrated deterrence that will be part of this review does precisely that.

Was Strategic Command fully consulted and able to fully participate in the Nuclear Posture Review process?

Admiral RICHARD. Senator, first I want to endorse the idea of integrated deterrence, that STRATCOM and previous commanders have been calling for this, the idea that you use every available instrument, beyond the military, to best deter your opponent and resolve political issues at the lowest possible level of violence. So we are strongly in support of that.

Second is to understand, though, that nuclear deterrence, in particular, is a part of integrated deterrence. They are not different things. In fact, if you do not have the nuclear piece inside of it the rest of integrated deterrence does not work because your opponent might be able to——

Senator WARREN. Excuse me for interrupting, Admiral. I understand this. I am just asking a question about process. Was Strategic Command fully consulted and able to fully participate in the Nuclear Posture Review process?

Admiral RICHARD. STRATCOM was fully involved in the Nuclear Posture Review process up through the Secretary of Defense. I had plenty of opportunity to tell the Secretary personally. We led portions of the Nuclear Posture Review. But beyond that, ma'am, I do not know.

Senator WARREN. Okay. Now as we discussed last year, the Nation's nuclear policy is up to the President and the Secretary, and the goal of the Nuclear Posture Review is to rigorously examine options to determine the proper role for nuclear weapons in our national security strategy. So, Admiral Richard, do you agree that the Nuclear Posture Review benefits—let me put it this way, from hearing a wide variety of views to make sure that we are developing the smartest possible policy?

Admiral RICHARD. Senator, yes, and my responsibility inside that is to offer the operational implications to each of those wide range of views.

Senator WARREN. Okay. Do you think our nuclear policy should be informed by objective technical analysis?

Admiral RICHARD. Ma'am, we provide a lot of that objective technical analysis.

Senator WARREN. So you think it should be informed by technical analysis and a broad variety of views. We are in agreement on that.

Admiral RICHARD. Yes, ma'am.

Senator WARREN. Good. You know, I am looking forward to reviewing the Nuclear Posture Review when it is released, but the reason I am focused on this is because I have concerns about the process that produced it. Over the past year, the Pentagon has repeatedly pushed out and obstructed efforts to have more rigorous debates and analysis to support this review, and I just want to give one example of this.

The ground-based strategic deterrent is a \$264 billion program. I requested that DOD contract with a respected group of outside experts to determine the technical feasibility of extending the Minuteman-III program instead of just buying expensive new weapons. I was then told that the DOD did not have the contract authority to do so, and that is just simply not true. It appears DOD simply did not want to do a study that might show that a massively expensive nuclear spending program was not actually necessary.

Now my view on this is no secret. We must reduce the role of nuclear weapons in our defense strategy. It is dangerous and it results in a staggering amount of spending, more than \$630 billion over the next decade. But no matter what you believe about these weapons, our nuclear policy should be developed by asking tough questions, not formulated in an echo chamber.

So thank you very much, Mr. Chairman.

Admiral RICHARD. Senator, can I suggest that I look forward to the Nuclear Posture Review being published so you can see exactly how and what it concluded. But I will add, thank goodness we have ICBMs right now. I will explain more in closed testimony.

Senator WARREN. So I am glad that you are looking forward to seeing the report. As I said, I am as well. But my whole point is that if we do not have a process that includes alternative points of view, a widespread point of view, then the product that comes from it is too likely to come from an echo chamber instead of being fully informed, and that is what troubles me.

Admiral RICHARD. Yes, ma'am.

Chairman REED. Thank you, Senator Warren.

Senator Ernst, please.

Senator ERNST. Thank you, Mr. Chair, and thank you, gentlemen, very much for being here today.

Unfortunately, Russia's unprovoked invasion of Ukraine has really reminded us of the threat that is posed by our adversaries and threat to our own international stability. We certainly cannot take peace for granted, so again, thank you very much for your service to our Nation.

If we could go back a little bit, you know, I understand some of the discussion that is here, but if you could again, Admiral Richard, just please reiterate why we cannot extend the life of the Minuteman-III.

Admiral RICHARD. Senator, there are a couple of reasons and there is one that I probably have not emphasized enough in my previous testimony. Any of our deterrence systems have to be able to operate in the threat environment that they face. Fundamentally, they have to be able to pace the threat. Minuteman-III, because it has been extended so long, has basically no margin left to be able to pace improvements in other nations' defensive systems. That is on top of the cost benefit that we would achieve by changing to a new system, modern, well-designed, lower operating cost.

But I want to come back to, for any of these weapons systems, with Minuteman-III being the best example, it has to be able to pace the threat in order for it to deter anybody.

Senator ERNST. Pacing that threat but then also safety implications as well. You mentioned that the Minuteman-III is 50 years old, but certainly there are ways that we can modernize and not

only impact safety implications going forward but also workforce implications. Maybe could you speak a little bit to that as we are going through modernization efforts and how we would be able to, as well, keep pace with the technology necessary to upgrade and modernize?

Admiral RICHARD. Senator, a common issue here is, it is not just about modernizing a rocket. It is the entire weapon system. So a key attribute the GBSB will bring is a much-improved nuclear command and control system for that particular piece. That alone is another significant reason that we have to go do that.

You mentioned workforce. The GBSB—and I will defer to the Air Force for the specifics—GBSB requires a lot less number of people to operate it because it has modern methods of maintenance and sustainment. Remember, Minuteman-III was not designed to be modernized at all. The Air Force did heroics to reverse-engineer the ability to do that on a weapon system only designed to be in service for 10 years. So there are a number of these benefits the Nation will achieve if we modernization the intercontinental ballistic missiles.

Senator ERNST. I appreciate that. You have also spoken to the fact that not having a stable appropriation, stable budget, how that has impacted negatively the modernization effort. So I just wanted to reemphasize that, that we really need to do our work as Congress and make sure that we get back into regular order.

So, Admiral, what is your assessment of the capability and ability of our domestic supply and production chains to produce our nuclear cores?

Admiral RICHARD. Senator, one, it would be best for me to defer the specifics of an answer to that to the people that actually buy this stuff. That is the services and the agencies. But bottom line is that is a very big concern that we have let, across the board, our industrial base atrophy, and we will need to take steps to restore capability and capacity in any number of areas—weapons complex, nuclear command and control, delivery systems—such that we have a robust, resilient defense industrial base that is able to produce the capabilities that commanders like I will have to use to defend us.

Senator ERNST. Just in the remaining time, I really appreciate that, the need to really modernize out there. I know there are a number of different opinions on this committee as we come to nuclear strategic deterrence, but the fact that we should have regular order in the way we do appropriations so that we can continue to modernize, if that is the directive that comes from this committee and from the Administration. But then also the workforce that goes with that as well. I think there are a lot of issues that comes to this discussion today. We are just very grateful to have you there and working on these issues with us.

So with that I will yield back. Thank you.

Chairman REED. Thank you very much, Senator Ernst.

Senator Shaheen, please.

Senator SHAHEEN. Thank you, Mr. Chairman, and Admiral Richard, General Dickinson, thank you both for your testimony this morning.

General Dickinson, I want to follow up on the conversation that has come up in several questions around the proliferation of debris in space. It is my understanding that the current collision screening notification criteria were developed over a decade ago. Is there an effort underway now to update that criteria, and who is in charge of that, and when do you expect that to happen?

General DICKINSON. Thank you for the question. Just to the, right up front, if I could just talk about the size of the debris and how much that is growing, just to give you a statistic or a feel for that. Back in 2019, when the Command stood up, we tracked on a daily basis about 25,000 objects in space. Today, in 2022, it is almost 44,000. So we have seen, obviously, a tremendous growth in things that we have to track each and every day around the globe. We have seen, with the Nudol test, for example, back in November, how that can expand quite quickly.

So the process that we use today to do that is done out at Vandenberg Space Force Base by the 18th Space Control Identification Unit out there. The algorithms and the C2 that they use has been upgraded. We look at that each and every day in terms of how we are able to identify and work with NASA to make sure that we are able to identify potential issues with the International Space Station and its safety.

Senator SHAHEEN. But you are looking only at the International Space Station?

General DICKINSON. No. Ma'am, we are looking at all the debris up there in terms of being able to provide that information out. That is just one area that I highlight, because it has such visibility on it.

Senator SHAHEEN. Am I correct that there is specific collision screening and notification criteria that you are looking at?

General DICKINSON. Yes, ma'am. So there is, and we work very closely with not only NASA but we also work very closely with our commercial partners as well. We have agreements with over 100 companies right now, what we call a space situational awareness agreement, and that agreement allows us to share that information with them. So for example, if you are a commercial company that has satellites on orbit, we will let you know, or we will let them know if there is an issue that we project with potential debris.

Senator SHAHEEN. Well, I guess what I am trying to figure out is this criterion that is updated on a regular basis, do you all do that? Does somebody else do that? How are other companies and other countries notified about that?

General DICKINSON. So we do that. That is on a website that we have that is called spacetrack.org, where that unit at Vandenberg Space Force Base updates that routinely with information that we have that we are gathering from our sensors and through our analysis process.

Senator SHAHEEN. Okay. I want to switch to a more mundane topic, because I certainly share the urgency with which both of you talked about the challenges we are facing from both China and Russia. We have had a number of conversations on this Committee about whether our decision-making process should be more efficient, should we address procurement. How do we address what we are seeing happening in China and Russia with respect to their in-

creasing military capability, although we may want to raise questions about Russia after Ukraine?

But I raise this in the context of the proposed relocation of SPACECOM headquarters from Colorado to Alabama, because I am puzzled, given the urgency, given the challenges of setting up this new command of the fact that you are still only in about 50 percent capacity in terms of the staffing that you need, why we are going to spend several years now trying to move SPACECOM to a new location that is going to take us, as I understand, a year and a half before we actually even know whether Redstone is potentially an appropriate location because of environmental concerns. Are we reassessing that decision? My understanding also is that it will take us until 2026 to actually move SPACECOM to that location, if the assessment proves to be that that is an appropriate location.

So help me understand why given all of our urgency and all of the decisions that we need to make we are going to spend the money and the time to relocate Space Command to a totally different place?

General DICKINSON. So, ma'am, Senator, there are two long-going efforts. I am sure you are probably aware the DOD IG [Department of Defense Inspector General] is conducting their evaluation along with the GAO [Government Accountability Office]. Both of those are moving along, and I am looking forward to the completion of those two efforts.

For me, it is not necessarily about the location. It is about the decision. So, in other words, I need a decision as soon as I can possibly get one so that I can build to full operational capability as quickly as possible.

We do have competitors that are moving very quickly. Those competitors are not necessarily waiting for me to reach FOC, or full operational capability. So I need a decision, and based on that decision I will do whatever I need to do to make sure that I can achieve my mission.

Senator SHAHEEN. Okay. I am out of time but I just want to follow up one point on that. If you were going to stay in your current location, do you have any sense of how long it would take to settle in to do any renovations that you need to do there versus moving to a new location in Alabama, and how long that would take and the cost of that?

General DICKINSON. So we are in the process right now of building the infrastructure that we need to do the mission that I have been given today, and we are moving in that direction. I would say we are a couple, 3 years away from full operational capability.

Senator SHAHEEN. Wherever you are located.

General DICKINSON. Wherever I am located.

Senator SHAHEEN. Is that based on the number of personnel you have to hire?

General DICKINSON. It is based on many things, Senator. One is personnel. The other has to do with expertise within the command, attracting the right expertise within the command, and making sure that I have trained those processes and procedures within the command to be able to do the entire mission set that I have been given.

Senator SHAHEEN. Thank you.

Chairman REED. Thank you, Senator Shaheen.

Senator Fischer, please.

Senator FISCHER. Thank you, Mr. Chairman. Thank you, Admiral and General, for being here today.

One of the reasons we have never adopted a no-first-use policy or made a sole purpose declaration is the real threat of a strategic non-nuclear attack. President Obama's 2010 Nuclear Posture Review states the following: "There remains a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring a convention or CBW [chemical and biological weapons] attack against the United States or its allies and partners. The United States is therefore not prepared at the present time to adopt a universal policy that deterring nuclear attack is the sole purpose of nuclear weapons."

Admiral Richard, chemical and biological threats are sometimes treated as an afterthought. How has the risk of major non-nuclear attack changed since 2010, and has it decreased?

Admiral RICHARD. Senator, first it has certainly not decreased. You are correct that often gets overlooked, at least in public discourse. I will tell you, as a part of the Nuclear Posture Review that was looked at very closely, and I look forward to the publishing of the Nuclear Posture Review to show you what the result of that analysis was.

Senator FISCHER. Thank you. Also, those who favor reducing the size of our nuclear forces often argue that non-nuclear capabilities such as space and cyber capabilities can be substituted for nuclear weapons without diminishing our ability to credibly hold targets at risk, deter adversaries, and assure our allies. What are your views on this idea?

Admiral RICHARD. Senator, what I would offer is, one, I applaud efforts—that is fundamentally you are getting after some of the capabilities that are used inside integrated deterrence, and we applaud that effort.

But I need to be clear about something here, which is there is no other capability or combination of capabilities that gets anywhere close to the demonstrated destructive potential of a nuclear weapon. That is why it is integral to integrated deterrence. Then with that foundation, with that backstop, you then use every other capability in our disposal to deter the opponent.

An important point here, Senator, if I could. When we are talking about issues between nuclear-capable great powers, it quickly becomes less about an order of battle comparison and who wins the fight and quickly becomes more about who judges greater stake and who is willing to take greater risks to get it. Integrated deterrence sets us up very well to resolve issues like that.

Senator FISCHER. Our threats are only increasing. We have already brought up that we have two peer competitors when it comes to the threats that we face now. How do you think we can get that message across to the people of this country so that they have a more complete understanding of the threats we face and what we must do to protect this Homeland and also to offer assurances to our allies?

Admiral RICHARD. Senator, I would offer that our opponents' actions are speaking to us much better than anything I can say in words. I think it is important for us to understand we do not know how far China is going to go, and Russia is also expanding. But also we are seeing demonstrations of how you can use these capabilities coercively.

We are so trained in thinking that all we do is deter. I do not think that we fully understand or have thought about, in a long time, what the coercive use of these capabilities looks like, and we are getting real-world demonstrations of that right now.

Senator FISCHER. Admiral, you quote China's strategic breakout in your opening statement and you note that, quote, "The PRC likely intends to have at least 1,000 warheads by 2030, greatly exceeding previous DOD estimates." As concerning as that is, it only captures, I think, part of the problem.

I know there is not a lot you can say in this environment, but do you believe it is wise to assume that China's nuclear forces will stop expanding when they reach that point?

Admiral RICHARD. Senator, I will tell you, I told my staff that whatever the time estimate that the intelligence community gives you on anything from China, divide it by 2 and maybe by 4 and you will get closer to the right answer. So no, I do not know that we have any idea of what the end point and/or speed. When I first testified here we were questioning whether or not China would be able to double that stockpile by the end of the decade. They are actually very close to doing it on my watch, and I think we need to factor that into our calculations as we think through what we need to defend ourselves.

Senator FISCHER. As we look at China's breakout, or we look at the continued growth of Russia's non-strategic arsenal, obviously nuclear threats are still growing. We are not trying to match any adversary system for system, but at the same time, an imbalance in forces does undermine our strategic stability. Isn't that right?

Admiral RICHARD. Yes, ma'am, and said another way I think it emboldens coercion and aggression.

Senator FISCHER. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Fischer.

Senator Rosen, please.

Senator ROSEN. Thank you, Chairman Reed, for holding this important hearing. I would also like to thank Admiral Richard and General Dickinson for testifying today and for your service to our country. Thank you.

I want to return now to the major role that Nevada plays in the capabilities and safety of our nuclear arsenal, specifically at the Nevada National Security Site, because we need some infrastructure upgrades in order to continue to complete and do our mission.

Admiral Richard, since 1993, the Nevada National Security Site, or we call it NNSS, has overseen the nuclear Stockpile Stewardship Program, principally at the U1a facility. It is an underground laboratory where scientists conduct those subcritical experiments to verify the reliability and effectiveness of our nuclear stockpile. This is the only facility in the country where this is done, and U1a is undergoing major construction projects that will soon host our most capable weapons radiographic system in the world. Of course, I

have visited NNSS a few times. I am very proud of it, that it contributes to the certification of our nuclear stockpile.

However, the NNSA faces several challenges as we have seen and you have testified to, to its modernization programs, including significant infrastructure delays which you note in your testimony dates back to the Manhattan Project era. The Nevada National Security Site is no exception. Unfortunately, Chairman Reed, the Nevada National Security Site is larger than all NSA sites combined and is the equivalent to the size of the state of Rhode Island, I might add.

Chairman REED. Thank you.

Senator ROSEN. So we have a vast amount of infrastructure to build and maintain.

So Admiral Richard, can you please speak to how upgrades to the Stockpile Stewardship Program like the U1a affect STRATCOM's certification of our nuclear stockpile, and how do these delays impact your ability to fulfill your responsibilities?

Admiral RICHARD. Senator, first I would put the Stockpile Stewardship Program on the list of things that make me proud to be an American that we actually figured out how to do that such that we relieved ourselves of the need to actually conduct nuclear weapons testing.

But what I think is important to understand is that alone will not give us the confidence that we have to have in our weapons. That is what this fundamentally comes back to. Are you confident in your stockpile and your deterrent because that underpins credibility which is needed to deter?

There are two other things we have to do in addition to the good work in the Stockpile Stewardship Program. One of them is you have to have a flexible and modern stockpile, which means we need to move past life extensions, which we have been doing for 30 years, and move into refurbishments, which is where NNSA is about to go. The second one goes back to the infrastructure you are talking about. You have to have a modern, responsive, and resilient infrastructure, and we have delayed too long, in my opinion, giving NNSA the resources necessary to do that piece. All three of those are necessary for us to have the confidence we need to conduct my mission.

Senator ROSEN. Thank you. Speaking of mission, we have cyber mission and space, and cyber, I could talk all about workforce, the workforce challenges that we have with developing that. Senator Ernst brought that up. But as we see what is happening particularly in the Ukraine, are you concerned, General Dickinson that the increasing threats of cyberattack from Russia could jeopardize our United States space operations? Maybe you cannot speak of it here. We will talk later about space cyber aggression as the war in Ukraine continues to go forward.

General DICKINSON. Well, thank you, and I will provide more in the closed session. But I will say here, this morning, is just to echo what Admiral Richard said in terms of posture at this particular point. I support Admiral Richard in a lot of things that he does in terms of his nuclear command and control, and I am very satisfied in the posture that we have today with respect to space as well as cyber. We have taken a lot of effort to ensure that we are cyber

hardened and that we have got the right types of experts looking at our systems, our vital space systems. But I can provide more to you in the closed session.

Senator ROSEN. Thank you. I appreciate that. I know my time is almost up. I do want to talk about workforce development. I have been lucky enough to have a Junior ROTC STEM bill passed, which means our youngest kids, kids in high school, they have a track for joining Junior ROTC to put them into STEM professions in the military. It is really important. We will talk later about developing that workforce. I will submit them for the record. But we really need to up our game there as well, to be nimble and modernize.

Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rosen.

Senator Cramer, please.

Senator CRAMER. Thank you, Mr. Chairman, and thanks to both of you for your service and for being here. Admiral Richard, let me just say as others have said, one of your strongest qualities, since I have known you anyway, has been your forthrightness and your clarity. But I have to say, in the moment that we are in right now, I have especially appreciated your boldness and clarity. We need to hear it. The people we work for need to hear it.

I also have to compliment you on your composure, being able to sit through some of this. The suggestion that there has not been enough variables or enough varying opinions to commit \$630 billion over 10 years to the most important deterrence to aggression in the world is frightening enough, but it is galling in the context that around here some people think nothing of spending trillions of dollars over the course of 10 months or 10 weeks or even 10 days, based on the opinion of one person at HHS. I will leave it at that. So congratulations on having composure as well.

I do want to get back to an issue that Senator Blackburn raised with regard to the postponement of that ICBM watch. As you can imagine, those of us in North Dakota pay close attention to those things. I appreciate your answer, particularly your commitment that it is only a postponement, that it is now rescheduled. Did you agree with postponing that, if I might ask?

General DICKINSON. Senator, I had an opportunity to directly advise the Secretary of Defense, among others. I think it would be best if I left that advice private between him and I.

Senator CRAMER. I understand and I appreciate that, because it seems to me that reality is now clashing with some people's fantasies. I appreciate you raising the reality of the moment. You said it well a little bit ago when you said opponents' actions are speaking as loudly as anything that we could probably say.

General, I want to talk a little bit about—I want to bring it home a little bit as well. You, of course, are very familiar. You and I visited the very old PARCS radar station, the Cavalier Radar Station, now the Cavalier Space Force Station, it seems like last month but I think it was probably a year or two ago. As you know, we had this very important early warning system designed to, of course, warn us early in case something is coming over the Arctic. Now, of course, it has been monitoring space as well. You have talked about the need for decision superiority. That was, I think, some-

thing you referenced or talked quite a bit about over the last couple of years.

I am just wondering if the PARCS array at Cavalier Space Station that relies on this very old technology, if there is modernization opportunities for our decision superiority as well that we should be talking about.

General DICKINSON. Senator, thank you, and I did enjoy my trip up there. I think it was over a year ago, maybe 2 years ago now. But certainly that particular sensor, and all of those early warning radars, are very critical to our overall architecture, to be able to provide that missile warning, missile defense, and space domain awareness. So critical to provide that very decision space to our national-level leaders.

So in terms of what that capability is today, we continue to look at that through a lifecycle management, and really I work very closely with the Space Force, because they are ultimately in charge of those upgrades and the modernization of those assets. What I do is identify whether or not we have a gap or a requirement that would need that. So we are working very closely with them and we are looking at the entire architecture, not just necessarily one asset. Because as we look to the future, it will not only be a terrestrial-based type of capability that is up there right now but we will look at a space capability too, that augments that, so we have a layered warning capability globally.

Senator CRAMER. I think, Admiral, you had mentioned earlier, maybe both of you have talked about, throughout this hearing, the delay or interruption in funding of modernization, what that means, the kind of signal that that sends, the practical, functional consequences of that.

Let me ask this. If we were, in this place, able to get our act together, if we were able to have enough consensus and realization that modernization is not just important but critical, and if we were to have the political will, would it even be possible to not only not delay but even accelerate any part of modernization if we were able to make that case?

Admiral RICHARD. Senator, I would defer to the services to give you the specifics of that. But I think you are hitting at, we need to ask questions differently. We used to ask what is it going to take, and we have gotten into the habit of saying how are we going to mitigate our assumed delay or failure. We used to ask the question the other way around. That is how we got to the moon by 1969. We need to get back to understanding the operational risk is on par with programmatic and technical risk, reverse the way we ask questions, and get back to producing capabilities to way we used to.

Senator CRAMER. I appreciate it. Thank you both. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Cramer.

Let me recognize Senator Tuberville for the purpose of a unanimous consent request.

Senator TUBERVILLE. Oh, thank you very much. Just really quickly, you know, I would like to correct for the record the remarks of my colleague from New Hampshire, and I appreciate General Dickinson being a bipartisan approach here on the movement

of Space Command from Vandenberg to Redstone Arsenal in Alabama.

The recently released draft environmental study found, quote, “significant impact on socioeconomic conditions and environmental justice,” end quote, at Vandenberg. By contrast, the study found no significant environmental concerns at Redstone.

Mr. Chairman, I would just like to submit this study to you for the record and correct that as we go along.

Chairman REED. Without objection.

[The information follows:]

DRAFT FINDING OF NO SIGNIFICANT IMPACT ENVIRONMENTAL ASSESSMENT FOR
UNITED STATES SPACE COMMAND HEADQUARTERS BASING AND CONSTRUCTION

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code 4231 to 4270d; Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500–1508; and 32 CFR Part 989, Environmental Impact Analysis Process, the U.S. Air Force has prepared the attached environmental assessment (EA) to address the potential environmental impacts associated with the establishment of a headquarters for the U.S. Space Command (USSPACECOM; Proposed Action) at one of five Department of Defense (DOD) installations in the United States.

PURPOSE AND NEED (EA SECTION (§) 1.2, PAGE 1–1)

Pursuant to Section 1601(c) of the National Defense Authorization Act for fiscal year 2018, the U.S. Deputy Secretary of Defense was directed to review national security space DOD components and recommend changes to Congress by August 1, 2018. The U.S. Deputy Secretary of Defense’s final report to Congress recommended that the President of the United States modify the Unified Command Plan to standup a new combatant command for space (USSPACECOM). The U.S. Strategic Command’s Joint Force Space Component Command was elevated to a combatant command and assumed these duties in 2019.

The purpose of the Proposed Action is to establish a permanent operational USSPACECOM headquarters as a functional combatant command. The need for the Proposed Action is driven by the need for suitable permanent facilities to fulfill USSPACECOM required functions to enable achievement of full operational capability by 2025.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action and all reasonable alternatives are presented and evaluated in the attached EA.

Proposed Action (EA § 2.1, page 2–1)

The Proposed Action would establish a USSPACECOM headquarters at one of five DOD installations in the United States: Buckley, Peterson, or Schriever Air Force Base (AFB) in Colorado; Vandenberg AFB in California; or U.S. Army Garrison Redstone Arsenal (Redstone Arsenal) in Alabama. The proposed headquarters facility would accommodate approximately 1,870 personnel in a typical headquarters setting consisting of 498,000 square feet of office/administrative space, and 502,000 square feet for privately owned vehicle (POV) parking, totaling 1,000,000 square feet, or approximately 23 acres. POV parking would be provided in adjacent parking lots except at Peterson AFB, where it would be provided in parking garages. The majority of the permanent facility would be sensitive compartmented information facility space, and open administrative space, offices, conference rooms, classrooms, kitchen, dining, and break rooms. USSPACECOM operations would include command and control of global DOD space operations, support to other combatant commands, defense of U.S. and allied space operations, the gaining and maintaining of space superiority, and the evolution of DOD space capabilities and training.

To conduct operations prior to the completion of the permanent construction (estimated to be 2025), temporary basing would include 193,000 square feet for interim facility space, and an estimated 502,000 square feet for parking. Existing, vacant office/administrative space or leased office/administrative space on or outside the selected installation, and/or new temporary/modular buildings that would be purchased or leased by the Air Force and placed on a suitable site within the selected installation’s secure perimeter would be used in the interim until the permanent

headquarters facility is operational. POV parking would be provided in existing parking lots and/or temporary gravel lots. To maximize flexibility for siting USSPACECOM headquarters operations, the interim and permanent facilities would not necessarily be at the same installation. Staffing of the interim facility would begin in 2019, and gradually increase to a total staff of approximately 1,870. Staff would transfer from the interim to the permanent facility after construction of the permanent facility is complete.

Force protection measures for the new facility will be incorporated in accordance with the Unified Facilities Criteria 4-010-01, DOD Minimum Antiterrorism Standards for Buildings, February 9, 2012. Construction of the permanent facility would comply with the U.S. Environmental Protection Agency's Construction General Permit in effect at the time of construction, and with the Energy Independence and Security Act (EISA) Section 438 requirements. Construction activities would be implemented using sustainable design concepts as outlined in the Unified Facilities Criteria and the selected installation's design and construction standards. Sustainable design concepts would emphasize state-of-the-art strategies for site development, efficient water and energy use, and improved indoor environmental quality. Stormwater management at the new facility would use low-impact development as required by Section 438 of the EISA, and the selected installation's municipal separate storm sewer system permit.

Alternatives (EA § 2.3, pages 2-7 to 2-33)

The Air Force identified seven potential interim and seven potential permanent site alternatives at the five DOD installations noted above. These site alternatives are summarized in Table 1. The perimeter of all alternative sites can be accessed by existing roads at the DOD installations being considered. The attached EA analyzes potential impacts from implementing the Proposed Action at these interim and permanent site alternatives.

All other potential installations and alternative sites evaluated during the Air Force's basing selection process were dismissed from analysis in the EA because they did not meet one or more of the Air Force site selection screening criteria, and therefore failed to meet the Proposed Action's purpose and need.

Table 1 Summary of Alternatives

Site Alternative	Site Alternative Description
Buckley AFB	
Interim Site Alternative 1 (West End District)	Previously disturbed but currently vacant land containing maintained vegetation on the western side of the base outside of its Restricted Area (RA). Interim facilities would consist of modular buildings.
Permanent Site Alternative 1 (North Corner Site 1)	Previously disturbed but currently vacant land on the northeastern side of the base outside of its RA. Partially overlaps a former skeet range.
Permanent Site Alternative 2 (North Corner Site 2)	Immediately southwest of Permanent Site Alternative 1. Partially overlaps vacant structures associated with the former skeet range, an on-base thrift store, and construction lay-down area.
Peterson AFB	
Interim Site Alternative 1 (Command Complex and Leased Off-base Office Space)	Previously disturbed but mostly undeveloped vacant land east of Building 3 in the installation's Command Complex. Interim facilities would consist of modular buildings and existing, leased off-base office space within 4 miles of Peterson AFB's West Gate. Temporary parking for the on-base modular facilities would be established on adjacent vacant land leased from the Colorado Springs Municipal Airport.
Permanent Site Alternative 1 (Command Complex)	Existing paved parking lot immediately south of Buildings 1 and 2 in the installation's Command Complex. POV parking would be provided in two garages that would be built on existing paved parking lots as part of the alternative.

Table 1 Summary of Alternatives—Continued

Site Alternative	Site Alternative Description
Schriever AFB	
Interim Site Alternative 1 (Inside RA / West Side of RA / Leased Off-base Office Space)	Previously undeveloped sites consisting of maintained vegetation (i.e., prairie grass). Interim facilities would consist of modular buildings and existing, leased off-base office space within 4 miles of Peterson AFB's West Gate.
Interim Site Alternative 2 (Outside RA / North of Building 24 / Leased Off-base Office Space)	
Permanent Site Alternative 1 (Inside RA) (West Side of RA)	Previously undeveloped sites consisting of maintained vegetation (i.e., prairie grass)
Site Alternative 2 (Outside RA) (Northwest of Building 24)	
Vandenberg AFB	
Interim Site Alternative 1 (Buildings 6523, 7225, and 10577)	Buildings 6523, 7225, and 10577 would undergo minor interior renovations to accommodate the interim facility. POV parking would be provided in existing lots and in an approximately 28,000-square-foot gravel-covered area that would be established adjacent to the existing parking lot at Building 6523.
Permanent Site Alternative 1 (California South)	Previously disturbed but currently vacant land in the installation's cantonment area. Land cover primarily consists of maintained vegetation and parking lots. An existing modular building on the site would be demolished.
Redstone Arsenal	
Interim Site Alternative 1 (Redstone Gateway, and Buildings 5201 and 5220)	Personnel would occupy office space currently under construction at Redstone Gateway, an enhanced use lease area within the installation's secure perimeter administered by the U.S. Army Corps of Engineers, and existing vacant office space that would undergo minor interior renovations at Buildings 5201 and 5220.
Interim Site Alternative 2 (Area 2, and Buildings 5201 and 5220)	Personnel would occupy existing vacant office space that would undergo minor interior renovations at Buildings 5201 and 5220, and modular buildings that would be placed on Area 2, a previously disturbed but currently undeveloped area that primarily consists of maintained vegetation.
Permanent Site Alternative 1 (Area 5 and Building 5201)	The new permanent facility would be built on Area 5, which is previously disturbed but currently vacant, and consists of maintained vegetation. Existing vacant space in Building 5201 also would be used following minor interior renovations.

No Action Alternative (EA § 2.3.7, page 2–33)

Under the No Action Alternative, the interim and permanent USSPACECOM headquarters would not be established. USSPACECOM would not be able to effectively perform the strategic objectives outlined in Fiscal Year 2018 National Defense Authorization Act Section 1601c.

SUMMARY OF ENVIRONMENTAL IMPACTS

The analyses of the affected environment and environmental consequences of implementing the Proposed Action presented in the EA concluded that there would be no significant impacts on the following resources at any of the candidate installations or site alternatives:

- Transportation
- Hazardous materials and waste
- Air quality
- Biological resources
- Cultural resources
- Geology and paleontological resources
- Water resources

The Proposed Action would have a potentially significant impact on socioeconomic conditions and environmental justice communities near Vandenberg AFB if that installation is selected for implementation. This impact and proposed mitigation measures are discussed below.

Because this potentially significant socioeconomic impact would have no inter-related physical environmental effects, it would not, in and of itself, require the preparation of an Environmental Impact Statement as stated in the CEQ regulations at 40 CFR 1508.14.

Transportation (EA § 4.2, page 4.2–1)

The Proposed Action would generate additional construction-related traffic in the short term, but the number and frequency of additional vehicles traveling to and from the project site would vary during the construction phase. The additional volume of construction-related traffic would be proportionate to the scale of the facilities being renovated or built to accommodate the interim and permanent facilities, and would not be particularly unusual.

In the long term, the Proposed Action would increase commuter traffic volumes on and off the selected installation(s), and require minor improvements to installation roads to provide vehicular access to the proposed interim and permanent facilities. However, these traffic increases would not exceed the existing capacity of the vehicular transportation network on or outside the selected installation(s), or noticeably contribute to the degradation of traffic conditions outside the installation.

Therefore, short-term and long-term impacts on transportation from the Proposed Action would be negligible or minor, and would not be significant.

Hazardous Materials and Hazardous Waste (EA § 4.3, page 4.3–1)

Hazardous materials and hazardous and non-hazardous solid wastes used and generated, respectively, during the Proposed Action's construction and operational phases would be managed in accordance with applicable Federal, State, local, and Air Force regulatory requirements; would be small in the context of such substances present on the selected installation(s); and would not exceed the selected installation's capacity to manage them, nor the capacity of licensed disposal facilities outside the installation to accept and dispose of them. To the extent possible, recyclable construction debris would be segregated from the non-recyclable waste stream in accordance with applicable Air Force/installation policies. Implementation of the Proposed Action would not delay or prevent the continued management and remediation of Environmental Restoration Program sites on the selected installation(s), and would not result in changes to the selected installation's Environmental Protection Agency generator status.

Therefore, short-term and long-term impacts from hazardous materials and hazardous waste from the Proposed Action would be negligible or minor, and would not be significant. In the long term, remediation of contaminated soils or hazardous materials underlying or at the selected site alternatives would represent a beneficial effect on hazardous waste management.

Socioeconomics and Environmental Justice (EA § 4.4, page 4.3–1)

The Proposed Action would have positive short-term socioeconomic impacts in jurisdictions adjacent to or near the selected installation(s) from employment, sales, and tax revenues generated by construction activities. Construction-related impacts with the potential to disproportionately affect environmental justice populations or concentrations of children would not extend beyond the boundaries of the selected interim and permanent sites, and therefore, would have no potential to affect those communities.

Implementation of the Proposed Action would not result in significant long-term socioeconomic impacts for any of the proposed candidate sites, apart from Vandenberg AFB. The nearest sizable municipalities to each installation except Vandenberg AFB have an existing supply of public and private services to meet the needs of the 1,870 staff that would be assigned to the proposed facilities.

Nearly 20 percent of the population in the cities of Lompoc and Santa Maria, California lived below the poverty line in 2017, and upwards of 60 percent of households that rent spend 30 percent or more of their income on rent. Any sizable increase in demand for housing that is not closely matched by an increase in supply would be expected to result in an increase in housing and rental prices. Low-income populations, which have less discretionary income compared to high-income populations, would face disproportionate impacts if there is increased competition for housing. The current housing supply and associated public and private services in those cities would not be able to meet the demands of the new population required for the Proposed Action at Vandenberg AFB.

To mitigate potentially significant and/or disproportionately adverse effects on low-income and environmental justice communities in the vicinity of Vandenberg AFB from the Proposed Action, and ensure such impacts remain less than significant, the Air Force will incorporate one or more of the following measures in the Proposed Action:

- Develop a plan for identifying and tracking locally available housing options that can help to meet the demand associated with new (out of region) personnel assigned to support long term operations of the proposed action;
- Continue to dedicate staff resources to assist new (out of region) personnel in securing housing;
- Work to identify persons currently living in the region to meet some level of the operational staffing needs; and/or
- Collaborate with public (e.g., cities) and private (e.g., developers) entities in the region that have the capacity and desire to develop new housing.

This potentially significant socioeconomic impact would have no interrelated physical environmental effects. Therefore, as stated in the CEQ regulations at 40 CFR 1508.14, it would not, in and of itself, require the preparation of an Environmental Impact Statement.

No mitigation measures would be required at the other candidate installations because impacts on socioeconomic conditions and environmental justice communities would not be significant.

Air Quality (EA § 4.5, page 4.5–1)

Short-term and long-term emissions from the Proposed Action of criteria pollutants regulated by the National Ambient Air Quality Standards under the Clean Air Act would remain below *de minimis* levels, and would not contribute to the further degradation of air quality such that attainment areas would be classified as non-attainment or maintenance, or delay or prevent the attainment of air quality standards in maintenance or non-attainment areas. A formal general conformity determination for the Proposed Action is not required. If implemented at Vandenberg AFB, emissions from the Proposed Action would remain below California daily significance thresholds. Emissions of Hazardous Air Pollutants (HAPs) from the Proposed Action would be higher relative to the No Action Alternative; however, *de minimis* levels have not been established for HAP emissions.

Each of the candidate installations is anticipated to be affected by global climate change to varying degrees. Emissions from the Proposed Action would contribute to climate change. However, given the magnitude of anticipated GHG emissions, the impact on cumulative global climate change would be low. Although sea level rise is anticipated to affect Vandenberg AFB, effects on the Proposed Action, if implemented at the installation, would be minimal because the proposed interim and/or permanent facilities would be well inland.

Biological Resources (EA § 4.6, page 4.6–1)

Vegetation impacts would be contained entirely within the boundaries of the selected sites and/or utility and transportation corridors where improvements are made to accommodate the proposed facilities. Vegetation removed to construct the interim and permanent facilities would constitute a small portion of existing vegetation on the selected installation(s) and surrounding region. Areas of the project sites not built on or otherwise developed would be revegetated in accordance with the installation's landscape design guidelines. The introduction or spread of non-native or invasive species would be prevented or minimized by adherence to each installation's Integrated Natural Resources Management Plan, and/or other applicable policy documents.

Construction of the proposed facilities would remove habitat; and displace, and in some limited cases, potentially destroy individuals of common wildlife species. Although these would be adverse effects, they would occur at the individual rather than population or species level, and would not threaten the continued propagation of common wildlife species. Mobile individuals would likely relocate to other areas of suitable habitat that would remain near the selected sites. Individual animals adapted to urbanized environments or high degrees of human activity would potentially return to the interim and permanent sites once construction activities have ended.

Adherence to site-specific stormwater pollution prevention plans (SWPPPs), erosion and sediment control plans, and/or stormwater management plans that would be prepared by the construction contractor in accordance with National Pollutant Discharge Elimination System permit requirements applicable to the selected instal-

lation(s) would prevent or minimize the potential for the degradation of water quality in receiving waterbodies and corresponding impacts on aquatic species.

Implementation of the Proposed Action would not involve the disturbance or filling of jurisdictional wetlands.

No federally listed species have been documented on the proposed interim and permanent sites. State-listed species, species of special concern, and/or migratory birds are known or suspected to be present on a number of the sites, particularly those in Colorado. Suitable habitat for special-status species also is present on a number of site alternatives. As applicable, vegetation clearing on the selected sites would occur outside of applicable time-of-year (TOY) restriction periods to avoid impacts on special-status species. If construction must occur during the TOY period, surveys for special-status species would be conducted onsite where such species or their habitat are known or suspected to be present. If the surveys confirm the presence of special-status species, the Air Force would conduct additional consultation with the U.S. Fish and Wildlife Service and/or other applicable Federal and State regulatory agencies to develop avoidance and mitigation measures.

The operation of the proposed interim and permanent facilities would not involve ongoing disturbance of common and special-status plant and animal species.

Therefore, short-term and long-term impacts on biological resources from the Proposed Action would be negligible or minor, and would not be significant.

Cultural Resources (EA § 4.7, page 4.7-1)

No known archaeological resources eligible for listing in the National Register of Historic Places (NRHP) identified at the candidate installations would be directly or indirectly affected by implementation of the Proposed Action. Given prior land-disturbing activities conducted on and around site alternatives, unanticipated discoveries are not likely, and the potential for unearthing previously undocumented resources is low to moderate. In the event of inadvertent discoveries of undocumented cultural resources, ground-disturbing work would stop immediately and policies in the selected installation's Integrated Cultural Resources Management Plan would be implemented to preserve and document the discovery, thereby ensuring that impacts would not be significant.

No identified NRHP-eligible buildings would be directly affected by implementation of the Proposed Action. Physical alterations proposed for unevaluated buildings in Interim Site Alternative 1 at Vandenberg AFB would be limited to interior renovations. Therefore, no significant direct impacts on the historic built environment under any of the proposed interim and permanent site alternatives are anticipated.

No buildings at Buckley AFB, Schriever AFB, Peterson AFB, and Vandenberg AFB that were considered for potential visual or other indirect effects appear to be eligible for the NRHP. Building 4381 at Redstone Arsenal has been extensively modified and is separated from Interim Site Alternative 2 by a forested area. Therefore, Building 4381 would not be indirectly affected by implementation of Interim Site Alternative 2.

The Air Force has proposed the preparation of a project-specific Programmatic Agreement (pPA) to the Colorado State Historic Preservation Officer (SHPO) as allowed for in 36 CFR 800.14(b)(1)(ii) "when effects on historic properties cannot be fully determined prior to approval of an undertaking." If a site alternative in Colorado is selected for implementation of the Proposed Action, the pPA would commit the Air Force to conducting additional Section 106 consultation following signature of the FONSI (if appropriate based on the analysis presented in the EA), but prior to beginning construction of the proposed facility. The Colorado SHPO has concurred that a pPA for the Proposed Action is appropriate, and agreed to participate in its development.

The Alabama and California SHPOs will be provided with a copy of the Draft EA for review and comment during the 30-day public comment period.

As of 2019, no Traditional Cultural Places, sacred sites, or items of cultural patrimony have been identified at any of the proposed interim and permanent sites. Consultation letters were sent in May and June 2019 to federally recognized Native American tribes with historic affiliations to the geographic areas of Redstone Arsenal and the Colorado candidate installations. To date, three tribes have requested to be a consulting party to the Proposed Action. Letters announcing the availability of the EA and Draft FONSI for public review will be sent during the 30-day public comment period to all federally recognized tribes initially consulted in May and June 2019.

Therefore, through ongoing consultation and adherence to applicable cultural resource management policies at the selected installation(s), the Proposed Action would have no or negligible impacts on NRHP-eligible archaeological and architectural resources, or on areas of tribal concern. Impacts would not be significant.

Geological and Paleontological Resources (EA § 4.8, page 4.8–1)

Construction of the Proposed Action would have the potential to disturb soils and alter topography on the selected interim and permanent sites. The extent of ground disturbance from site preparation associated with the proposed interim and permanent facilities would vary depending on the sites that are ultimately selected. Such disturbance from an interim alternative involving the use of modular buildings would be minimal relative to construction of the proposed permanent facility. All interim and permanent site alternatives are previously disturbed; do not contain pristine or unique soils; and are not considered Prime Farmland. Soils exposed on the sites for extended periods would be revegetated to prevent or minimize erosion by wind and water. Clean fill soils with properties supporting the proposed construction would be imported to the selected sites as necessary to supplement or replace soils considered unsuitable for development. Soils containing hazardous substances exceeding applicable regulatory thresholds (e.g., petroleum constituents) would be removed from the selected sites and transported to licensed disposal facilities outside the installation(s) for disposal.

Ground-disturbing activities on the selected interim and permanent site alternatives would alter existing topography to provide level construction surfaces. The extent of alteration would vary based on the site(s) that are ultimately selected; however, all of the proposed interim and permanent sites are relatively flat, previously disturbed, and do not contain unique, pristine, or noteworthy topographic features. The selected interim and permanent sites would be regraded as necessary to achieve positive surface drainage post-construction.

The extent and nature of effects on subsurface geology from construction of deep foundations for the permanent facility would be determined by site-specific soil properties and depth to bedrock. Geotechnical studies would be conducted following selection of the permanent site to determine the extent of foundation support required. No unique or noteworthy geologic strata would be affected, because none are present under any of the permanent site alternatives. Excavation associated with construction of the proposed interim facility would be relatively shallow (i.e., no more than a few feet at most), and would have no potential to affect underlying geologic strata.

All ground disturbance associated with the Proposed Action's construction phase would be limited to the selected interim and permanent sites, and discrete areas of the respective installation(s) where associated infrastructure and/or road improvements would occur. Ground disturbance would be proportionate to the scale of the facilities being constructed, and would not be particularly unusual in the context of facility construction projects of similar type and scale that occur with relative frequency at each of the candidate installations.

If an interim and/or permanent site alternative with a higher likelihood for paleontological resources to be present is selected for the Proposed Action, additional surveys for such resources would be conducted prior to ground-disturbing activities, as determined necessary through coordination between the Air Force and the selected installation(s). In the event of inadvertent discovery of previously undocumented paleontological resources during construction of the proposed facilities, all ground-disturbing work would immediately stop, and procedures specified in the selected installation's Integrated Cultural Resources Management Plan would be implemented to preserve and document the discovery.

Interim site alternatives only involving the use of existing, vacant office space (i.e., Redstone Arsenal Interim Site Alternative 1) would have no potential to disturb geological or paleontological resources.

The Proposed Action does not involve mineral extraction or the ongoing disturbance of geological or paleontological resources. Soils not built on or otherwise developed would be revegetated to minimize or prevent continued erosion. The proposed permanent facility, and to the extent possible, the proposed interim facility, would be built in accordance with seismic reinforcement requirements applicable to the selected locations.

Therefore, short-term impacts on geological and paleontological resources from the Proposed Action would be negligible or minor, and would not be significant. There would be no long-term impacts.

Water Resources (EA § 4.9, page 4.9–1)

Construction and operation of the Proposed Action would not involve redirecting, channeling, damming, draining, spanning, or withdrawals from surface waterbodies; withdrawals or intentional discharge or injection of pollutants to groundwater; or disturbance of the 100-year floodplain.

Contractors would adhere to site-specific erosion and sediment control plans, Stormwater Management plans, and SWPPPs, in accordance with applicable Fed-

eral, State, and local regulatory requirements, including the applicable requirements of each installation's National Pollutant Discharge Elimination System permit, to minimize concentrations of sediments and pollutants in stormwater discharged from the construction sites, and corresponding degradation of water quality in receiving waterbodies.

All areas of the sites not built on, paved, or otherwise developed would be revegetated in accordance with the selected installation's landscape design and planting guidelines; or would otherwise be maintained in a permeable condition to minimize or eliminate the potential for further impacts from erosion of exposed soils and degradation of downstream water quality.

Potential increases in stormwater volume generated on the proposed interim and permanent sites resulting from an increase in impervious surface would be managed in accordance with the policies and requirements of the selected installation's SWPPP and other applicable policy documents, thereby ensuring that runoff from the proposed facilities would have no potential to contribute to exceedances of water quality thresholds in receiving waterbodies. Stormwater management infrastructure on or near the selected permanent and interim modular site alternatives would be installed or upgraded as necessary to account for any additional stormwater volume generated by the proposed facility. Incorporation of low-impact development measures in accordance with Section 438 of the EISA would maintain the pre-development hydrology of the site to the maximum extent technically feasible, further minimizing impacts.

Hazardous materials and hazardous waste used and generated, respectively, during construction and operation of the Proposed Action would be managed in accordance with label directions and the selected installation's applicable policies, including those specified in its Hazardous Waste Management Plan and Spill Prevention, Control, and Countermeasures Plan, thereby minimizing or preventing the migration of hazardous substances to groundwater or receiving surface waterbodies. Adherence to these requirements would prevent or minimize the potential for accidental spills or releases of hazardous substances.

Therefore, short-term and long-term impacts on water resources from the Proposed Action would be negligible or minor, and would not be significant.

Cumulative Impacts (EA § 4.13, page 4.13-1)

The Proposed Action analyzed in this EA would have short- and long-term, negligible or minor cumulative impacts on transportation, hazardous materials and waste, air quality, biological resources, cultural resources, geology and soils, and water resources. It is anticipated that impacts on those resources from Federal and non-Federal projects of similar type and scale occurring on and near the selected installation(s) would be similar. Short-term, beneficial cumulative impacts on socioeconomics would occur at all installations except for Vandenberg AFB, which would experience long-term, potentially significant cumulative impacts on socioeconomics and environmental justice due to collective demand on housing. Impacts on environmental justice communities near Vandenberg AFB, if selected for implementation of the Proposed Action, would require mitigation by the Air Force; it is anticipated that such impacts from similar Federal and non-Federal projects on and near Vandenberg AFB would be similarly mitigated through conditions of development granted by Federal, State, and local regulatory authorities.

MITIGATION AND ENVIRONMENTAL MANAGEMENT ACTIONS

The Proposed Action would potentially have significant adverse impacts on socioeconomic conditions and environmental justice populations near Vandenberg AFB if that installation is selected for implementation. Therefore, the Air Force will incorporate one or more of the following mitigation measures in the Proposed Action to ensure such impacts remain less than significant if the Proposed Action is implemented at Vandenberg AFB:

- Develop a plan for identifying and tracking locally available housing options that can help to meet the demand associated with new (out of region) personnel assigned to support long term operations of the proposed action;
- Continue to dedicate staff resources to assist new (out of region) personnel in securing housing;
- Work to identify persons currently living in the region to meet some level of the operational staffing needs; and/or
- Collaborate with public (e.g., cities) and private (e.g., developers) entities in the region that have the capacity and desire to develop new housing.

As stated in the CEQ regulations at 40 CFR 1508.14, this potentially significant socioeconomic impact would have no interrelated physical environmental effects, and therefore would not require, in and of itself, the preparation of an Environmental Impact Statement.

There would be no significant impacts on other resources analyzed in the EA. Therefore, mitigation measures for impacts on those resources would not be required.

To prevent or minimize potential adverse effects on special-status species from the Proposed Action, vegetation clearing required on the selected sites would be conducted outside applicable TOY restriction periods to prevent the removal suitable habitat. Species surveys would be conducted prior to construction if special-status species are suspected to be present on the selected sites, and vegetation clearing must be conducted during TOY restriction periods. If special-status species are determined to be present, mitigation or avoidance measures would be developed through additional consultation with U.S. Fish and Wildlife Service and/or other Federal and State regulatory agencies.

CONCLUSION

Based on the provisions set forth in the Proposed Action, the proposed activities were found to comply with the criteria or standards of environmental quality, and coordinated with the appropriate Federal, State, and local agencies. The attached EA and a draft of this Finding of No Significant Impact (FONSI) were made available to the public on 24 July 2019 for a 30-day review period.

FINDING OF NO SIGNIFICANT IMPACT

After review of the attached EA, prepared in accordance with the requirements of NEPA; CEQ regulations; and 32 CFR Part 989, Environmental Impact Analysis Process, and which is hereby incorporated by reference, I have determined that the Proposed Action would not have a significant impact on the quality of the human or natural environment with the incorporation of applicable mitigation measures. Accordingly, an Environmental Impact Statement will not be prepared. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the U.S. Air Force. The signing of this FONSI completes the environmental impact analysis process.

Michelle A. Linn, GS-15,
DAFC Chief, Engineering Division.
Command Civil Engineer.

Date

Attachment:

Environmental Assessment for Construction and Operation of USSPACECOM Headquarters Facility, Multiple Department of Defense Installations, United States.

Senator TUBERVILLE. Thank you.

Chairman REED. Thank you, Senator Tuberville.

Senator Peters, please.

Senator PETERS. Thank you, Mr. Chairman, and gentlemen, thank you for being here today, for your testimony, and thank you for your service.

General Dickinson, your posture statement provided a very detailed account of the significant progress that SPACECOM has made with some partners and allies all over the world. The illegal and unjust Russian invasion of Ukraine has certainly renewed NATO's sense of purpose. I think we would all agree on that. It is very encouraging to see, and it has driven some of our key allies to make some sorely needed changes, I think, in their security posture.

My question for you, sir, is with this increased appetite for defense cooperation around the free world, what should we be doing in the coming years to expand on this even more in the space domain?

General DICKINSON. Thank you. That is one of the highlights in the Command, I think, over the last 2, 2½ years, is our ability to work with our allies and partners. It has really, quite frankly, exploded in terms of our partners coming to the table and wanting to be part of the efforts that we are working around the world. An example is our Combined Space Operations group that we have called CSpOC, just signed a vision statement that came out a couple of weeks ago. But that is an example of the growing, if you will, the expansion of our partnership.

Just as an example, there are three different countries right now that have actually stood up their own version of U.S. Space Command. So the enterprise itself is growing, and the willingness to work is just like we have seen in other domains, for example, so air, land, and sea. But they are really coming and we are working closely together, and it is probably, when you look at our integrated deterrence strategy, one of the pillars of that is being able to leverage our allies and partners in not only situations we are seeing today but ones that we do each and every day.

Senator PETERS. Great. Great. General Dickinson, as you know, on March 3rd, Russia stated that they will withhold delivery of the RD-180 engines that are used by some United States defense industries as part of the Atlas V launch system. While it certainly appears that this development will not significantly hinder any launching operations, I think it certainly underscores the importance of supply chain integrity. Semiconductors, for example, are a known liability all across the many domains.

So my question for you, sir, is are there additional space-specific material or technologies supplied by either Russia or China that could result in degraded military readiness, if withheld?

General DICKINSON. Not that I am aware of.

Senator PETERS. Great. Admiral Richard, you indicated in your posture statement that while STRATCOM academic alliance is an excellent asset, with over 70 academic and industrial partners, quote, "It is only a fraction of what is needed to reinvigorate research and analysis for deterrence concepts," end of quote.

My question for you, sir, is what additional ways can we leverage the power of American and allied defense industry and academia to maintain our strategic edge?

Admiral RICHARD. Senator, first, beyond the academic alliance what we did at STRATCOM was put together an analytic agenda. What are the key questions that we need research done on—three-party deterrence dynamics would be an excellent example of that—so that we can harness the power of the Department of Defense, and the Nation more broadly? Think your UARCs, your FFRDCs [Federally Funded Research and Development Centers], other places where we can do that.

But even that, this is bigger than one combatant command. I think this is a broader Department of Defense or national issue. I am reminded, this Nation invented the entire Rand Corporation to do not much more than think through deterrence back in the Cold War. We face an even bigger problem. I think it is going to need an equivalent national-level response.

Senator PETERS. Great. Great. Well, I agree. Admiral Richard, you outlined how establishment of the Joint EMS Operation Center

will facilitate joint electromagnetic spectrum operations throughout the Department of Defense and combatant commands. But as the electromagnetic spectrum is just as vital in terms of homeland security, how do you see the Joint EMS Operation Center working with non-DOD agencies as well?

Admiral RICHARD. Senator, first, I applaud where my Department is going in understanding the importance of electromagnetic spectrum and the fact that we cannot take it for granted anymore. It is a contested, congested space. There is an EMS superiority strategy that our Secretary just signed out. We are responsible for a piece of it. You are hitting on that. We are the operational proponent, and so first we work to make sure that the standards and certification inside the Department in our forces are sufficient. We are moving out on that. We provide support, and we are doing that right now, in electromagnetic spectrum operations.

But fundamentally what I do is come back in and provide the operational consequence of programmatic decisions. Those changes those decisions to our benefit.

Senator PETERS. Great. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Peters.

Senator Scott, please.

Senator SCOTT. Thank you, Chairman. First of all I want to thank both of you for your clarity and for your commitment to the freedoms of this country.

So Admiral Richard, as we all know we are in a position where we have to deter two nuclear-armed, great power adversaries, Russia and China. First off, based on the funding you received and based on how the Congress has been acting since you have had this job, do you feel comfortable that Congress has your back that we are going to provide you the resources that you are going to be able to deter both Russia and Communist China?

Admiral RICHARD. Senator, first, I would applaud my Department because over the course of my tour we are now able to say, and I expect this in the next budget, but the last one was one of the first ones we could say not only was the strategic deterrent forces fully funded, so was the nuclear command and control, which are the two pieces inside the Department of Defense. We are going to need to continue to do that. Additionally, Senator, continue to ask ourselves the question, what additional capability, capacity, and posture might we need to do?

So yes, I think Congress, as you said, "has my back" if we would pass a budget. The budgets are adequate. We just need them enacted.

Senator SCOTT. So right now do you think we have enough capability to prevent Russia and Communist China from intimidating us and our allies?

Admiral RICHARD. Sir, my forces are ready right now to do anything the President asks us to do.

Senator SCOTT. Admiral Richard, you have been watching Putin's statements, and you might not be able to answer all these questions, about his potential use of nuclear weapons. So I have got a couple of questions. The first one is, have you seen any tangible operational changes following Putin's order to increase the readiness of his nuclear forces?

Admiral RICHARD. Senator, I would like to answer that question in closed session, but I will say we have been thinking through this class of problem for years.

Senator SCOTT. Second, given your experience of observing foreign leaders, which would be part of your job, in your personal opinion do you believe America and our allies, especially other nuclear powers, should treat Putin's words and actions as a legitimate indication that he is crazy enough and willing to employ nuclear weapons of any kind?

Admiral RICHARD. Senator, I will go into more detail in the closed session, but I would look to his previous actions to give us a clue as to what his future ones might be.

Senator SCOTT. I see. The things that he said outside his nuclear capability, has he basically followed through?

Admiral RICHARD. Senator, again, I would prefer to answer that in closed session.

Senator SCOTT. Thank you. General Dickinson, is the United States fully treating our outer space as a warfighting domain, and are we developing systems consistent with that policy to combat and be able to defeat Russia and Communist China in their space capabilities?

General DICKINSON. We certainly have seen some activity by both Russia and China over the last few years, going back to 2007 and 2008, when the Chinese destroyed a satellite on orbit, and then just as recently as November, with the Russian Nudol event that occurred. So we can see, at least from our competitor standpoint, they are, in fact, doing testing and development in that domain.

Senator SCOTT. It seems like there are people who are trying to talk about we ought to cooperate with these adversaries, but don't they need to know that we are going to deter and defeat them in space and we have to be willing to do everything we can to be able to beat them?

General DICKINSON. Well, I think, Senator, that each and every day that we are operating in space we are doing that very thing in terms of deterrence.

Senator SCOTT. Do you feel like you have been given the resources to be able to do that?

General DICKINSON. I have the resources that I need to perform my mission today.

Senator SCOTT. So I believe that Communist China and Russia plan to use outer space against us. So what is your biggest concern about their plans, and what do we need to do that we are not doing?

General DICKINSON. Well, it is fundamental, Senator, back to my opening statement when I said in order to be able to articulate what is happening I have got to have exquisite domain awareness, exquisite domain awareness. I need to be able to tell you what I see in the space domain, in terms of space domain awareness, as a critical function of that to be able to interpret what is happening so that I can make recommendations and take actions that I need to.

Senator SCOTT. General Dickinson, I know that Space Force was recently created, but do you feel like you have had sufficient

progress toward integrating these capabilities all across the Pentagon?

General DICKINSON. Senator that is a great question. Our relationship with the Space Force is as you would expect it to be. We have got a very close relationship with General Raymond and his team in terms of being the service that provides most of my capability to the combatant command. We are also working with the other services because they, in fact, have capabilities that I can use in the space domain as well.

So it is really not just the relationship and integration with Space Force. It is across the Department to each one of the services.

Senator SCOTT. Thank you. Thank you, Chairman Reed.

Chairman REED. Thank you, Senator Scott.

Senator Cotton, please.

Senator COTTON. Admiral Richard, last fall, and again today in your opening statement, you referred to a Chinese breakout—"breakout" was your term—of nuclear weapons and capabilities. Could you please explain a little bit more, just in plain English? I am not sure a normal American watching would understand what a "breakout" means. Explain a little more in plain English what you mean and its implications for our security.

Admiral RICHARD. Senator, so first that is not a talking point. I formally informed the Secretary of Defense of that fact last year. There are two components that I can talk about here. I would be happy to go into more detail in closed session.

First is it signals a significant shift in their capability and fundamentally their strategy. China has long been in a minimum deterrence posture, which was consistent with their stated no-first-use policy. They now have significantly more capability than is necessary to execute a minimum deterrence strategy, and enables them now to execute any plausible nuclear employment strategy.

Second is on our side. It drove me to have to take operational actions in response to a dramatic change in the threat, and I will go into more detail as to what those were in closed session.

Senator COTTON. So despite their so-called no-first-use policy, they are building a nuclear arsenal capable of executing a first strike.

Admiral RICHARD. One, Senator, they have plenty of capability that have no role in a true minimum deterrence strategy, and, in fact, there is no technical difference between a system that is designed to go first or to go second. There are attributes that enable that, but we need to be very conscious of what they could do with it, not what they say they are going to do with it.

Senator COTTON. So I think we should focus on what they are spending and what they are building than rather on what they are saying, because they could change their no-first-use policy like that, could they not?

Admiral RICHARD. Senator, yes, and I put no more credence in that than I did in the Soviet Union's no-first-use policy.

Senator COTTON. All right, Admiral. Earlier this year, media reports suggested that the Biden administration wanted to cut two nuclear systems from America's arsenal. These were so-called non-strategic nuclear weapons, weapons with smaller explosive yields,

designed often to be used against military formations. Is this reporting accurate? Were there discussions to cut the Whiskey 76-2 and the sea-launched cruise missile, also known as the SLCM?

Admiral RICHARD. Senator, all the capabilities in our deterrence portfolio were examined inside the Nuclear Posture Review (NPR). Those are included in that, and I look forward to the results of the NPR to see what the decisions were.

Senator COTTON. When is the NPR going to be released?

Admiral RICHARD. Senator, I would have to defer you to OSD for that answer. But I do want to make a point about those capabilities in particular, which is every capability that is in the U.S. arsenal is therefore a reason. It is designed to produce an effect against an assessed threat. If we do not have a capability, the threat that drove it to be there still exists, and so we either as a Nation have to choose to take the risk that we can achieve that effect or we have to go find another way to go do that, and that is something we are going to continue to have to do, even after we finish the Nuclear Posture Review. I can give you more details, sir, in closed session.

Senator COTTON. Thank you. I agree with that, and I agree that we are, to a degree, self-detering while we are letting Russia run wild on non-strategic nuclear weapons, yet we are considering cutting our own.

I want to turn to the cancelled test in recent days. Admiral, it is correct that we have routinely conducted unarmed tests for our Minutemen-III missiles and that we give Russia advance notice to those tests. Correct?

Admiral RICHARD. Senator, that is correct, for a long time.

Senator COTTON. They are routine. They are scheduled well in advance. Correct?

Admiral RICHARD. Yes, they are, sir.

Senator COTTON. We cancelled one of those in the last week. Correct?

Admiral RICHARD. Senator, we rescheduled it.

Senator COTTON. So let me ask you this. These tests are a critical part of keeping our nuclear deterrent healthy and viable. Right?

Admiral RICHARD. Senator that is a 50-year-old weapon we are talking about. I need those tests, and actually I want to acknowledge they are Air Force tests, for us to maintain confidence in the reliability.

Senator COTTON. So you can say we rescheduled it, but there is a detailed and longstanding testing schedule. So what we really did was cancel it. Did we cancel that test because we did not want to, quote/unquote, "escalate with Russia"?

Admiral RICHARD. Senator, we are trying very hard not to send any escalatory signals at this point. My recommendation, in general, has been to maintain our routine, normal, scheduled operations. I think we are all very familiar, and that is the best posture for us to be in. We very carefully think through those to maintain our readiness and to maintain our training, and demonstrate that. So my recommendation overall is that we maintain that cadence.

Senator COTTON. I am glad you recommended that. Do you know who, above your rank, decided not to accept that recommendation of this test?

Admiral RICHARD. Senator, I would like——

Senator COTTON. Was it the Secretary or——

Admiral RICHARD.—to maintain private my specific recommendations in this case.

Senator COTTON. Okay. I will just say that there is nothing escalatory about longstanding, long-scheduled, routine tests that Russia knows about in advance, and it is just another example of how we have mistaken actions that would have de-escalated this situation rather than escalated it. This is not within your combatant command, but if we had been sending all the missiles to Ukraine over the last five months that we had been sending on an emergency basis for the last two weeks, I know that some people fear that that might cause Vladimir Putin to invade Ukraine, but how foolish does that look now? I think it also is a bad signal not to continue our routine nuclear testing.

Chairman REED. Thank you, Senator Cotton.

Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman. Thank you, gentlemen, both for being here. Thank you for your service as always. Admiral, if I could start with you, just a basic question here. You were just testifying to Senator Cotton. China is a nuclear power, right?

Admiral RICHARD. A near-peer.

Senator HAWLEY. Russia is a nuclear power.

Admiral RICHARD. Yes, sir.

Senator HAWLEY. You were just amplifying to Senator Cotton your testimony about China being in the midst of a strategic breakout. We see Vladimir Putin making now explicit nuclear threats. Is this a good time to weaken our own nuclear deterrent?

Admiral RICHARD. Senator, recapitalization of what we have today is the absolutely minimum that we need to do, and we are going to need to further ask ourselves if any else in posture capability and capacity is warranted based on change in threat and what we are learning out of crisis deterrence dynamics right now.

Senator HAWLEY. Absolute minimum, you testified. I think that is very important. Am I right in thinking that our nuclear forces remain the bedrock of our strategic deterrent?

Admiral RICHARD. Not only our strategic deterrent, Senator, but it is integral and foundational to integrated deterrence.

Senator HAWLEY. Including our ability to project power and to manage escalation beneath the nuclear threshold. That is what you are talking about, I think.

Admiral RICHARD. Senator, no other plan or no other capability in the Department of Defense is going to work if I cannot maintain strategic and nuclear deterrence.

Senator HAWLEY. Very good. Let me ask you about something you wrote in your testimony. You said prioritizing the crucial NNSA infrastructure modernization programs is the best and only option to pace projected threats and sustain strategic deterrence. We have got, in my state, in the state of Missouri, we have got the

Kansas City National Security Campus which supports the nuclear deterrent. We are very proud of that.

Can you explain why it is important for us to fully fund NNSA infrastructure modernization?

Admiral RICHARD. Senator, we have reached the point where we can no longer deter with the leftovers of the Cold War. We have life-extended them to the maximum extent possible. We must now start to recapitalize, remanufacture those. That requires a very robust infrastructure. We are 10 years behind the point where we needed to start recapitalizing the infrastructure, and that is NNSA and actually the rest of the complex. The consequence is we simply will not have the capabilities that we are going to have to have to deter the threat environment we are in.

Senator HAWLEY. Very good. Thank you for that. You told me—switching back to China, Admiral, you said during an appearance before this committee in 2019, to me, that China had the capabilities required to threaten or to actually use nuclear strikes to compel the United States to surrender in a potential war over Taiwan. We know that since then China has continued, and you just testified to this, China has continued to develop its nuclear forces in theater, and Chinese strategists are showing interest in changing their doctrine and also in the need for lower-yield nuclear weapons in order to increase the deterrence value of China's force.

Is it fair to say that China's ability to engage in limited nuclear employment at the theater level is growing?

Admiral RICHARD. Senator, not only yes, if you will ask me that in closed session I will give you a very vivid example of what that could do to us.

Senator HAWLEY. Very good. If you could just explain for us, why are limited nuclear options like, for instance, the supplemental capabilities endorsed by the 2018 Nuclear Posture Review, why are those so important for deterring China or, for that matter, any other adversary that wants to use non-strategic nuclear weapons to coerce us?

Admiral RICHARD. Limited nuclear use is deterred differently than the way you deter the classic large attack, and it is designed to make sure that the opponent does not think that there is some threshold below which they could use the nuclear effect, leaving us with a disproportionate response that ultimately winds up self-detering us.

Senator HAWLEY. Very good. General, let me switch to you, just in the time I have remaining here. Thomas Shugart, an analyst, and others have shown that the PLA is preparing to engage in a large-scale, pre-emptive strike operation at the outside, or would be prepared to engage at the outset of any conflict over Taiwan that we may find ourselves in, in an attempt to cripple our ability to project power in the Western Pacific.

It seems to me we have got to assume Beijing may be incentivized to strike pre-emptively in space as well, which brings me to my question. What are the most important things that Congress can do this year to support SPACECOM's efforts to bolster the resilience of our architecture in space over the next 5 years?

General DICKINSON. Thank you, Senator. So it boils down to, and Admiral Richard touched on it, is that predictable funding. So

when I look at the size of the enterprise and the requirements and capabilities that we need, it all boils down to having a consistent stream of funding that will allow the Space Force and the other services to provide the capabilities that I will need.

Senator HAWLEY. Very good. My time has expired. Gentlemen, thank you both again for your testimony. Thank you for your service to this country.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Admiral. Thank you, General. The open portion of this hearing will adjourn, and we will reconvene in SVC-217, in approximately 15 minutes, and that would be 11:50 by my watch, roughly.

This portion is adjourned.

[Whereupon, at 11:36 a.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEANNE SHAHEEN

NATIONAL GUARD IN SPACE

1. Senator SHAHEEN. General Dickinson, the Fiscal Year 2022 National Defense Authorization Act asks for additional information from Department of Defense about the establishment of a Space National Guard. When do you plan to brief the Senate Armed Services Committee on the results from the report?

General DICKINSON. National Guard and Reserve members are an invaluable part of our team, with representatives throughout our Headquarters, and within our components. The industry experience that National Guard members bring to the command is invaluable. For specifics on how best to organize the space-oriented Reserve component, and the results reflected in the subject report legislated in the fiscal year 2022 National Defense Authorization Act, I would defer to the Office of the Secretary of Defense (OSD). Additionally, the Secretary of the Air Force and Chief of Space Operations are better suited to describe the organization of the force.

HEADQUARTERS RELOCATION

2. Senator SHAHEEN. General Dickinson, in your statement, you mentioned U.S. Space Command reached initial operational capability in August. To reach full operational capability, U.S. Space Command will have to establish and fully staff its headquarters. What challenges do you foresee in fully-staffing U.S. Space Command to reach “full operational capability” if the headquarters is moved?

General DICKINSON. Currently, my biggest challenge to reaching full operational capability comes from the need for a final decision on the permanent location of my Headquarters. We can staff the Headquarters with fully qualified personnel and execute our mission no matter where we are ultimately based. The sooner that decision is in place, the more significant progress we will make toward full operational capability.

3. Senator SHAHEEN. General Dickinson, would you please clarify estimates as to when U.S. Space Command would reach full operation capability if it was decided the command will remain in Colorado? If the command were to relocate to Alabama?

General DICKINSON. I anticipate USSPACECOM will reach full operational capability, assuming appropriate resourcing, approximately two to 3 years after we are established in our Headquarters location regardless of where the final basing decision puts us. In the meantime, we will continue effective mission execution as we build toward full operational capability.

4. Senator SHAHEEN. General Dickinson, do you have an estimate as to how many civilian employees you project to lose if the command is relocated to Alabama?

General DICKINSON. Our current civilian employees have chosen to live in Colorado Springs. If the final basing decision is elsewhere, we would prefer they moved with us. But until we have a final basing decision and can announce it to our civilian workforce, we will not have an accurate estimate of how many would choose to relocate.

SPACE CONGESTION

5. Senator SHAHEEN. General Dickinson, as space congestion continues to grow and close calls are becoming more likely, are there plans to update the collision screening and notification criteria and who leads the updating of that criteria? When was the last update to the criteria collision screening and notification criteria?

General DICKINSON. I look forward to the Department of Commerce (DOC) taking on the mission as they establish their new space traffic management capability for civil conjunction analysis and messaging, allowing the military members of the team to more directly focus on Space Domain Awareness (SDA). Currently, the collision screening and notification process is an enterprise-wide effort led by USSPACECOM in close coordination and partnership with NASA. One of my functional component commanders, the Commander of the Combined Forces Space Component Command (CFSCC), has the delegated authority to define emergency-reportable screening and notification criteria for predicted collisions. The CFSCC Commander last updated these criteria in 2016 based on interagency, commercial, and multinational feedback. Since 2016, CFSCC, implemented continuous process improvements to reduce latency and provide more actionable data in coordination with both our interagency and industry partners.

6. Senator SHAHEEN. General Dickinson, in your testimony you spoke about U.S. Space Command working with NASA on space congestion and debris issues. Would you please elaborate on how U.S. Space Command works with NASA and other relevant agencies, like the Department of Commerce, to address space congestion and debris issues?

General DICKINSON. NASA is a critical USSPACECOM partner in mitigating space congestion and debris challenges, and as Vice President Harris described in comments at Vandenberg SFB, space debris presents a large risk to the safety of our astronauts, satellites, and growing commercial presence. The DOD and NASA signed a Memorandum of Understanding in 2005 to foster close collaboration on Space Domain Awareness (SDA) operations, data analysis, system development, data sharing and international collaboration. Today, NASA orbital analysts sit side-by-side with 18th Space Defense Squadron (18 SDS) operators to maintain custody of on-orbit objects. They work closely on refining data and providing actionable and accurate information to space operators. 18 SDS provides a team of orbital safety analysts dedicated to human spaceflight safety who interact directly with NASA Johnson Space Center on the safety of the International Space Station and associated missions. Additionally, as the Department Of Commerce builds its space traffic management capability, USSPACECOM is helping inform development of their processes and practices.

RESPONSIVE LAUNCH

7. Senator SHAHEEN. General Dickinson, can you more details about those plans, your timeline for completing those tasks and how Congress can better support you to bring this capability to operational maturity?

General DICKINSON. Assured access to space remains a top national security priority. Robust launch infrastructure, and responsive launch capabilities are essential to our assured use of space. We are fortunate to have our U.S. Space Force service component, and its subordinate field command, Space Systems Command, focused on developing indigenous military responsive launch capabilities, while also fostering industry's development of the same. Prior congressional action and direction in support of tactically responsive space launch, small satellite constellations, and hybrid space architectures serve to inform this development. We appreciate the continued support from Congress in development of these capabilities, especially as Congress provided the necessary resources to our service components in their responsive spacelift organize, train, and equip responsibilities.

8. Senator SHAHEEN. General Dickinson, can you describe why rapid launch capability can change the cost-calculus of attacking our assets in space?

General DICKINSON. Rapid launch capability is part of the solution to ensuring space domain mission assurance in contested, degraded, and operationally limited conditions. Providing robust reconstitution options increases resilience of the systems necessary for mission accomplishment. Additionally, launch capability complicates domain awareness tasks and raises targeting dilemmas for an adversary. This reconstitution and payload delivery capability raises the level of effort—and thus cost—required for potential adversaries to effectively negate our space capabilities.

9. Senator SHAHEEN. General Dickinson, how would U.S. Space Command make use of responsive launch capability for the warfighting mission in the space domain and what needs to be done to better integrate it into U.S. Space Command's resilient architecture and concepts of operation?

General DICKINSON. Our fundamental objective is to deter conflict in space. Our mission is to protect and defend U.S. and allied space capabilities. Responsive launch capability is key to our ability to do both. Responsive launch complements our resilience efforts through rapid reconstitution of space capabilities and facilitates proliferation, which is important to keep pace with competitors like China and Russia. We further use it to effectively demonstrate advanced capabilities for deterrence purposes. Proliferation in times of war adds resilience to essential capabilities; in times of peace, resiliency is cost imposing on our competitors' attack strategies and key to integrated deterrence. To better integrate responsive launch capability into our space architecture, we collaborate with our service components in establishing requirements, developing operational concepts, and testing and exercising responsive launch capabilities. The key is continued advocacy for these capabilities as critical elements of our assured access to space.

SPACE PROCUREMENT

10. Senator SHAHEEN. General Dickinson, it is critical that the U.S. capitalize on the diverse and robust launch market developing here at home. In the Phase III RFI, industry was asked for information that should be used to modernize the U.S. Space Force's requirements and procurement approach to best match American space lift capabilities with the DOD's mission needs. How can you assure this Committee that the U.S. Space Force will fully review its procurement approach and ensure that it will not create unnecessary barriers to entry or disincentivize industry participation with outdated and overly burdensome requirements?

General DICKINSON. I defer to the U.S. Space Force to address their particular acquisition process, but I agree that finding ways to leverage American commercial strengths is critical to competition in the space domain. American commercial innovation and capability is an asymmetric advantage that our competitors do not possess, and one that we should use to the maximum extent possible.

QUESTIONS SUBMITTED BY SENATOR JACKY ROSEN

U.S. SPACE COMMAND HEADQUARTERS

11. Senator ROSEN. General Dickinson, one of the primary factors for consideration in any basing decision is cost. With regards to establishing a permanent U.S. Space Command headquarters, can you share your cost estimate for standing up a new HQ? Can you clarify whether, in making this basing decision, the Air Force took into consideration as a viable alternative the option of renovating the existing building in which U.S. Space Command is currently operating?

General DICKINSON. The Department of the Air Force (DAF) is leading the USSPACECOM basing decision process. USSPACECOM offered mission and functional requirements to help inform that process. Final selection criteria as well as costs were part of that process, and information on cost estimates which informed the process are the purview of the DAF, and will be part of the GAO and DOD IG inquiry reports.

QUESTIONS SUBMITTED BY SENATOR TOM B. COTTON

COMMAND RELATIONSHIPS

12. Senator COTTON. General Dickinson, I've heard rumors of a contested and potentially destructive relationship amongst the highest echelons of leadership of the United States Space Force and the United States Space Commands. What is Space Command doing to ensure the Space Force can operate with its full scope of Title 10 authorities while establishing a normal relationship with a nascent service?

General DICKINSON. The Nation's newest combatant command, United States Space Command, and our newest branch of the Armed Forces, United States Space Force, are critical partners in deterring conflict in space, and protecting and defending U.S. and allied interests in the domain. The leadership of both organizations understands fully our respective roles as outlined in Goldwater-Nichols, and in the numerous national level directives and guidance we have been given to inform execution of our respective missions. We are dedicated to outstanding execution of those roles. The Chief of Space Operations, General Raymond, and I collaborate closely

and effectively in ensuring our collective ability to provide the National Command Authority with options for ensuring access to the capabilities offered by the space domain. Additionally, our staffs also collaborate daily to achieve mission success.

13. Senator COTTON. General Dickinson, do you believe the United States Space Force can successfully organize, train, and equip forces to provide Space Command with the operational capabilities Space Command requires to execute its mission? If not, would you support transferring additional manning and resources to the United States Space Force from other services or Defense Department Agencies?

General DICKINSON. Although the United States Space Force (USSF) is a new service, it leverages nearly four decades of experience in organizing, training, and equipping space forces and capabilities in its previous form as Air Force Space Command. Under its new structure, appropriate for the new strategic environment, the USSF is rapidly adapting and applying its force presentation in response to new USSPACECOM requirements, and those of the other combatant commands. As those requirements evolve, so too should the force structure of our largest space capability provider.

DUPLICATION OF EFFORTS

14. Senator COTTON. General Dickinson, some concerns have been raised about the confusion and overlap between the United States Space Force and United States Space Command. You testified that you consider yourself “a customer” of the United States Space Force. Could you please explain what capability the Joint Integrated Space Teams provide that aren’t otherwise available from the service components?

General DICKINSON. We designed USSPACECOM’s Joint Integrated Space Teams (JIST) to integrate space into all combatant commands, especially into the front end of operations, intelligence, planning, and executing, through education, integration, advocacy, and communication of all space-related activities that pertain to our Unified Command Plan-assigned roles and responsibilities, both in USSPACECOM’s supporting, and supported functions. As an example, our JIST intelligence professionals link the USSPACECOM J2 and Joint Intelligence Operations Center to the other combatant commands. Given the United States Space Force (USSF) is a close and critical partner of USSPACECOM, we work diligently to ensure that we are not duplicating efforts. In support of this effort, USSPACECOM and USSF signed a “Joint Space Integration Terms of Reference” on 17 September 2021 to codify and differentiate the roles and responsibilities of the JISTs and the Space Force Service Components supporting other combatant commands. Overall, JISTs synchronize across combatant commands and enable globally integrated deterrence and other operations, while combatant command service components integrate capability inside their theater of operations.

15. Senator COTTON. General Dickinson, in addition to overlap of authorities relating to the utility and potential duplicity of Joint Integrated Space Teams, I’m concerned about the duplication of efforts regarding space-related acquisitions. Could you explain the differences of Space Command’s needs which necessitate the demand for acquisitions professionals of its own, rather than providing requirements gaps to the services?

General DICKINSON. Acquisitions professionals in USSPACECOM are primarily program analysts developing, assessing, and overseeing capability requirements and operational capability employment. Our small staff of acquisitions professionals help identify, define, assess, and prioritize requirements to fill operational gaps. USSPACECOM then provides those operational requirements to the services for incorporation into their organize, train, and equip processes. USSPACECOM has an even-smaller set of acquirers whose focus is on contracting, purchasing, and budgeting for the headquarters and subordinate forces, capabilities that are inherent in every military organization.

OVER-CLASSIFICATION

16. Senator COTTON. General Dickinson, the fiscal year 2022 NDAA required a report on the over-classification of space-based capabilities. I am concerned that the fear of disclosure is damaging readiness by not allowing forces away from the Headquarters to adequately train. I’m worried that our exercises preclude training that uses all the tools available because they’re unaware of a capability’s existence or some participants in exercises are unable to share a capability with other participants due to compartmentalized information restrictions such as Special Access Programs. I understand the importance of concealing some exquisite capabilities or particularly damaging vulnerabilities, but could you explain how you are preventing fu-

ture over-classification of capabilities and streamlining the access to capabilities for warfighters in your command for day-to-day training and large-scale exercises?

General DICKINSON. We agree with your concerns and will continue to advocate for broader access to classified capabilities so that our warfighters can more effectively plan, train for, and execute space domain operations for the Nation. USSPACECOM works with all services, components, and the intelligence community to review classification protocols to ensure we operate all capabilities at the lowest classification possible while still protecting any technology or operational vulnerability. USSPACECOM is assisting our partner organizations in striking the delicate balance of information sharing with external organizations, partners and allies while still protecting it appropriately when national security demands doing so. For exercises, we are working to ensure that we train and exercise at the appropriate level for the target audience in order to adequately train and prepare our forces.

DEFENSE OF ORBITAL ASSETS

17. Senator COTTON. General Dickinson, I believe that space is a warfighting domain. In that vein, could you please explain why we are leaving our expensive and exquisite space-based assets undefended from kinetic interference from ground-launched or space-based threats?

General DICKINSON. Challenges to our operations in space are rapidly increasing. Generally, defending our assets in space is more complicated than defending assets in other domains. Our Area of Responsibility begins 100km above mean sea level and extends out indefinitely. Physics, the challenge of orbital mechanics, lack of traditional resupply capability, adversary actions, and a number of other challenges make it difficult to defend our on-orbit assets. We compensate for those limitations with proactive and preventative measures informed and enabled by space domain awareness and intelligence, which help us identify, attribute, and discern intent of adversaries engaged in hostile activities. Further, we have equipped many of our satellites with other protection mechanisms including hardening, shielding, mission redundancy, and maneuvering capabilities that help safeguard our capabilities. We then maximize these capabilities through exercises and tough, realistic training.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

MINUTEMAN III TEST POSTPONEMENT

18. Senator SULLIVAN. Admiral Richard, regarding the postponement of a regularly scheduled Minuteman III test last week, during the open session of this hearing you stated, "[m]y fundamental recommendation is that we maintain our normal set of operations. Day-to-day we very carefully craft a series of operations, activities, and other evolutions that are designed to show our readiness, designed to maintain that readiness, and designed to give us confidence in our forces." Given these remarks, did you recommend to the Secretary of Defense to continue with the test as planned?

Admiral RICHARD. Yes.

19. Senator SULLIVAN. Admiral Richard, do you believe canceling a regularly scheduled Minuteman III test like this increases or decreases the deterrence of our authoritarian adversaries?

Admiral RICHARD. In the long term, cancelling a single Minuteman III test will not appreciably affect the deterrence of our adversaries. As I have stated in testimony, USSTRATCOM's forces are ready today. The Nation's nuclear forces underpin integrated deterrence and enable the U.S., our allies, and our partners to confront aggressive and coercive behavior. It is important we maintain our day to day activities necessary for near and long term readiness as well as to demonstrate our will necessary for deterrence.

LOW-YIELD NUCLEAR WEAPON

20. Senator SULLIVAN. Admiral Richard, last Tuesday, in response to Russia elevating the readiness of its nuclear forces, you stated, "I am satisfied with the posture of my forces. I have made no recommendations to make any changes." In your assessment, are we and our allies adequately prepared to respond to Russian employment of a low-yield nuclear weapon?

Admiral RICHARD. USSTRATCOM, along with the other combatant commands, has been studying and training for this type of scenario for years. Specifically, USSTRATCOM is prepared to respond to Russian limited nuclear weapon employ-

ment as directed by the President. Likewise, NATO has stated it is ready to respond against any Russian attack. However, our current capabilities are the minimum essential to prevail against the unprecedented challenges the Nation and our allies face. The situation in Ukraine and China's nuclear trajectory convinces me a deterrence and assurance gap exists. To address this, a low-yield, non-ballistic capability to deter and respond without visible generation is necessary to provide a persistent, survivable, regional capability to deter adversaries, assure allies, provide flexible options, as well as complement existing capabilities. Such a capability with these attributes should be re-examined in the near future.

SPACECOM PREPARATION FOR CONFLICT IN INDOPACOM

21. Senator SULLIVAN. General Dickinson, in your written statement to this Committee in advance of this hearing, you stated that, "PLA writings on doctrine and strategy suggest that reconnaissance, communications, navigation, and early warning satellites could be among the targets to attack, a strategy designed to 'blind and deafen the enemy.'" How is U.S. Space Command working to ensure our forces are adequately prepared and supported to maintain all-domain awareness in the event of conflict with PRC in the Indo-Pacific?

General DICKINSON. USSPACECOM works with all combatant commands to exercise and train our capabilities. Specifically in the Pacific, USSPACECOM will hold a joint, high-level exercise with U.S. Indo-Pacific Command (USINDOPACOM) in fiscal year 2023 that will allow us to work through and refine the supported and supporting relationships between our commands. The exercise will provide opportunities to practice space-related and theater-specific problem sets within USINDOPACOM and extending into the space domain. Similarly, USSPACECOM continues our participation in USINDOPACOM's other exercises, emphasizing and educating warriors across the joint enterprise about space capabilities employed throughout their area of operations against near peer adversaries. Additionally, our professional military education efforts have focused on educating the Joint Force about the challenges in the space domain and why we must train to fight and win in ways that leverage our space capabilities and can overcome challenges if they are degraded.

QUESTIONS SUBMITTED BY SENATOR KEVIN J. CRAMER

TACTICALLY RESPONSIVE SPACE LAUNCH

22. Senator CRAMER. General Dickinson, I'd like to learn more about Tactically Responsive Space Launch. In your testimony to the House Armed Services Committee last week, you said that responsive launch capabilities are part of the requirements and concepts of operation U.S. Space Command is working on to develop a resilient space architecture.

Can you elaborate on what those plans entail—including your timing for completing those tasks—and how the Congress can better support you to bring this capability to operational maturity?

General DICKINSON. Continued launch advancements to improve domestic launch infrastructure are national security priorities and will support responsive space capabilities and requirements. Rapid tactical launch capability must be a part of the Department of Defense's solution to ensure continuity of space operations in contested, degraded, and operationally limited conditions. USSPACECOM works closely with the United States Space Force and its Space Systems Command to narrow the gap between combatant command requirements and our ability to acquire and field tactically responsive launch capabilities. Continued support from Congress for these capabilities will posture the command and the Department of Defense for more secure and assured access to space.

23. Senator CRAMER. General Dickinson, after a successful demonstration launch last year of a "tactically responsive" mission, you said that responsive launch capabilities can deter adversary action in space by changing the cost-calculus of attacking our assets on orbit.

Can you describe in more detail your reasoning for why rapid launch capability is such a deterrent and operational advantage?

General DICKINSON. Rapid launch capability is part of the solution to ensuring space domain mission assurance in contested, degraded, and operationally limited conditions. Providing robust reconstitution options supports resilience of the systems necessary for mission accomplishment. Additionally, launch capability complicates domain awareness tasks and raises targeting dilemmas for an adversary. This re-

constitution and payload delivery capability raises the level of effort—and thus cost—required for potential adversaries to effectively negate our space capabilities.

24. Senator CRAMER. General Dickinson, as the Commander of U.S. Space Command you're in charge of deterring conflict, delivering combat power and defending US vital interests in space. You've spoken about the operational utility of a responsive launch capability to rapidly launch or reconstitute our space assets.

How would U.S. Space Command make use of that capability for the warfighting mission in the space domain, and what needs to be done to better integrate it into your resilient architecture and concepts of operation?

General DICKINSON. Tactically responsive launch will provide USSPACECOM with the capability to replace degraded assets or buttress capabilities as required by the tactical situation. The commercial space industry continues to demonstrate faster capabilities every year. We can learn from, and leverage that level of innovation. The ability to rapidly augment, reconstitute, and replenish our critical space capabilities supports increased resiliency of our architectures and raises the cost imposed on those attempting to degrade our space missions. Building a resilient space architecture capable of rapid reconstitution will help ensure that joint and combined forces receive the space support they need to defend the U.S., allies, and partners.

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

TUESDAY, APRIL 5, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

**UNITED STATES SPECIAL OPERATIONS COMMAND AND
UNITED STATES CYBER COMMAND POSTURE**

The Committee met, pursuant to notice, at 9:30 a.m. in room SD-G50, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, King, Manchin, Rosen, Inhofe, Fischer, Cotton, Rounds, Ernst, Sullivan, Scott, Blackburn, Hawley, and Tuberville.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. Let me call the hearing to order, and for the benefit of my colleagues there is a vote at 10:30, and conferring with the Ranking Member we will recess at 10:30, reconvene at 10:45, so we can promptly get that vote done, and then there will be a second vote later.

Welcome to our witnesses. Good morning. The committee meets today to receive an update on the readiness and posture of U.S. Special Operations Command and U.S. Cyber Command. Our witnesses are Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict Christopher Maier; Commander of U.S. Special Operations Command General Richard Clarke; and Commander of U.S. Cyber Command, National Security Agency Director, and Chief of the Central Security Service, General Paul Nakasone.

I would note that this is likely General Clarke's last appearance before the Committee, and I would like to express my appreciation for your 38 years of service to the Nation, including as the Commandant at West Point and Commanding General of the 82nd Airborne Division, but most importantly 3rd Battalion, 504th Parachute Infantry Regiment. Thank you very much, sir.

On behalf of the committee, I hope our witnesses will convey our appreciation to the men and women you represent, and their families, for their dedication and professionalism.

For the first time since Congress reformed the responsibilities of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict, or ASD SO/LIC, more than 5 years ago, the office has, again, for the first time, a Senate-confirmed Assistant Secretary and a full-time Director of the Secretariat for Special Operations, focused on the advocacy and oversight of special operations forces. These positions are critical to ensuring our special operations forces are trained, equipped, and organized to adequately support our National Defense Strategy. I appreciate the Department's efforts over the past year to institutionalize the role of the ASD SO/LIC, but I remain concerned that the number and expertise of the personnel assigned to supporting the office's "service secretary-like" responsibilities continues to fall short of what is required. I hope the Department will prioritize and accelerate these hiring efforts in the coming months.

The threat from violent extremist groups like ISIS [Islamic State of Iraq and Syria] and al Qaeda, while diminished, remains real and will continue to require the sustained application of special operations capabilities that have been honed over the last 20 years. Additionally, long-term strategic competition with China and Russia as well as the challenges posed by Iran and North Korea increasingly require the tailored and often clandestine capabilities that only our special operations forces can provide.

Following our withdrawal from Afghanistan, the special operations community is at an inflection point. Assistant Secretary Maier, General Clarke, I look forward to an update regarding your efforts to focus and prepare our special operations forces for the challenges ahead. In particular, I would ask that you discuss the capabilities we need to build an enduring advantage over our strategic competitors, how you are shaping the force of the future through recruiting, retention, and building a culture of accountability, and how you are addressing the unique challenges faced by special operations families.

Turning to Cyber Command. General Nakasone, the Commander of U.S. European Command recently testified to the committee about his appreciation for the performance of your command and the National Security Agency prior to and during the Russian assault on Ukraine. Please convey our gratitude to the personnel under your command for their exceptional work.

I also want to commend General Nakasone, the President and his staff, and the leaders of the intelligence community for the unprecedented and skillful release of intelligence over the last several months that exposed Russia's aggressive intentions and deceitful activities. Intelligence officials are understandably cautious about revealing hard-won insights on adversaries, but this current strategy has proven highly effective in strengthening the international community's response and creating dilemmas for Vladimir Putin. This is a great example of competing effectively in the information domain, and I hope we will continue to make this kind of creative use of intelligence information.

General Nakasone, you have been working to mature the cyber force and advance its capabilities to conduct defensive, offensive, and supporting intelligence operations to counter our adversaries. I know that improving the readiness of our Cyber Mission Forces

is your highest priority. For you to succeed, however, the military services must increase their numbers of qualified and trained personnel for this mission set. Compounding this challenge, the private sector has realized the immense value of our highly skilled military cyber operators and is offering them very high compensation to leave the military. The services must adjust accordingly by providing a combination of incentives to retain these personnel. I would note that Senators Manchin and Rounds are holding a Cyber Subcommittee hearing focused on this critical topic this afternoon, and I would welcome your thoughts on the issue, and again, I commend both Senators Manchin and Rounds for their forward-looking and insightful approach to the problem.

Over the past several years, Cyber Command and the NSA [National Security Agency], working jointly, have taken vigorous and sustained actions to defend our elections from foreign interference and malign influence operations. General Nakasone, with the 2022 midterm elections approaching, I would ask for your assessment of our election defense efforts, which you have described as an “enduring, no-fail mission.”

Finally, I would note that, in accordance with changes in the global security environment and President Biden’s heightened focus on the Indo-Pacific region, Cyber Command has shifted a task force to focus on competition with China and has created the China Outcomes Group under senior-level leadership. The work of these organizations will be of keen interest to the committee.

I again want to thank the witnesses for their service and appearance before us today. I look forward to your testimony.

Let me now turn to the ranking member, Senator Inhofe, please.

STATEMENT OF SENATOR JAMES M. INHOFE

Senator INHOFE. Thank you, Mr. Chairman, for welcoming our great witnesses.

As I have said many times, we face a more dangerous and complex set of threats than any time in my life. Just last week, Army Secretary Christine Wormuth said, quote, “this is probably the most dangerous security environment” in her 25 years of service. Well, it is the same with me, except it is more than 25 years.

The Chinese Communist Party announced a 7.1 percent defense budget increase this year, continuing 2 decades of historic military modernization. Every day, they give us more evidence that their goals and interests are fundamentally opposed to ours.

Russia’s invasion of Ukraine has upended European security, North Korea is developing more capable ICBMs [intercontinental ballistic missiles], Iran has accelerated its aggression, and terrorist groups are reconstituting in Africa and Afghanistan.

For our witnesses today, you face challenges across each of these threats. In addition to growing their conventional military capabilities, our adversaries are expanding their use of irregular warfare and cyber to threaten the United States and our partners.

I am still working through the recently released 2022 National Defense Strategy, but I have seen an extensive description of the gray-zone expansion and cyber threats posed by each of our adversaries. But I have not seen much in this budget so far about responding to those threats.

General Clarke, you have the daunting challenge of reorienting SOCOM [Special Operations Command] for a high-end fight, even as you will be stretched thin in shouldering the burden of the fight against terrorism. Like with our Afghanistan withdrawal, I am concerned we are taking too much risk there. Mitigating that risk will largely fall on you and your troops.

General Nakasone, the pace of Chinese advances in cyber is pretty breathtaking, and our other adversaries are also moving fast. We want to make sure you have the resources and authorities you need to maintain or regain your advantage. I definitely want us to do more in cyber cooperation with our allies and partners, so we will have to look at funding for that this year also.

I look to our witnesses to describe how the men and women they lead are postured to deal with this array of threats and what this committee can do to ensure they have the tools necessary to be successful.

So, Mr. Chairman, I thank you.

Chairman REED. Well thank you very much, Senator Inhofe.

Since a quorum is now present I ask the committee to consider the following civilian nominees: The Honorable William A. LaPlante, Jr., to be Under Secretary of Defense for Acquisition and Sustainment; Mr. Erik K. Raven, to be Under Secretary of the Navy; Ms. M. Tia Johnson to be a Judge in the United States Court of Appeals for the Armed Forces; and Dr. Marvin L. Adams to be Deputy Administrator for Defense Programs, National Nuclear Security Administration.

Is there a motion to favorably report these four nominations to the Senate?

VOICE. So moved.

Chairman REED. Is there a second?

VOICE. Second.

Chairman REED. All in favor, please say aye.

[Chorus of ayes.]

Chairman REED. The motion carries. Thank you very much.

Now let me recognize Secretary Maier and then I will recognize General Clarke and then General Nakasone.

Mr. Secretary, please.

You might want to pull that as close as you can get to you. Some of us cannot hear.

STATEMENT OF THE HONORABLE CHRISTOPHER MAIER, ASSISTANT SECRETARY OF DEFENSE FOR SPECIAL OPERATIONS AND LOW-INTENSITY CONFLICT

Mr. MAIER. Thank you, Chairman. Chairman Reed, Ranking Member Inhofe, and distinguished Members of the Committee, thank you for the opportunity to testify on the global posture of our Nation's special operations enterprise, or SOF. I am honored to testify alongside General Clarke and General Nakasone, two of our Nation's most dedicated military professionals.

On a personal note, and reinforcing, Chairman, what you said, I would like to thank General Clarke for his leadership and partnership during his tenure as SOCOM commander during a time of major transformation and strategic importance. I also appreciate

the leadership of Command Chief Master Sergeant Greg Smith, who is here today.

The dedication, service, and sacrifice of our SOF leaders and the SOF community motivates me each and every day to ensure we are doing all we can to provide them the ways and means to win, regardless of the challenge. I would also like to thank Congress, and particularly this Committee, for its steadfast support for our SOF warriors and their families. Since the establishment of SOCOM, our strong partnership with Congress has been instrumental to fielding the world's most capable and elite special operations force.

We continue to make progress in advancing Congress' intent to institutionalize the role of the office I lead, the Special Operations and Low-Intensity Conflict, within the Department, or SO/LIC. Sustaining and enhancing the competitive advantage of the U.S. military, and even more broadly the Nation's capabilities and future fights, depends on our effectiveness to provide the civilian oversight and backing of the SOF enterprise. This group of extraordinary military, civilian, and contractors has proven itself over so many decades to be essential to the U.S. military and strategic success.

In today's increasingly complex security environment, the SOF enterprise provides our Nation's leaders with agile, scalable, and discrete options to address challenges across the spectrum of competition, crisis, and conflict. SOF play an essential role in the National Defense Strategy by holding adversary systems at risk and by enhancing our allies' and partners' ability to resist aggression and malign influence.

Even as we transform the SOF enterprise to meet the challenges of achieving enduring advantage through integrated deterrence and active campaigning, we continue to enhance our capabilities to conduct high-priority counterterrorism crisis response operations. The President's fiscal year 2023 budget request for SOF reflects these priorities in modernizing our maritime capabilities and investing in artificial intelligence and other key technologies. The budget also supports the Armed Overwatch Program to ensure our SOF had the required support in remote and austere environments where they operate.

As reflected in the fiscal year 2023 budget, we continue to invest in the health and well-being of our SOF warriors and their families. Our flagship Preservation of the Force and Families program, or POTFF, complements service-administered programs to address the unique physical, cognitive, psychological, and spiritual health needs of our SOF community.

We continue to prioritize enhancing diversity and inclusion within SOF. Drawing on a diverse set of talents and perspectives is essential to our success in a changing operational environment and to SOF's unique ability to engage and collaborate with allies and partners around the world.

The number of women in our ranks continues to grow, and in the past 2 years the first three women have successfully completed special forces qualification, and last year the first woman qualified as a naval Special Warfare Combatant Crew member, or SWCC. We are proud of these warriors' individual achievements and continue

to actively promote a career in SOF for all who meet our rigorous standards.

Lastly, I would like to briefly mention the war in Ukraine. Among many observations, it serves as a daily reminder of the importance of building the capabilities and resilience of our allies and partners. As we watch the Ukrainians employ a number of elements of irregular warfare against a larger force to great effect, we should internalize the need to continue to grow our own irregular warfare skills and continue to develop and refine irregular warfare options for our Nation's leaders.

Mr. Chairman, thank you again for the opportunity to testify today. I look forward to your questions.

[The prepared statement of The Honorable Christopher P. Maier follows:]

PREPARED STATEMENT BY THE HONORABLE CHRISTOPHER P. MAIER

Chairman Reed, Ranking Member Inhofe, and distinguished Members of this Committee, thank you for providing this opportunity to testify on the global posture of our Nation's Special Operations Forces (SOF) enterprise. I welcome the opportunity to testify with General Richard Clarke, Commander, U.S. Special Operations Command (USSOCOM) and General Paul Nakasone, Commander, U.S. Cyber Command, two of our Nation's most dedicated military professionals and outstanding leaders.

I would also like to acknowledge the support of Congress for the SOF enterprise. Your support and commitment to civilian oversight, both within the Department of Defense (DOD) and here in Congress, ensure we have the world's most capable SOF. Your support enables the men and women of the SOF enterprise to tackle some of the Nation's most challenging problems in austere, chaotic, and dangerous environments.

Today's strategic environment is complex and diverse, with threats across the spectrum of competition, crisis, and conflict compounded by instability resulting from transboundary challenges like pandemics, climate change, and economic stressors. All require SOF, and the entire U.S. national security establishment, to be more adaptive, innovative, and agile than ever before. We are at an inflection point where the SOF enterprise will be called upon to contribute more to counter the challenges of China and Russia, while maintaining enduring capabilities to counter violent extremist organizations (C-VEO) and conduct crisis response to protect Americans and America's interests.

In alignment with the National Defense Strategy and Secretary Austin's priorities, SOF will build enduring advantages, lead and support integrated deterrence operations, and actively campaign with partners. We will do so by continuing to focus on our people, by providing tailored and unique capabilities, and deepening our relationships with Allies and partners. As this and prior Congresses have made clear, our best chance of success lies in a mature civilian-military partnership that is led effectively to be far greater than the sum of its parts.

CIVILIAN OVERSIGHT AS KEY TO AN OPTIMIZED SOF ENTERPRISE

During his confirmation hearing last year, Secretary Austin testified that "the safety and security of our democracy demands competent civilian control of our armed forces" and pledged to empower his civilian staff accordingly. The Secretary actively supports institutionalizing the role of ASD (SO/LIC) in the administrative chain-of-command for USSOCOM as Congress directed. Last May, the Department revised the DOD Directive that explains and validates the ASD (SO/LIC) responsibilities and roles, further strengthening my office's ability to provide civilian leadership, management, and oversight of the organization, training, and equipping of SOF.

Secretary Austin also reaffirmed that the ASD (SO/LIC) will continue to report directly to him as the Secretary of Defense in exercising authority, direction, and control of special operations-peculiar administrative matters, and reiterated his commitment to ensuring that the ASD (SO/LIC) has a seat at the table alongside the Secretaries of the Military Departments in key decision forums, such as his regular Service Secretary meetings, the Deputy's Management Action Group, and the Joint Requirements Oversight Council. In doing so, SO/LIC is positioned to provide

effective and enduring civilian representation of SOF equities and competencies to Department and national leadership.

As you have seen in our monthly section 926 updates, our Secretariat for Special Operations has made progress building the manpower and expertise necessary to conduct meaningful oversight and provide civilian leadership to the SOF enterprise. Though we have made headway, our development remains a work in progress. The Secretariat has increased its expertise and integration with the Department's processes across all of the special operations-peculiar administrative matters. We will reach full potential when we have adequate amount of staff, leadership, and expertise in place to embed in all relevant processes at the required levels of seniority, and adequate facilities and communications to execute our mission. I appreciate your continued support as we institutionalize these reforms.

Additionally, General Clarke and I have worked together to achieve a new level of transparency and collaboration between our organizations. On at least a weekly basis, we review key issues of importance to the SOF enterprise. Further, the SO/LIC leadership team collaborates closely with senior executives and general and flag officers on the USSOCOM staff. This partnership allows SO/LIC to more effectively understand and represent unique SOF requirements, challenges, and capabilities. Perhaps as importantly, it enables us to innovate on the best ways to employ and structure SOF today and for the future.

Our collaboration extends to jointly creating a new SOF Vision and Strategy earlier this year that represents a shared leadership outlook for the SOF enterprise. We are also working on a longer-term vision as we closely collaborate to execute a SOF Force Design 2040. In December of 2021, SO/LIC and USSOCOM initiated the SOF Force Design 2040 to ensure SOF's future force is constructed to address the future threat environment. Through this effort, we will also publish a SOF Operating Concept 2040, conduct a capability gap assessment, and develop a SOF future force structure to implement the operating concept.

Looking toward an optimized force for the challenges of 2040 forces us to think beyond the pressures of immediate operations and also consider what developments might not yet be captured in current strategies. It focuses our exercise and experimentation work so that we continue to innovate where it is beneficial, while sustaining capabilities of enduring value. With this new strategic tool, we will be better positioned to analyze the SOF enterprise, continue to refine the operational vision for future joint SOF, and articulate SOF's ability to deliver global, scalable, and tailorable strategic options that enable U.S. national leaders to manage risk over the near, medium, and long-term. We expect this force design effort to lay the foundation for the long-term direction of SOF, and become the basis for a repeatable and sustainable cycle of reviewing, testing, and experimenting SOF concepts, force structure, and modernization efforts.

SO/LIC's dual role in shaping the Department's policy, in combination with our administrative oversight and leadership and management responsibilities reinforce SOF's role in and contributions to the Department's strategic priorities. With our unique twin roles, we are positioned to ensure key SOF-led capabilities are integrated into strategic concepts, and simultaneously ensure appropriate investments in areas such as irregular warfare, information operations, and undersea capabilities. SO/LIC will ensure SOF concepts and capabilities inform and supports the Department's regional and functional goals. We will also continue to develop the Special Operations Policy Oversight Council to ensure that SOF is able to meet the Joint Force's requirements and clearly identifies the support it needs from the Services.

BUILDING ENDURING ADVANTAGES BY FOCUSING ON OUR PEOPLE

SO/LIC is also partnering closely with USSOCOM to protect and preserve our greatest asset—our people. SOF has always recognized that the foundation of its success lies in its people and the Secretary of Defense established taking care of people as one of his top three priorities. We believe at our core that our single most important enduring advantage against potential adversaries is personnel who are highly trained and motivated to excel in combat arms and in problem solving with partners. Continuing to recruit and retain the most diverse and talented Americans for SOF is essential. Over the last decades we have asked much of these warriors and their families. We are motivated by our enduring commitment to the well-being of SOF personnel and families who have repeatedly faced the strains of combat and repeated deployments while facing some of the Nation's most challenging operational problems. We also recognize that the future operational and strategic environment will not be the same as the past and we must prepare the force for those challenges.

Together with senior leadership from USSOCOM, I regularly review the health and readiness of our special operations workforce. With Office of the Secretary of Defense, Personnel and Readiness, we ensure SOF are integrated into efforts to better quantitatively model the impacts of force management decisions on readiness and consider their cross-cutting strategic impacts.

We continue to invest in the resiliency of SOF by taking a holistic, whole-person approach to the well-being of personnel and their families. With the strong support of Congress, SOCOM is strengthening the Preservation of the Force and Families (POTFF) program to address SOF-unique challenges and to optimize physical, psychological, cognitive, social, and spiritual performance. POTFF, through a combination of USSOCOM, Service, and Department resources, ensures we are able to meet the unique needs in individual SOF components and units. The POTFF's embedded service providers have broken the stigmas historically associated with those seeking psychological health support and have provided preventative care to avert potential suicides during the COVID-19 pandemic. We appreciate Congress' support through Section 561 of the National Defense Authorization Act (NDAA) for fiscal year 2022 to enable the SOF enterprise to extend the POTFF family support program to our Gold Star families and embrace surviving families as important members of the SOF community.

USSOCOM's Warrior Care program also continues to provide members who have sustained physical or psychological trauma and their families with much needed support throughout the process of recovery, rehabilitation, reintegration, and transition. We have no greater responsibility than to care for our personnel who sacrificed their mental and physical well-being to defend the Nation and to provide them with a path to return to service and/or to transition to civilian careers following their years of service.

It has been 2 years since the release of the Comprehensive Review, an internal review directed by Commander, USSOCOM and ASD (SO/LIC) to address concerns about force employment, leadership, and accountability across SOF formations. The implementation of the recommended actions from the Review is beginning to have a measurable and positive impact on SOF culture and ethics. USSOCOM is working to refine data collection so that progress, trends, and risks can be identified and so that mitigations can be evaluated for their effectiveness. Across the SOF enterprise, there has been commitment to ensuring present and engaged leaders at all levels to ensure alignment with SOF values. Our work will not stop here; SO/LIC and USSOCOM are committed to going beyond the Review to create institutional mechanisms that will continue to promote cultural changes that benefit the force and its mission execution.

We remain committed to taking further steps to combat sexual assault and extremism activities within our community and support such efforts across the Department. USSOCOM created the Health of SOF Cell to orchestrate efforts in organizational culture and climate, diversity and inclusion, and countering extremism within the SOF enterprise. We fully support this comprehensive approach and work closely with the Cell to promote the healthy organizational climate and culture of SOF. Over the next year, we will improve our data tracking and metrics to identify areas requiring additional attention, to examine the efficacy of our efforts, and to steer our strategy and resources to where they are needed and most effective. As we consider the future operating environment, we recognize that SOF is not fully taking advantage of the Nation's talent pool. SOF's unique capabilities to communicate, coordinate and collaborate with Allies, partners, and other foreign groups with different backgrounds and perspectives are a critical requirement for the future operational success. I endorse General Clarke's view that, "building a diverse force is therefore both an operational imperative and a strategic necessity."

The SOF Executive Council for Diversity and Inclusion was created 2 years ago in response to our requirement to take advantage of the Nation's talent to more effectively operate in a diverse global environment. This forum provides executive level attention to advancing diversity and inclusion in the SOF enterprise. SOF Service components are increasing their outreach to groups that previously may not have considered a career in SOF and working with their parent Services to develop more targeted and effective recruiting initiatives. We do not need to change our core standards, but we do need to carefully examine how we bring in personnel and the process and sequencing of how we test the ability to meet the standards.

PROVIDING TARGETED AND UNIQUE CAPABILITIES FOR INTEGRATED DETERRENCE

To meet the challenges of integrated deterrence, we must equip SOF with innovative, modern, and reliable capabilities that can out-perform our competitors in all areas. We continue to invest in technologies and capabilities to empower our per-

sonnel to operate in denied areas and to conduct high-risk air, land, and sea operations in remote and austere environments, with a focus on the near-peer threat environment.

SO/LIC–USSOCOM collaboration on strategy is mirrored in resourcing. General Clarke and I now co-sign the yearly Capabilities and Programming Guidance used to develop USSOCOM's 5-year Program Objective Memorandum (POM) and the President's Budget request. This past year was the first in which SO/LIC was able to formally exercise oversight responsibility and submit the USSOCOM POM for the Secretary's ultimate review and approval. In addition, this is the first year in which we also formally designated Armed Overwatch and Undersea Programs as "special interest" acquisition programs ensuring more comprehensive oversight so that any problems or issues may be identified early and rapidly remedied.

As the Department's advanced strike and surveillance aircraft focus on nation-state threats, SOF deployed to remote locations continue to require close air support, precision strike capability, and airborne intelligence, surveillance, and reconnaissance capabilities to safely execute missions in support of integrated deterrence and building enduring advantages. The investment into the Armed Overwatch program will ensure that this dedicated capability exists, allowing high-end fighter aircraft to orient towards other critical needs. The Armed Overwatch platform will deliver a capability that ensures our SOF can continue to operate wherever we need them, whenever they are needed.

In our SOF Undersea Programs, we are investing in advancing USSOCOM's manned and unmanned undersea systems capability with a focus on enhancing joint force lethality. We are working with the Department of the Navy to ensure the integration of modernized SOF operational concepts and investments intended to facilitate access in denied areas and greater range for longer periods of time with less risk to the operator.

CAMPAIGNING AND MAXIMIZING OUR WORK WITH ALLIES AND PARTNERS

In today's security environment, China is our pacing challenge, Russia is an immediate threat to our Allies and partners, Iran's and Iranian-supported destabilizing behavior continues in the Middle East, North Korean maintains a threatening posture on the peninsula, and multiple violent extremist organizations continue to pose a threat to the U.S. and our Allies and partners. We also see adversaries operating in the "gray zone," or level below armed conflict, where they hope to avoid provoking a conventional military response from the United States. We see adversaries expanding their capabilities in multiple domains (e.g., space, cyber, information) and with unique or modified tactics and weapons such as small unmanned aerial systems. Our adversaries are also leveraging criminal organizations, fragile nations, and poor governance to influence global politics, destabilize our Allies and partners, seize natural resources, and fund other malign activities. Within the SOF enterprise, there are actions, activities, and investments to assist the Joint Force and the Nation to address all of these challenges.

SOF's unique training authorities such as the Joint Combined Exchange Training (JCET) program maintains our readiness in diverse global environments. These small-unit engagements prepare our teams to conduct persistent small-footprint irregular warfare and expand and strengthen our purpose-built network of Allies and partners. As COVID-19 restrictions continue to be lifted, we are on pace to almost double the number of these training deployments conducted this year compared to 2021. These persistent and habitual partnership exercises enable critical region access, geographic and cultural familiarity, and operational interoperability in support of combatant commander requirements for high-priority Allies and partners.

Based on training, capabilities, and mission sets, SOF are ideally positioned to support the interagency, Allies, and partners as they develop a wide range of low-visibility options for the purposes of strategic competition and campaigning in the gray zone. Drawing on decades of counterterrorism experience, SOF has the "muscle memory" to integrate activities against a number of diverse state-based threats, especially in pre-conflict environments.

Unique authorities provided by Congress, such as that provided under section 1202 of the NDAA for fiscal year 2018, enable SOF to assure our Allies and partners of U.S. support during competition, crisis, and conflict; and provides key access and placement. Section 1202 is an example of an authority which enables SOF's transition to increased focus on campaigning to gain advantages against competitors' coercive actions.

We continue to execute a sustainable approach to combatting terrorism that carefully balances risk and resources. SOF will continue to prioritize the Defeat-ISIS campaign and to disrupt and degrade other violent extremist organization's threats

to our U.S. national security interests. SOF will also continue to build the capacity of partner forces to address and monitor these threats.

The SOF enterprise now is at a pivot point where we must build enduring advantages, lead and support integrated deterrence operations, and actively campaign with partners in to provide to our national leaders unique and vital capabilities and options in a more complex security environment. For the past 20 years, SOF capabilities and force structure were optimized for C-VEO operations. SOF is now adapting its concepts, force structure, and capabilities to gain an advantage during strategic competition, to help drive integrated deterrence, and to support the joint force in conflict should deterrence fail.

CONCLUSION

Mr. Chairman, I would like to conclude by thanking the Committee again for its strong support for our special operations personnel, who work diligently every day to safeguard our national security. Our partnership with Congress is vital to our ability to successfully fulfill our mission, and your support of the men and women of the SOF enterprise is appreciated.

I thank the Committee again for the opportunity to testify, and I look forward to your questions.

Chairman REED. Thank you very much, Secretary Maier. General Clarke, please.

STATEMENT OF GENERAL RICHARD CLARKE, USA, COMMANDER, UNITED STATES SPECIAL OPERATIONS COMMAND

General CLARKE. Chairman Reed, Ranking Member Inhofe, and distinguished Members of this Committee, thank you for this opportunity. I am honored to testify alongside the Honorable Chris Maier and my good friend, General Paul Nakasone. Joining behind me is Chief Greg Smith, SOCOM's senior enlisted leader. This is Greg's final time appearing before this Committee before he retires after 33 years in uniform. He is representative of the extraordinary women and men of USSOCOM, and I am consistently grateful for his counsel.

This April 16th, next week, marks 35 years since USSOCOM was activated. We are thankful for the foresight and support of Congress and particularly this Committee and Senators Nunn and Cohen, who had the foresight to stand up USSOCOM. Thank you for your decades of continued support ever since.

Your special operations forces create strategic, asymmetric advantages for the Nation across the spectrum of conflict. USSOCOM bolsters deterrence globally through our campaign activities, all providing critical options for the Joint Force. We are also innovating and modernizing to build enduring advantage while strengthening our force and family and make continual challenges to the rule-based international order. Maintaining a range of credible options unpins our Nation's strategic advantage.

We have witnessed Russia's unprovoked and unjustified invasion of Ukraine, China's coercive and malign activity in the Indo-Pacific, and efforts by other state and non-state actors, including violent extremist organizations to sow instability. In this dynamic environment, USSOCOM's enduring value resides in our ability to combat asymmetric threats, particularly in the gray zone and below the threshold of armed conflict. We employ precision and surprise to both prevail and respond in crisis, and our formations support the resilience and resistance efforts of our allies and partners, often through sustained, long-term partnership with their special operations forces.

Regardless of the threats we face, SOF represent a critical strategic edge to respond in crisis. Exquisite, tailored capabilities enable us to undertake sensitive and high-risk missions, crucial to safeguarding our citizens and protecting our vital national interests.

A cornerstone of all these efforts remain our longstanding partnership with ASD SO/LIC. The oversight, policy guidance, and advocacy within the Department of Defense provided by ASD SO/LIC are essential for the modernization, readiness, and well-being of our SOF and their families. Together we are committed to sustaining trust by strengthening our culture of accountability. We are preparing for future threats by unlocking our Nation's diverse talent, and we are leading with our values through our continual efforts to mitigate civilian harm.

As we speak here today, more than 5,000 men and women from SOCOM are defending our Nation and standing shoulder-to-shoulder with partners in over 80 countries worldwide. The courage and commitment of over 75,000 members of our special operations community are inspiring. As this may be my final opportunity before this Committee I would emphasize that it has been the honor of my lifetime to serve with them every day.

I look forward to your questions.

[The prepared statement of General Richard D. Clarke follows:]

PREPARED STATEMENT BY GENERAL RICHARD D. CLARKE

INTRODUCTION

Chairman Reed, Ranking Member Inhofe, and distinguished members of this Committee, thank you for providing this opportunity to discuss the posture of the U.S. Special Operations Command (USSOCOM). I am proud to testify alongside the Honorable Christopher Maier, Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (ASD(SO/LIC)) and General Paul Nakasone, Commander, U.S. Cyber Command.

ASD(SO/LIC)'s oversight, policy guidance, and advocacy within the Department of Defense are essential for the modernization, readiness, and wellbeing of special operations forces (SOF) and their families. We have continued to deepen our longstanding partnership through our co-authored SOF Vision and Strategy documents which provide an enduring foundation to guide future SOF activities and investments. This collaboration continues as we refine our Future Operating Concept and assess force design considerations over the coming months.

The steadfast support of Congress ensures our Nation's SOF are the world's most capable and credible. Your support underpins our efforts to bolster deterrence, ensure our enduring advantage through innovation and modernization, and strengthen our force and their families. Your SOF remain vigilant, ready to respond in crisis, and committed to defending the Nation against all threats from state and non-state adversaries.

Today, I am honored to present an account of USSOCOM's priorities, activities, and investments to ensure our SOF remain unmatched and prepared for the challenges of tomorrow.

The strategic environment of 2022 is dynamic, but its complexities are not new. Nation-states and non-state actors, including violent extremist organizations, compete for influence and advantage, acting both across domains and transregionally.

In Ukraine, Russia's unprovoked, unjustified, and premeditated invasion reminds us of continued challenges to the rules-based international order. Since 2014, following Russia's previous aggression in Crimea and Eastern Ukraine, SOF supported multinational training efforts with Ukrainian SOF forces and provided Military Information Support Operations (MISO) assistance to illuminate and counter Russian disinformation. Russia's destabilizing activities reinforce the importance of USSOCOM's decades-long commitment to enhancing interoperability with Allied SOF throughout Europe—a critical asset in providing options for the United States and our Allies.

To preserve and advance our vital interests and those of our Allies and partners, the United States must maintain its overmatch in strategic deterrence, conventional military force, and space and cyberspace capabilities—complemented by credible irregular warfare capabilities. Given this overmatch, competitors will prefer asymmetric means to attack, erode, or undermine our Nation’s advantages and interests—particularly our network of Alliances and partnerships. Strategic rivals continue to seek advantage through activities in the “gray zone” below the threshold of a credible military response. Disinformation continues to be employed at unimaginable speed and scale without regard for geopolitical boundaries. The destabilizing impacts of climate change, diminished influence of international institutions, and political turmoil aggravated by the global pandemic have provided opportunities for non-state actors and nation-state competitors alike.

SOF create strategic, asymmetric advantages for the Nation across the spectrum of conflict. Our formations provide options to the Joint Force to deter, deescalate, or decisively prevail if war is unavoidable. SOF are problem-solvers. Their enduring value resides in their ability to adapt and to combat asymmetric threats, including in the “gray zone”; employ precision and surprise to achieve strategic effects in conflict or crisis; build access, placement, and influence through sustained partnership with foreign forces; and support Allies’ and partners’ resilience and resistance efforts—all providing discrete options when conventional action is impractical or not desired.

To address current and future strategic challenges, SOF are aligned with the DOD’s strategic priorities. USSOCOM’s institutional and operational efforts span three broad areas: bolstering deterrence through campaigning, innovating for advantage, and strengthening our force and family.

BOLSTERING DETERRENCE

After 2 decades of combat, our SOF today are more integrated, credible, and capable than at any point in our Nation’s history. USSOCOM’s dedicated men and women have degraded violent extremist organizations (VEOs) and disrupted innumerable plots to attack Americans and our interests since 9/11—while remaining vigilant and ready today. Their courage and commitment are and have been remarkable. Notably, twelve SOF servicemembers have been awarded the Medal of Honor for actions since 9/11, and three of those recipients are still serving on Active Duty within our SOF formations today.

SOF are bolstering deterrence globally as part of the DOD’s integrated deterrence approach. Operations over the past 20 years have necessitated operating transregionally alongside capable Allies and partners, leveraging the unique capabilities of our interagency community, and integrating with the Joint Force across domains—the foundation for effective integrated deterrence.

We have rebalanced our activities to prioritize campaigning for strategic advantage—comprising nearly one third of our deployed forces in fiscal year 2022—while maintaining sustainable counter-VEO (C-VEO) operations. Our command is committed to defending the Nation and our interests globally, advancing our partnerships, and actively campaigning to strengthen deterrence, including in the “gray zone.”

Defending the Nation

USSOCOM has honed our capabilities to defend Americans, our Homeland, and our valued Allies and partners through our operations since 2001. We currently have over five thousand SOF deployed to over 80 countries. Our National Guard SOF supported wide-ranging operations globally in over 30 countries while also deploying stateside to 18 states last year, providing essential Defense Support of Civil Authorities, COVID-19 response, inauguration security support, and natural disaster relief.

SOF represent a critical strategic hedge for the Nation to respond in crisis. Exquisite, tailored capabilities enable SOF to execute no-fail hostage rescue missions and to counter an adversary’s efforts to produce or deploy weapons of mass destruction. Repeatedly during 2021, SOF provided crucial forces and command and control for crises requiring rapid deployment, complex problem-solving, and synchronized effects—whether responding to manmade and natural disasters or safeguarding Americans globally.

Alongside the ever-increasing capabilities of near-peer rivals, the threats posed by select non-state actors will endure. Violent extremists will continue to use terrorism as a tactic to achieve their objectives. Drivers of extremist violence exist in deep, multigenerational ideological divisions that cannot be overcome quickly or with military force. Violent extremism and terrorism will persist in the decades to come, representing an enduring threat to the United States, our Allies, and our partners.

USSOCOM continues to pursue a sustainable approach to our C-VEO operations by prioritizing threats, working closely with international and interagency partners, and leveraging expanded options to degrade VEO capabilities. During operations to counter the Islamic State of Iraq and Syria (ISIS) over the past decade, SOF have played a critical role in mobilizing international partners, disrupting illicit financing, interdicting foreign fighters, illuminating propaganda, and defeating large-scale territorial expansion, when necessary.

USSOCOM continues to prioritize our role as the DOD's Coordinating Authority for CVEO through our Department-wide campaign planning, assessments, and recommendations. Our semi-annual VEO threat assessment highlights our transregional approach involving multiple Geographic Combatant Commands.

After sustained global pressure since 2001, the threat to the United States Homeland posed by VEOs based in the Middle East and Africa has diminished. Nevertheless, the threat to U.S. interests overseas remains. The continued availability of safe havens coupled with local security shortfalls perpetuates the risks of VEOs' external attacks. In East Africa, al-Shabaab continues to focus its operations within Somalia and presents an ongoing risk to U.S. interests in the region. In Afghanistan, ISIS-Khorasan (ISIS-K) has prioritized local and regional operations but presents an enduring external threat to the United States Homeland and interests abroad. Senior al Qaeda leaders also remain committed to attacking the United States Homeland and continue to encourage attacks by their affiliates. In Yemen, al-Qaeda in the Arabian Peninsula presents a continued threat of conducting or directing attacks externally. In Iraq and Syria, ISIS senior leaders demonstrate the intent and capability to target American interests despite the losses of key operatives and personnel since 2019.

Violent extremists continue to incorporate new technologies and adapt their tactics, posing an ongoing risk to counterterrorism (CT) efforts globally. Adversary unmanned aerial systems (UAS) pose a pressing challenge, exhibiting a rapid evolution in employment and lethality exceeding improvised explosive devices over the past 2 decades. While the evolving UAS threat from VEOs is troubling, capable state adversaries and their aligned paramilitary forces have also successfully employed UAS to target American and Allied forces—recently in Iraq in early 2022.

SOF Campaigning

SOF's full range of core activities, tailored capabilities, and enduring partnerships provide critical options for campaigning to bolster deterrence. Our combat-credible forces can undermine adversary confidence that aggression will succeed, shaping a rival's decision calculus. The access, placement, and influence generated by SOF's long-term commitments to building partner capacity and improving Ally interoperability provide expanded, low-cost options to gain awareness, shape the operating environment, or present an adversary with multiple dilemmas, if necessary. Additionally, SOF remain ideally suited to identify an adversary's challenges in the "gray zone" and counter those malign activities with firmness while managing escalation.

USSOCOM continues to prioritize its operations, activities, and investments in the Indo-Pacific and Europe while maintaining a sustainable posture to counter threats from the Middle East, Africa, and other regions. Over the past 3 years, our campaigning activities to counter and deter near-peer rivals have more than doubled—comprising over 30 percent of our deployed forces in fiscal year 2022 and continuing to grow to nearly 50 percent in fiscal year 2023. Our command also provides specialized expertise from our stateside forces to support Combatant Command priorities globally through Continental U.S.-Based Operational Support (CBOS)—a disciplined approach to provide tailored, low-density capabilities to support specific operational needs. We continue to optimize our global posture to counter violent extremists and other non-state actors while sustaining the ability to respond to crises worldwide.

Focused, deliberate campaigning in Eastern Europe over several years has supported whole-of-nation resilience efforts among critical Allies and enhanced their resistance capabilities if threatened with territorial aggression. Our continued focus on honing the core maritime capabilities of our Naval Special Warfare and Marine Raider formations complemented by exploring creative options to extend SOF's operational reach has also improved our ability to act credibly throughout the Indo-Pacific.

USSOCOM has invested heavily to expose and counter adversary propaganda and disinformation to better compete in the cognitive domain. Competitors, like China and Russia, continue to act assertively in the information "gray zone" to manipulate populations worldwide. As DOD's Joint Proponent for Military Information Support Operations (MISO) and the Coordinating Authority for Internet-based MISO, our

command is adapting our psychological operations forces for the evolving information landscape. As part of our ongoing rebalancing efforts, our MISO activities to counter strategic competitors have also more than doubled over the past 3 years—comprising over 40 percent of our MISO activities worldwide in fiscal year 2021. The Joint MISO WebOps Center (JMWC) continues to coordinate our MISO conducted via the internet and actively engage foreign audiences to illuminate and counter hostile propaganda and disinformation online. Since 2021, we have incorporated our first foreign partners and interagency liaisons within the JMWC.

Lastly, the critical authorities granted by Congress continue to allow SOF to campaign effectively against state and non-state actors alike, achieving an outsized impact across multiple mission sets. Operations supported by Fiscal Year 2018 National Defense Authorization Act (NDAA) § 1202 (Irregular Warfare) have proven essential for applying SOF capabilities to expose and impose cost on malign actors, and the recent extension of this authority in the fiscal year 2022 NDAA will continue enabling these critical SOF activities. Operations supported by 10 USC § 127e (CT) provide flexible options to apply CT pressure in otherwise inaccessible or contested areas—increasingly important as we optimize our C-VEO capabilities. Recent authorities under 10 USC § 127f (Clandestine Operational Preparation of the Environment) and fiscal year 2020 NDAA § 1057 (Intelligence / Counterintelligence) also support SOF activities with greater clarity and transparency.

Advancing Partnerships

USSOCOM benefits from unparalleled integration with our Allies and international partners, the interagency community, and the Joint Force strengthened over the past 2 decades of operations. While shared interests in countering violent extremism and terrorism prompted unprecedented levels of integration since 2001, these mutually beneficial relationships have extended to the full range of SOF operations globally.

Our network of valued Allies and international partners is our Nation's greatest strategic advantage. We cannot surge trust in crisis. USSOCOM maintains a global network of liaison officers and exchange officers with Allied and international SOF. At our headquarters alone, we host exchange officers and foreign liaison officers from 28 Allied and partnered nations, offering an unrivaled ability to provide options to understand and act worldwide. Through persistent engagement over decades, our SOF have fostered extensive interoperability with Allied and partner SOF, often intensified by operating shoulder-to-shoulder during combat operations for over 2 decades. Authorities under 10 USC § 333 (Building Partner Capacity) and 10 USC § 322 (SOF Training)—the latter of which enables the Joint Combined Exchange Training program—are essential to further enhancing collaboration and promoting interoperability.

SOF's integration with the U.S. interagency community is equally important to leverage the Nation's full capabilities to enhance awareness and provide expanded options to act. Our extensive interagency liaison network facilitates information sharing, speeds decision-making, and enhances synchronization for effective whole-of-government responses. Routine collaboration with interagency partners, such as the National Counterterrorism Center (NCTC) and Department of State's Global Engagement Center (GEC), has enhanced USSOCOM's response to a range of threats over the past year, including violent extremism, adversary misinformation, and near-peer malign activities.

The ongoing success of Operation Gallant Phoenix (OGP)—a multinational C-VEO initiative launched by USSOCOM in 2014—has enabled international and interagency partners to share information and prosecute violent extremists. While focused upon degrading VEO networks, the lessons learned are applicable to future efforts to counter adversary actions in the “gray zone” and deter aggression. Coupled with USSOCOM's Counter Threat Finance authorities and expertise, information-sharing operations, like OGP, provide expanded options to disrupt illicit financing or deter malign activities.

Additionally, USSOCOM maintains collaborative, mutually supporting relationships across the Joint Force to ensure the most effective application of military power. Close coordination with Geographic Combatant Commands enables SOF to operate transregionally—particularly important as strategic rivals, like China and Russia, pursue advantage worldwide. Operating transregionally has proven critical for C-VEO efforts and is necessary to counter adversary “gray zone” activities. Equally strong collaboration with Functional Combatant Commands ensures synchronization across critical warfighting domains. Our recent efforts to enhance SOF-Cyber-Space capabilities leveraged trilateral coordination among USSOCOM, USCYBERCOM, and USSPACECOM in addition to other interagency partners. Lastly, our ongoing efforts to promote opportunities for experimentation between

our components and their respective Services have deepened ties, resulted in operational breakthroughs, and improved warfighting effectiveness.

Our role as DOD's Coordinating Authority for Counter-Weapons of Mass Destruction (CWMD) draws upon USSOCOM's full suite of international, interagency, and joint relationships to counter WMD proliferation and deter aggressive actions by state and non-state actors. Our recent design and execution of a transregional chemical, biological, radiological, and nuclear (CBRN) senior leader forum advanced comprehensive partner understanding of the threat and informed the development of integrated actions to deter, defend against, and respond to WMD use.

INNOVATING FOR ADVANTAGE

USSOCOM is innovating and modernizing our approaches, tactics, and technologies to build enduring advantage. We continue to invest in promising data-driven technologies while also developing a workforce well-prepared for our data-driven age. Our command is also accelerating our wide-ranging modernization efforts and fully leveraging our important acquisition authorities that enable us to capitalize on our Nation's innovation advantage—with an emphasis on four key acquisition programs: modernized maritime platforms, counter-UAS, Next-Generation ISR, and Armed Overwatch. Focused modernization also requires a complementary emphasis on divesting dated or obsolete platforms that are no longer operationally relevant or effective in the current and future environments.

Investing in a Data-Driven Future

USSOCOM continues to serve as pathfinder within DOD for integrating data-driven technologies, leveraging artificial intelligence (AI) powered by machine learning, deep learning, neural networks, and similar cutting-edge technologies. Our early work with DOD's Project Maven expanded our understanding of data collection and algorithm development, leading to successive Service-led initiatives. We are modernizing into a data-enabled command employing cloud, data, and AI technologies throughout our operations from the tactical edge to strategic decision-making.

Over the past year, we have maximized DOD-wide initiatives, led by the DOD Chief Data Officer and the Joint AI Center, to further identify opportunities to implement data-driven technologies. Our command was one of the first to welcome teams as part of the Deputy Secretary of Defense's Accelerating Data and AI Initiative in early fiscal year 2022. We look forward to continuing these important efforts overseen by the DOD Chief Digital and AI Officer. We are closely aligned with DOD-wide initiatives to promote responsible and explainable AI to mitigate algorithmic risks, ensure traceability, and guard against unethical, illegal, or immoral outcomes.

Valuable partnerships with academia, national laboratories, and industry are central to this effort. In late 2021, we launched an initiative with Massachusetts Institute of Technology's Lincoln Labs to enable SOF information dominance. We continue to invest in promising AI and data fusion capabilities to streamline ISR processing, exploitation, and dissemination (PED); identify online disinformation; enhance mission command; improve predictive maintenance; and leverage robotic process automation to enhance a variety of resource-intensive, often error-prone processes. Additionally, our network of liaison officers in key innovation hubs across the country—including Silicon Valley, Boston, Austin, and Washington, DC—enhances our partnerships with academia and industry and supports our command-wide modernization efforts.

Harnessing the full capacity of AI requires sustained investments in our talented workforce. Our AI-Ready Workforce initiatives have made steady progress since their inception in fiscal year 2020, and we are codifying lessons learned in our new SOF AI Education Strategy. Partnering with leading universities—such as Carnegie Mellon University and Massachusetts Institute of Technology—to educate hundreds of senior and midgrade SOF leaders on AI principles and ethics has accelerated USSOCOM's progress in implementing AI across a spectrum of operational problems.

Several enterprise-wide initiatives further support USSOCOM's data transformation, especially with respect to mission command, intelligence fusion, and business activities. Equipping our workforce with a modern cloud-computing environment is equally critical to developing and deploying AI enterprise-wide. Additionally, our recent Data Strategy Implementation Plan outlines the ways and means for SOF to harness the power of data across our activities globally. Our enterprise-wide data steward pilot enables our SOF formations to execute their tailored data missions while preserving flexibility. Finally, USSOCOM's efforts to accelerate the adoption of Advancing Analytics (known as Advana) enable real-time, data-driven

decision-making throughout our command—including supporting efforts to integrate a variety of personnel and readiness systems as well as our financial systems.

Accelerating Modernization

USSOCOM is rapidly modernizing its materiel and systems and incorporating emerging technologies to build enduring advantage. Our command leverages its unique acquisition authority to modernize special operations capabilities in five focus areas: Next-Generation ISR, Next-Generation Mobility, Data and Networks, Precision Effects, and Hyper-Enabling the Operator/Biotechnologies.

We have coordinated closely with the Under Secretary of Defense for Research and Engineering (USD(R&E)) as well as the Services to collaborate on and experiment in each of these focus areas. USSOCOM's unique attributes of being inherently globally deployed, partnered, and joint while also possessing acquisition authorities positions us to contribute to the overall modernization of the Joint Force. Specifically, we are well-positioned to be the partner of choice supporting three of USD(R&E)'s technology priorities: within cyber, focusing on MISO capabilities; within directed energy, focusing on electronic warfare/electronic attack at the tactical edge; and biotechnologies.

Next-Generation ISR enables finding and fixing a target in a contested environment and consists of three components: cyber-based ISR, space-based ISR payloads, and small tactical unmanned systems. In the cyber domain, we will continue supporting DOD's Project Maven to automate the PED process while also collaborating with USCYBERCOM on the ability to find and fix adversaries in cyberspace at the tactical edge. Our efforts in the cyber domain also include capabilities to better leverage the full range of open-source data. To better harness advances in space, we have established a collaborative arrangement with the Space Force and the Space Development Agency to experiment with payloads that will provide our forces with space-based capabilities at the tactical edge. Finally, we are aggressively pursuing collaborative autonomy through our AI for small unit maneuver efforts across our portfolio of ground, air and maritime unmanned and unattended sensors.

As part of our Next-Generation Mobility efforts, we continue to modernize our platforms to prevail in contested environments while working closely with the Services. We are equipping our existing aviation platforms with advanced infiltration and penetration capabilities—such as our Silent Knight terrain-following/terrain-avoidance radar for our rotary- and fixed-wing fleets and radio-frequency countermeasures for our MC-130s and AC-130s. For the MC-130s, we are also exploring an amphibious take-off and landing capability to provide expanded options in maritime-focused environments, like the Indo-Pacific. We have partnered with both the Air Force for development of high-speed, vertical take-off and landing platforms and the Army for their Future Vertical Lift program. Finally, we are investing in modernized surface and undersea maritime platforms in partnership with the Navy. Our efforts in developing, testing, and fielding a range of maritime capabilities will strengthen deterrence in the Indo-Pacific and across the globe.

The Armed Overwatch program remains central to our Precision Effects modernization efforts—as we advance to a production award later this fiscal year. Armed Overwatch will provide responsive and available situational awareness, protection, and fires to our ground forces executing C-VEO missions in permissive environments.

Precision Effects are not limited to kinetic fires as we modernize our electronic warfare/electronic attack capabilities—best exemplified by our counter-UAS (C-UAS) efforts. While our command hones capabilities to defeat UAS prior to launch, we are also closely teamed with the Army's Joint Counter-UAS Office to detect and defeat UAS that pose a threat to deployed SOF and our partners. Through our System Integration Partner contract, we have taken an innovative approach to C-UAS which will enable us to effectively counter the evolving threat. We are pursuing a system-of-systems, open architecture approach to C-UAS that will allow for the rapid integration of both emerging and proven technologies.

Within the Data and Networks modernization area, we are advancing technologies across three broad capabilities: operations and intelligence fusion for our tactical commanders, protection of our operators from ubiquitous technical surveillance, and influence operations in the cyber domain. Our Mission Command System/Common Operating Picture deployed after only 1 year of development by embracing agile software development techniques and is USSOCOM's gateway to DOD's Joint All-Domain Command and Control. As our forces operate in increasingly contested environments alongside partners, we must provide identity management capabilities to protect them, their partners, and their families. Finally, we will continue to modernize our JMWC and other MISO efforts with automation and AI-enabled capabilities to operate more effectively in the cognitive domain.

Our final modernization focus area—Hyper-Enabling the Operator/Biotechnologies—focuses largely on developing emerging technologies, enabling us to rapidly deploy promising capabilities. Hyper-Enabling the Operator pursues technologies to provide decision advantages by optimizing information for individuals and teams conducting partnered operations—with the goal of enhancing effectiveness. Our biotechnology efforts are closely aligned with our Preservation of the Force and Family program to address the physical and cognitive wellbeing of our SOF. Our ongoing brain health efforts remain a critical component of this effort—combining best-in-market, leading-edge data and AI industry partners with nutrition and health partnerships while leveraging state-of-science commercial and academic labs.

STRENGTHENING OUR FORCE AND FAMILIES

Our people are the underlying source of strength within our SOF formations. The creativity and commitment of these men and women is crucial to adapting our tactics and technologies for tomorrow's challenges. We believe unreservedly that our first SOF Truth endures: "Humans are more important than hardware." USSOCOM continues to focus on sustaining trust by implementing our Comprehensive Review findings, enhancing the readiness and resilience of our teammates and their families, and unlocking the potential of our Nation's deep and diverse pools of talent.

Sustaining Trust

Our commitment to high ethical standards, engaged leadership, and maintaining accountability within SOF is critical to sustaining the trust earned over decades. USSOCOM continues to make sustained progress in implementing the recommendations from the 2019 Comprehensive Review, as detailed in the forthcoming biannual report to Congress from our command and ASD(SO/LIC). Our Comprehensive Review Implementation Team has diligently overseen the continued efforts to codify institutional adjustments. Our components have taken active roles in refining their processes to select key leaders, enhancing ethical training throughout the force, and ensuring accountability for lapses that erode trust.

Over the past 2 years, USSOCOM has made marked improvements in achieving sustainable force employment—one of several underlying concerns identified in the Comprehensive Review. Through a rigorous review of requirements, we have ensured key tactical leaders are best postured to provide present and engaged leadership while minimizing risk to our missions overseas. Our formations have attained DOD's directed 1:2 deployment-to-dwell ratio for nearly all SOF—while steadily approaching the 1:3 deployment-to-dwell goal—by exercising strategic discipline through our force employment processes.

We are unequivocal that sexual assault and extremism have no place in our formations. We will continue aggressively investigating allegations of misconduct and holding personnel accountable, as appropriate. USSOCOM actively supports DOD and Service policies, including ongoing implementation of the Independent Review Commission recommendations, regarding sexual assault and harassment that have improved reporting processes, victim advocacy, and prevention. Our command also remains fully engaged in DOD's efforts to remove behaviors that promote discrimination, hate, or harassment and that are inconsistent with our oaths to defend the Constitution against all enemies foreign and domestic.

Enhancing Readiness and Resilience

The Preservation of the Force and Family (POTFF) and the Warrior Care Programs (WCP) remain central to enhancing readiness and resilience for SOF and their families. The POTFF program has evolved to foster a holistic, multifaceted approach to human performance, resilience, and rehabilitation. Over 60 percent of POTFF manpower now supports the psychological and cognitive aspects of performance. The increased focus on brain health and cognitive performance—including funding authorized for related research in the fiscal year 2022 NDAA—is necessary to prepare SOF to operate in an increasingly complex, information-rich battlespace. SOF commanders overwhelmingly recognize the POTFF program as promoting career longevity, improving retention, and enhancing quality of life within our formations.

Caring for our wounded, injured, and ill teammates is a sacred duty, especially after 2 decades of sustained combat. Our WCP, commonly referred to as the Care Coalition, has led this critical effort since 2005. Thanks to the WCP's tireless efforts, we have retained over 70 percent of wounded SOF in military service—with nearly 60 percent of these highly trained, skilled, and experienced warriors returning to duty within their original occupational specialty. Congress' continued support for these programs has enabled these remarkable results.

Our formations also maintain a persistent focus on suicide among SOF. Leaders are increasingly attentive to underlying risk factors through enhanced training and education. Through persistent efforts to destigmatize seeking care, the number of servicemembers seeking mental health resources through POTFF has increased. While we witnessed a modest reduction in suicides in 2021 when compared with the previous 2 years, any loss of life through suicide is tragic and unacceptable. We continue to fully support all efforts in this critical arena.

Lastly, as the COVID-19 pandemic enters its third year, its impact on SOF readiness has been moderate, resulting from cancelled or postponed events and decreased interaction with Allies and partners. USSOCOM's uniformed, civilian, and contractor populations have been largely protected through compliance with DOD-wide and installation-specific risk mitigation measures, including vaccination requirements.

Unlocking the Potential of our Nation's Talent

The strength of our Nation lies in its boundless and diverse reservoirs of talented individuals. Maintaining the world's finest SOF in the decades to come requires accessing the Nation's deep and diverse pools of talent. Building a diverse force is therefore both an operational imperative and a strategic necessity.

Our Diversity and Inclusion Strategy and accompanying Implementation Action Plan continue to guide our efforts with our initial report to Congress forthcoming. Our SOF Executive Committee on Diversity and Inclusion—chaired by ASD(SO/LIC) and USSOCOM—provides senior leader oversight and fosters accountability for sustained progress in implementation. USSOCOM is committed to welcoming all men and women capable of meeting the high standards required of SOF professionals, ensuring these servicemembers are part of inclusive teams, and overseeing their equitable careerlong advancement.

We continue to make incremental, but critical, progress in removing barriers to women's and minority participation and advancement within SOF. Women and minority servicemembers now serve in key leadership roles throughout all four SOF components and within our headquarters—in several cases for the first time in USSOCOM's history. Women have also continued to successfully enter SOF-specific career fields that had previously been closed. While these milestones are important and notable, they are not sufficient. Sustained focus in fostering diverse and inclusive organizations is still required.

CONCLUSION

USSOCOM is committed to creating strategic, asymmetric advantage for the Nation. SOF are bolstering deterrence by campaigning in line with the DOD's strategic priorities while providing critical options in the "gray zone." Our force stands ready to respond in crisis and defend the Nation from state and non-state threats. Further, our wide-ranging modernization initiatives build enduring advantage and prepare our force to prevail in the future. Doing so necessitates our continued prioritization of our people—our most cherished resource. Our efforts sustain hard-earned trust, build resilience within our force, maintain quality of life for families, and ensure inclusive and diverse teams to succeed on tomorrow's battlefield.

We will meet the challenges of tomorrow with clear thinking and resolve. Our Nation demands it. SOF have proven their innovative spirit and determination on countless battlefields over many decades. With the continued support of Congress, USSOCOM will demonstrate the strategic advantage of maintaining the most credible and capable SOF in the world.

Chairman REED. Thank you very much, General Clarke. General Nakasone, please.

STATEMENT OF GENERAL PAUL NAKASONE, USA, COMMANDER, UNITED STATES CYBER COMMAND/DIRECTOR, NATIONAL SECURITY AGENCY/ CHIEF, CENTRAL SECURITY SERVICE

General NAKASONE. Chairman Reed, Ranking Member Inhofe, and distinguished Members of the Committee, I am honored to testify beside Assistant Secretary Maier and General Rich Clarke. I am joined today by Command Sergeant Major Sheryl Lyon, the U.S. Cyber Command and NSA senior enlisted leader. We are hon-

ored to represent the military and civilian members of U.S. Cyber Command.

Command Sergeant Major Lyon and I want to recognize Rich Clark and Greg Smith and their families for 36 and 30 years of dedicated service to our Nation. Well done, gentlemen.

Defending the Nation is the heart of U.S. Cyber Command's mission. The command has been integral to the Nation's response to the current Russia-Ukraine crisis. We have provided intelligence on the growing threat, helped to warn government and industry to tighten security within critical infrastructure sectors, enhanced resilience of the DOD [Department of Defense] information network, accelerated efforts against criminal cyber enterprises, and together with interagency and allied partners, plan for a range of contingencies.

Coordinating with the Ukrainians in an effort to help them harden their networks, United States Cyber Command deployed a hunt forward team, who sat side-by-side our partners to gain critical insights that have increased homeland defense for both the United States and Ukraine.

United States Cyber Command views 2022 as a year of significant opportunity for building our capabilities as we pursue five priorities: readiness; operations in defense of the Nation; integrated deterrence; recruitment, retention, and training; and the Joint Cyber Warfighting Architecture and Enhanced Budget Control. My goal as the commander remains world-class, ready and capable at providing options and conducting operations in defense of the Nation with wider partnerships and exceptional talent.

These elements will be essential to national security as our Nation faces an array of adversaries who are expanding, in scope, scale, and sophistication. Cybersecurity is national security. Speed, agility, and unity of effort, brought about by the connected relationship between U.S. Cyber Command and the National Security Agency is the ingredient that protects the United States against our enemies.

The men and women of the United States Cyber Command are grateful for the support of this Committee and Congress that you have given to our command. I look forward to answering your questions.

[The prepared statement of General Paul M. Nakasone follows:]

PREPARED STATEMENT BY GENERAL PAUL M. NAKASONE

Chairman Reed, Ranking Member Inhofe and distinguished members of the Committee, thank you for your enduring support and the opportunity today to represent the hard working men and women of U.S. Cyber Command (USCYBERCOM). I am honored to be here and testify beside Assistant Secretary of Defense Christopher Maier and General Rich Clarke.

Let me begin by acknowledging the dedicated service of our servicemembers and civilians at USCYBERCOM. Their mission is to plan and execute global cyber operations, activities and missions to defend and advance national interests in collaboration with domestic and international partners across the full spectrum of competition and conflict. Our three lines of operation are to:

- Provide mission assurance for the Department of Defense by directing the security, operation and defense of Department of Defense Information Network (DODIN), including DOD's critical infrastructure;
- Help deter and defeat strategic threats to the United States and its national interests; and

- Assist Combatant Commanders to achieve their objectives in and through cyberspace.

U.S. Cyber Command directs operations through its components. These include the Cyber National Mission Force-Headquarters (CNMF-HQ), Joint Force Headquarters-DOD Information Network (JFHQ-DODIN, the commander for which is dual-hatted as the Director of the Defense Information Systems Agency) and Joint Task Force Ares. They work with our Joint Force headquarters elements, the commanders for which are dual-hatted with one of the Services' cyber components (Army Cyber Command, Marine Corps Forces Cyberspace Command, Fleet Cyber Command/Tenth Fleet, Air Force Cyber/16th Air Force and Coast Guard Cyber Command). The Command currently comprises 133 teams across the Cyber Mission Force (CMF), approximately 6,000 servicemembers, including National Guard and Reserve personnel on Active Duty. The CMF is due to grow by 14 teams over the next 5 years.

USCYBERCOM is postured to execute its missions and meet both the Nation's near-term and enduring strategic challenges in cyberspace. I shall address the Command's role in the crisis caused by Russia's invasion of Ukraine, and then speak to our preparedness for persistent threats and in meeting our long-term pacing challenge, China. As the Commander of USCYBERCOM and Director of the National Security Agency (NSA), I have learned that the Command's linkage with NSA is essential to achieving critical outcomes for the Nation in both cyber and intelligence operations. The dual-hatted command relationship improves planning, resource allocation, risk mitigation, and unity of effort. It allows us to operate with speed, agility, and mission effectiveness that we could not achieve without it. This is critical to meeting the strategic challenges of our adversaries as they grow in sophistication, aggressiveness and scope of operations.

STRATEGIC CHALLENGES

Russia's invasion of Ukraine demonstrated Moscow's determination to violate Ukraine's sovereignty and territorial integrity, forcibly impose its will on its neighbors and challenge the North Atlantic Treaty Organization (NATO). Russia's military and intelligence forces are employing a range of cyber capabilities, to include espionage, influence and attack units, to support its invasion and to defend Russian actions with a worldwide propaganda campaign.

United States Cyber Command (with NSA) has been integral to the Nation's response to this crisis since Russian forces began deploying on Ukraine's borders last fall. We have provided intelligence on the building threat, helped to warn United States Government and industry to tighten security within critical infrastructure sectors, enhanced resilience on the DODIN (especially in Europe), accelerated efforts against criminal cyber enterprises and, together with interagency members, Allies, and partners, planned for a range of contingencies. Coordinating with the Ukrainians in an effort to help them harden their networks, we deployed a hunt team who sat side-by-side with our partners to gain critical insights that have increased homeland defense for both the United States and Ukraine. In addition, USCYBERCOM is proactively ensuring the security and availability of strategic command and control and other systems across the Department. We have also crafted options for national decision makers and are conducting operations as directed.

When Moscow ordered the invasion in late February, we stepped up an already high operational tempo. We have been conducting additional hunt forward operations to identify network vulnerabilities. These operations have bolstered the resilience of Ukraine and our NATO Allies and partners. We provided remote analytic support to Ukraine and conducted network defense activities aligned to critical networks from outside Ukraine—directly in support of mission partners. In conjunction with interagency, private sector and Allied partners, we are collaborating to mitigate threats to domestic and overseas systems.

These measures were made possible by the patient investments in cyberspace operations capabilities and capacity over the last decade, as well as by the lessons that we as a Department and a Nation have learned from operational experience. The current crisis is not over, but I am proud of the response of our people and confident in their ability to deliver results no matter how long it lasts. Their grit and ingenuity have been inspiring.

Shifting to longer-term considerations, I note that our operations are planned and executed in accord with the Interim National Security Strategic Guidance. Underpinning our work is Integrated Deterrence. We provide combat-capable forces in cyberspace that engage in active campaigning to disrupt adversary actions, demonstrate capabilities and resolve, shape adversary perceptions and gain warfighting advantages should deterrence fail. Integrated Deterrence is multi-partner, multi-do-

main, multi-theater and multi-spectrum, requiring us to compete every day in cyberspace against military and intelligence actors seeking to undermine our Nation's strength and strategic advantages.

Cyberspace is a dynamic and inter-connected domain where near-peer adversaries seek to exploit gaps and seams between our organizations and authorities. Such adversaries use a variety of cyber means to compromise our systems, distort narratives and disseminate misinformation. These actions threaten our national interests by impairing the safety and security of our citizens, stealing intellectual property and personal information while seeking to undermine the legitimacy of our institutions. Our adversaries have demonstrated sophisticated cyber-attack capabilities for use in competition, crisis and conflict, but I am confident that USCYBERCOM is well positioned to meet those challenges.

China is our pacing challenge, which I see as both a sprint and a marathon. China's military modernization over the past several years threatens to erode deterrence in the western Pacific, which requires immediate steps to redress. At the same time, China is an enduring strategic challenge that is now global in scope. Beijing is exerting influence worldwide through its rising diplomatic, informational, military, and economic power. China is a challenge unlike any other we have faced. I have therefore created a China Outcomes Group under joint USCYBERCOM and NSA leadership to ensure proper focus, resourcing, planning, and operations to meet this challenge. Although we recognize that much of our effort will be in support of United States Indo-Pacific Command, China is a global challenge. The success of our efforts will depend in part on the resilience and capabilities of regional and worldwide partners. We are building operating relationships and also dedicating long-term work to enhance their cybersecurity and cyberspace operations forces.

Iran and North Korea are cyber adversaries growing in sophistication and willingness to act. Despite our strengthened focus on China, we are maintaining our ability to counter these threats. Tehran has increased ransomware operations, the targeting of critical infrastructure, and influence campaigns (including in our 2020 elections). We support United States Central Command in its efforts against Iranian-backed proxies in Iraq and Syria (as we also did in the withdrawal from Afghanistan last summer). North Korea uses its cyber actors to generate revenue through criminal enterprises, such as hacking-for-hire and theft of cryptocurrency. USCYBERCOM works with the Departments of State and Treasury to stem Pyongyang's campaigns.

The scope, scale and sophistication of these threats is rising. The United States faced major cybersecurity challenges over the last year, beginning with the SolarWinds supply-chain compromise but extending to incidents involving software compromises that affected companies like Colonial Pipeline, Microsoft, JBS, Kaseya, and Apache. In each instance, our Command worked through CNMF and other components to provide insights to our homeland security and law enforcement partners, who are the Nation's first line of defense for U.S. systems and networks.

Ransomware can have strategic effects as America saw in the disruption of Colonial Pipeline's systems. CNMF has taken numerous actions over the past year to combat ransomware in close partnership with law enforcement, interagency, industry, and foreign partners to disrupt and degrade the operations of ransomware groups attacking our Nation's critical infrastructure. CNMF and NSA enabled whole-of-government actions targeting ransomware actors, passing key insights in near-real time. CNMF was a key partner in the whole-of-government effort to disrupt and impose costs against those who targeted Colonial Pipeline.

USCYBERCOM (with JFHQ-DODIN) also defended the DODIN against cyber threats and helped ensure that disruptions to its systems and data remained inconsequential and brief. We continue to innovate in enhancing DODIN defenses and countering adversary threats; indeed, we must, because our adversaries are agile and adaptive. Key to this effort is building resilience in our systems and platforms while preparing the Department, the other Combatant Commands and Defense Industrial Base (DIB) companies to operate even in degraded cyber environments.

U.S. CYBER COMMAND POSTURE FOR THE FUTURE

Our success against these growing challenges is a result of sustained efforts and investments, not to mention a lot of hard work. I should add that that work over the last 2 years took place under COVID-19 mitigations. USCYBERCOM has been on-mission, running operations and exercises with the joint force and domestic and foreign partners throughout the pandemic, with negligible workforce transmission and slight impact to operations. We will continue to prioritize workplace safety, workforce confidence, and mission continuity.

We see 2022 as a year of opportunity to make progress in several areas that will enhance USCYBERCOM's capabilities and contributions to national security. With this in mind, I have established the following priorities for our Command:

- Readiness;
- Operations in Defense of the Nation;
- Integrated Deterrence;
- Recruiting, Retention and Training; and
- Joint Cyber Warfighting Architecture and Enhanced Budget Control

Readiness is priority one. It is foundational to the success of operations in defense of the Nation and Integrated Deterrence. USCYBERCOM has made progress despite challenges. We improved our ability to monitor the status of our cyber mission forces down to the team, mission element and individual levels. Across the Department, USCYBERCOM is responsible for setting standards for all of DOD's Cyberspace Operations Forces. We work to provide commanders with the situational awareness they require to assess risks and make informed decisions, not just in operations but in maintaining force readiness as a whole. We will work with the Services this year to ensure the progress we have made over the past year continues.

Second, along with our interagency partners, we defended the Nation's recent elections against foreign interference and are preparing to support the defense of this year's midterms through the combined efforts of USCYBERCOM and NSA. We anticipate that our adversaries will continue using their military and intelligence elements to affect our democracy. Thus I appointed a USCYBERCOM general officer and an NSA senior executive to oversee election security in 2022. This is an enduring, no-fail mission for USCYBERCOM.

Interagency partnerships are crucial in these efforts. Working with the Federal Bureau of Investigation (FBI) and the Department of Homeland Security's Cybersecurity and Infrastructure Security Agency (CISA) has demonstrated that we are much stronger together. Indeed, no single agency can defend the Nation on its own. USCYBERCOM imposes costs on threat actors and provides insights to domestic and foreign partners to mitigate and respond to malign activity, enabling each to act under its respective authorities. We will continue to collaborate with our domestic partners across the Federal Government and the states to share best practices and expertise.

Our adversaries also target our economy. DIB companies are on the frontlines in cyberspace and are constantly targeted by malicious cyber actors. Over the past year, we have deepened our relationships with private industry through voluntary information sharing. Since the Nation's critical infrastructure and systems are largely in private hands, these relationships have directly enhanced our operations, in addition to the security of their commercial systems.

Third, supporting the national priority of Integrated Deterrence means preparing for crisis and conflict while campaigning in competition across the full spectrum of cyber operations. It also means building the strategic partnerships that enable the defense of U.S. systems and networks beyond the DODIN and the DIB. Our foreign partnerships begin with our "Five Eye" Allies—the United Kingdom, Canada, Australia and New Zealand. The circle of partnership has been enlarged in recent years as we enhanced existing relationships with allies and forged new ones with several nations, especially in Europe and the Indo-Pacific region.

Fourth is building a skilled workforce through recruitment, training, and retention. Talent is key to preserving our competitive edge against our adversaries. USCYBERCOM has improved its civilian hiring with the use of its congressionally-granted Cyber Excepted Service (CES) authorities, which allow us to offer competitive compensation packages for high-demand expertise. In addition, a diverse, talented workforce that expands equity and inclusiveness is an enduring goal. To recruit and retain a skilled military workforce, we are also grateful for the authorities Congress has granted the Services to offer flexible promotion and commissioning avenues in support of the CMF.

Partnerships with academia will aid in engaging the future cyber workforce and enriching the strategic dialogue about cyber. Our new Academic Engagement network began last year and comprises 93 institutions, including 10 minority-serving institutions, across 40 states and the District of Columbia, as of March 25, 2022. Interest in partnering with USCYBERCOM is strong and growing.

Training and proficiency are improving through our mission simulation capabilities, particularly the Persistent Cyber Training Environment (PCTE). The PCTE is helping us mature cyber operations tradecraft, enhance individual proficiencies and enable faster attainment of team certification and collective training in maneuvers such as Exercise CYBER FLAG.

The Reserve Component is critical to protecting the Nation in cyberspace. As a result of the partnership between USCYBERCOM and the National Guard Bureau during the 2020 election, Guard units could rapidly share information on malicious cyber activity with state and local authorities. Members of the National Guard and Reserve often have private-sector experience in fields of strong interest to USCYBERCOM. In addition, the ability of the National Guard and Reserve to hire cyber talent has been especially helpful in retaining the contributions of servicemembers who decide to leave Active Duty upon completion of their commitment; members can transfer to a part-time status.

Our final priority is guiding the Department's investments in cyberspace capability through the Joint Cyber Warfighting Architecture (JCWA) and Enhanced Budget Control. JCWA consolidates and standardizes the Department's cyberspace operations capabilities, enabling us to integrate data from missions and monitoring to help commanders gauge risk, make timely decisions and act against threats at speed and scale. The Department is building JCWA and advancing the Cyber Mission Force's capabilities for conducting the full spectrum of cyberspace operations.

USCYBERCOM is grateful to this Committee and Congress for granting us Enhanced Budget Control over resources dedicated to the Cyber Mission Force. With this authority, USCYBERCOM will improve direction, control and synchronization of investments for cyber operations across the Department of Defense.

CONCLUSION

U.S. Cyber Command views 2022 as a year of significant opportunity for building our capabilities against the five priorities above. Our overarching goal is to build a Command that is ready and capable at providing options and conducting operations in defense of the Nation with wider partnerships and world-class talent, all linked through the Joint Cyber Warfighting Architecture. These elements will be essential to our Nation's security as it faces an array of adversaries who are expanding the scope, scale and sophistication of their operations against us, and will be critical to developing the right mission posture to meet the unprecedented challenge of China.

The men and women at U.S. Cyber Command are grateful for the support this Committee has given to our Command. We can only succeed with a strong partnership with Congress. Thank you, and now I look forward to your questions.

Chairman REED. Thank you very much, General Nakasone. Before I begin let me too commend Sergeant Major Greg Smith for his service. We all understand that the great advantage that the United States military has are the NCOs and enlisted men, and thank you for your service.

Secretary Maier, we, over the past many years, have been trying to create this "service secretary-like" posture with SO/LIC, and as I indicated in my opening testimony, it seems to me you need additional resources and additional facilities. Can you give us an idea of what you need to be that service-like, Secretary?

Mr. MAIER. Chairman, thanks for the question, and this Committee, more than any other I think, has been a huge supporter of reinforcing the institutionalization of ASD SO/LIC, so we very much appreciate that.

Where I think we have made progress over the last year, from the time I was last here, testifying in front of you on institutionalizing the role of ASD SO/LIC in the Department with, frankly, a lot of advocacy personally from Secretary Austin, I think elements of the dual reporting structure that I am a big proponent of, where we report up one chain for policy and another chain for the service sec responsibilities does not translate always well into the Department. It just does not graft well in the blueprint. So that puts us, at times, at a disadvantage for competing for resources and some of the other aspects that we would need in a start-up organization.

I think your continued advocacy, your continued support for funding for staff, and as I think was highlighted in your opening

remarks, the right mix of expertise, and frankly senior expertise, where we are a small proportion as a ratio of senior executives who are having the responsibility to oversee many of the key aspects of the SOF enterprise, and we are doing it with people who traditionally are at a lower rank, as just some of the key aspects that we continue to work with the Department to reinforce, sir.

Chairman REED. Thank you very much.

General Clarke, from your perspective as the commander, can you indicate how valuable the role is of the SO/LIC, and what improvements you might suggest from the standpoint of a commanding officer?

General CLARKE. Thanks for the question. Senator, first, it is great to have a confirmed nominee that has been consistent in the position. Mr. Maier testified last year. Mr. Maier is the seventh ASD SO/LIC, either confirmed or acting, that I have had. So the consistency for SOCOM is very important, but it is also important for those deputy assistant secretaries and the structure within.

The other aspect that I would highlight, Senator, is that Mr. Maier now has a seat at the table with the other service secretaries that allow him to, one, provide advocacy for SOCOM structure and what we need to do in the future for the Department but also to provide that advocacy and insights as to what the Secretary is thinking. That is everything from human resources to the Secretary's priorities, and that has been extremely valuable for this command, where sometimes we could be working more in the dark without Mr. Maier at the table. So thank you.

Chairman REED. Thank you very much, General Clarke. I was going to ask questions, General Nakasone, about the need for talented personnel, but I think I will cede that to Senator Rounds and Senator Manchin today, in anticipation of the hearing.

But I do have a question about the social media data threat analysis center. We authorized that in the NDAA's [National Defense Authorization Act] of 2020 and 2021. Do you agree that it would be helpful to have such a center to provide ongoing analysis and trends and also provide some deterrence perhaps? Could you comment on?

General CLARKE. Chairman, I can. Based upon my experience watching two different election cycles and the work of our adversaries to attempt to garner greater influence, I think such a center would be helpful. Here is what the center really needs to do, though. It needs to be able to look at all of the full spectrum operations of what our adversaries are doing. What are the tactics? What are the tradecraft? What are the procedures they are doing?

I think the second piece is that what would probably be most helpful is this center being outside the Government, a federally funded research center or perhaps another center that is obviously in support that is able to attract the talent and remains very, very vibrant and dynamic in its approach.

Chairman REED. Thank you very much. Again, gentlemen, thank you for your service. General Clarke, please give my regards to your father, who was my physical education instructor at West Point, and passed me despite my inadequacies. Thank you very much.

Senator Inhofe, please.

Senator INHOFE. I enjoyed that.

General Nakasone, it is clear that threats posed by our adversaries in cyberspace is growing. China is using cyber to steal our cutting-edge technologies and Russia is using destructive cyberattacks in Ukraine and elsewhere to deter the United States and our partners.

General Nakasone, in the face of these serious cyberthreats your stance has been consistent and it has been clear on the benefits of the dual-hat arrangement. The dual-hat arrangement, for some reason, has become controversial, and I think you and I both agree on this. But why is it that that arrangement is in the national security interests of the United States? Explain that to us.

General NAKASONE. Senator, thank you for the question. I begin with just 2018, when I came into the job, both as Commander of U.S. Cyber Command and the Director of the National Security Agency, and I look at the change in terms of our national security today, in terms of what our adversaries in cyberspace are trying to do.

We were not thinking about ransomware in 2018. We were not necessarily thinking about near-peers in terms of their capabilities in 2018. Very, very focused on coming out of the 2016 elections, obviously the midterm elections of 2018, and then also being able to address a series of threats with counterterrorism.

But over this past 4 years, as you have indicated, Senator, the world has changed considerably, and what we see is a speed of sophistication and a willingness for our adversaries to operate tremendously impactful within cyberspace.

What we have done is to continue to mature the relationship between U.S. Cyber Command and NSA. How do we bring the best of what is being done in foreign intelligence and cybersecurity to the work that is being done on the command, to be able to get after our adversaries? This is what changed.

So 1 plus 1, we do not want it to equal 2. We wanted a force multiplier of 5 or 10 that can get after our adversaries, and we are not alone at this, Senator. Our adversaries are doing the same thing.

Senator INHOFE. Thank you. That is a great response.

China views Africa as key to its global ambitions, which is why they built their first overseas military base in Djibouti. People do not realize that it is not just that military base in Djibouti. That was the first military base, period, in their history. So they want to build another one on the West Coast of Africa.

Now we witnessed this in Djibouti, and the bulk of the United States Forces in Africa are special operations troops who work with our partners to build capabilities, collect intelligence, and push back on China, Russia, and terrorist groups. We should deploy more of these troops to Africa, given the growing threats that we have pointed out several times in Africa.

General Clarke, what is your assessment of what the Chinese military seeks to accomplish in Africa, and what can our special operations forces do to confront these growing threats?

General CLARKE. Senator, I have been to Djibouti many times and also see it as a strategic location not just for Africa, but what it gives for a platform for us to conduct counterterrorism missions

into the Middle East, with its proximity to Yemen. As a key strategic hub there, the Chinese clearly see the same thing.

For U.S. Special Operations Command in support of AFRICOM, it is to ensure that the violent extremist elements there are disrupted so they cannot cause a threat back to the United States. As far as our ability, by being there really allows us to see and sense what the Chinese pernicious behavior is inside of Africa, with a great interest specifically in collecting resources and minerals for the future. By being there it helps us to highlight those for the partners with whom we work.

Senator INHOFE. Well, and I am glad that we have that opportunity. Mr. Chairman.

Chairman REED. Thank you very much.

Senator Gillibrand, please.

Senator GILLIBRAND. Thank you, Mr. Chairman. General Nakasone, it is great to see you, and I just want to give my gratitude to all three witnesses today for their extraordinary service, especially General Clarke on your retirement. You have really been a bright light for many, many years, and we are grateful for everything you have done.

General Nakasone, I have advocated for the need for a national cyber and digital services academy, which was consistent with the recommendations of the AI Commission, to train the next generation of the civilian cyber workforce. This would serve as a complement to existing fellowship and scholarship programs.

Looking forward, what are the key competencies that these pipelines should be developing? Second and related, DHS [Department of Homeland Security] is still in the pilot phase of their new DHS community talent management system, where they seek to more quickly onboard 150 new cyber personnel outside of the traditional OPM [Office of Personnel Management] process. Are there any early lessons that can be learned from this and helpful to the DOD in increasing civilian hiring?

General NAKASONE. Senator, I think the first lessons that we have is we need the largest pool that is possible. This is a critical piece of what our Nation is going to do in the future. Cyberspace is where our Nation stores its wealth and its treasure, and so as we take a look at that, being able to attract from a broad range of our society, that traditionally perhaps have not touched science, technology, engineering, and mathematics is an important first step.

Secondly is focusing on some of the key competitive advantages our Nation is going to need for the future—data science, coding, artificial intelligence, machine learning. All of these are capacities that our Nation is going to need well into the future.

The third piece, I think, is just the ability to attract and to focus on the mission of what really gets done here. This is what we have learned at the National Security Agency and Cyber Command, is it is the mission that attracts people to work in this field. Thank you.

Senator GILLIBRAND. Do you have any particular views on the development of the national cyber and digital services academy?

General NAKASONE. Senator, if I might, let me take that for the record, just so I give a more fulsome answer.

Senator GILLIBRAND. I appreciate that. How many personnel are detailed to domestic agencies, such as DHS, to help protect domestic critical infrastructure? The 2018 MOU authorized 50 detailees. In 2020, DOD scaled it down to about 20, and as of last year, OIG report had only 10 filled. Obviously, we are trying to position ourselves to defend against any oncoming Russian cyberattacks, especially to the civilian sector, and as you know, about 80 percent of our cyber networks are civilian owned and operated.

So I would like to know what your perspective is on this and how we can create better collaboration so that not only can DOD resources, through the National Guard, but certainly NSA and other cybersecurity forces can be supportive of what we do to create cyber defense domestically.

General NAKASONE. Senator, what we have done, we began not only with the ability, as this Committee has allowed us to generate up to 50 personnel, but I think the first thing that we want to do is make sure that we exchange liaison officers, which has been done now, between ourselves and CISA [Cybersecurity and Infrastructure Security Agency].

The second piece is focusing a part of my force on direct support to CISA. This is a discussion that Director Easterly and I have had. It is also the ability for us to look at and say, what are the areas that perhaps are unique for our force that might be available to CISA and the Nation in the future.

The third piece is working very closely to better understand what are the competitive advantages that we might bring from U.S. Cyber Command to what is necessary for defense of the critical infrastructure. Thank you.

Senator GILLIBRAND. Thank you very much, General. I would like to work with you on creating a more formalized relationship between you and CISA for the future, because I know that the jointness efforts in New York City are among the best in the country. Currently in our cyber protection with both assets from National Guard, NSA, NYPD [New York Police Department], and FBI, we are collaborating now with over 50 entities that are deemed critical infrastructure—major banks, major supply chain, major energy, major water—and that is working extremely well.

So also for the record I would be grateful for any thoughts you have on that collaboration, making sure it could become more robust and more formalized. I would like your thoughts if you have any today but also for the record.

General NAKASONE. Let me take that for the record, Senator. I did have the opportunity yesterday to speak with Director Easterly. We were actually in the same location and had an opportunity to just go over some of these topics. So that will be an apropos time.

Senator GILLIBRAND. Thank you. Thank you, General. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Gillibrand.

Senator Fischer, please.

Senator FISCHER. Thank you, Mr. Chairman.

General Clarke, special operations forces have an indispensable and outsized role in counterterrorism operations. Would you agree that without sustained CT [counterterrorism] pressure terrorist

groups are more able to focus on planning and preparing for external attacks?

General CLARKE. I would fundamentally agree. That, but I would also add that it is key to do that with allies and partners, because then you actually are able to expand and get a bigger bang for your buck.

Senator FISCHER. As commander you must be extensively familiar with the challenges associated with conducting over-the-horizon CT operations. Correct?

General CLARKE. I am, Senator.

Senator FISCHER. Can you describe the challenges of conducting over-the-horizon CT operations without reliable partners on the group, without basing access in neighboring countries, and without reliable access to airspace?

General CLARKE. Senator, it is more difficult, and I am not going to sit in front of this Committee and say that it is not. I would also, on the same hand, though, say that in the last 20 years we have developed exquisite capabilities, and we can conduct counterterrorism missions over-the-horizon, and we have exhibited that in the past.

The most important aspect, from my purview—and I have witnessed this multiple times, and you are referencing it—is the intel collection that is associated to ensure that you have that intelligence to conduct those operations.

Senator FISCHER. We have been successful in the past, but have we been successful in the recent past, specifically in Afghanistan after we left?

General CLARKE. Senator, I can point to a recent raid in Syria to show that we have had success, and we continue to observe and monitor in Afghanistan, along with Central Command and other intel agencies.

Senator FISCHER. In this setting can you say if we have had success in Afghanistan?

General CLARKE. Senator, I think some of those questions best be served in a closed hearing.

Senator FISCHER. Thank you. Secretary Meier, has there been progress made towards securing any basing agreements or arrangements with any country bordering Afghanistan?

Mr. MAIER. Senator Fischer, there has been but I would prefer to talk about that in closed session, due to the sensitivities.

Senator FISCHER. Okay. Mr. Secretary, our current strategy for countering terrorist groups in Afghanistan assumes an immense amount of risk. I am also deeply concerned by the lack of intelligence collection capabilities that we have for Afghanistan.

In December, CENTCOM Commander General McKenzie stated that, quote, “we are probably at about 1 or 2 percent of the capabilities we once had to look into Afghanistan,” end quote. Does the Department plan to develop any additional resources to ISR in Afghanistan or is the Department comfortable with the current level of risk associated with the current ISR levels?

Mr. MAIER. Senator, the Department is looking actively right now at other forms of intelligence. I would not limit it only to ISR. There are other capabilities that I think can be surged, and that is an ongoing effort to look at those opportunities.

Senator FISCHER. Will you be able to discuss those in a closed setting with us?

Mr. MAIER. Senator, yes, I will be able to.

Senator FISCHER. Thank you.

General Clarke, for the better part of 2 decades the counterterrorism fight has been your main effort in your command. The unclassified summary of the new National Defense Strategy clearly states that China is the pacing threat, and de-emphasizes other persistent threats, including the threat from violent extremist organizations. How do you envision the demand signal from geographic combatant commanders changing given the shifting priorities under the new National Defense Strategy?

General CLARKE. Senator, the demand for special operations forces will always exceed the capabilities that we can provide. But what we are doing is to ensure that we are developing and modernizing to provide unique capabilities such as undersea modernization, maritime mobility that could work very well inside the Indo-Pacific, and to do things that only SOF can do. We have recently stood up a special reconnaissance enabling command to look at our sense of activities that can be applied globally.

Senator FISCHER. In your written testimony you talk about rebalancing the activities, and for the record if you could explain how special operation forces are realigning to support the priorities that are identified in that National Defense Strategy, please.

General CLARKE. I will. I will take that for the record, Senator.

Senator FISCHER. Thank you, and thank you so much for your service to this country.

Chairman REED. Thank you, Senator Fischer.

Senator Hirono, please.

Senator HIRONO. Thank you, Mr. Chairman. Thank you all for testifying, and a special aloha and mahalo to General Clarke, as this may be the last time that you are appearing before this Committee.

A question for General Nakasone. In your prepared remarks you note that one of your priorities is maintaining a skilled cyber workforce through recruitment, training, and retention. We all know that recruitment and retention in this area is particularly important.

We have a number of cyber education programs in Hawaii that work collaboratively with NSA and DHS, such as the National Center of Academic Excellence in Cyber Defense and Center of Academic Excellence in Research. However, we also struggle to retain these trained cybersecurity experts in Hawaii, where opportunities do exist. Yet, we are competing with the private sector, among other entities.

Are you able to meet the demands of an ever-changing cyber landscape with the talent that you currently have, General Nakasone?

General NAKASONE. Senator, thank you. Very specifically, yes right now, but we need to be postured for the future. To give you an example, we stood up, at U.S. Cyber Command this year, the Academic Engagement Network, over 92 universities across 40 different states, to include the University of Hawaii at Manoa, which I have had the ability to go and actually talk there, and talk with

the students there. This is an incredibly important piece of what we do because my sense is that as good as our technology is, it always come back to people.

Our talent initiatives right now are focusing on being able to develop the next generation. While we have enough for today, our Nation needs more for tomorrow.

Senator HIRONO. I think it is a constant need, and so we have a situation where we need to recruit or encourage a lot more people into the STEM [Science, Technology, Engineering and Mathematics] areas, wouldn't you say?

General NAKASONE. That is correct, Senator. In fact, we have a program with the National Science Foundation, Next Generation Cyber that is being run by NSA and the National Science Foundation, of which we have camps every summer for K-12, generating interest in science, technology, engineering, and mathematics.

Senator HIRONO. Are you finding that you are able to recruit women or girls and minorities into these programs?

General NAKASONE. Senator, we are. However, again, I point to the fact that it is not enough, and we need to do better in the future. Right now our forces, 35 percent female in terms of our overall strength on the civilian side and about 20 percent on the military side. Overall, in the cybersecurity industry, it is at 20 percent. That is a very, very low number for our Nation, and so I am concerned about our command, our agency, and certainly our Nation in this area.

Senator HIRONO. I think that whatever programs, educational programs that we have that would encourage more women and minorities into the STEM fields are important, wouldn't you say?

General NAKASONE. I agree, Senator. I think the other piece that I would add, being the son of two educators, is ensuring that the teachers, that we are able to bring this curriculum to the teachers that are so instrumental in being able to sow the foundation for the future.

Senator HIRONO. I agree. I know that we have to do a heck of a lot more to encourage particularly women and minorities, because that is a vast, untapped group of individuals.

Again for you, it is likely that many of our military installations in the Pacific would be targeted in the event of conflict with China, and it is clear we need a flexible and resilient approach to logistics in the Pacific. In her testimony last week, General Van Ovost, commander of USTRANSCOM, highlighted cybersecurity as a chief threat to her mission as it pertains to contested logistics, and highlighted partnerships with CYBERCOM.

In what ways has CYBERCOM integrated with STRATCOM and INDOPACOM regarding the vulnerability of our assets spread across the Pacific?

General NAKASONE. Two ways, Senator. First of all, being able to ensure that the network that U.S. Transportation Command utilizes, along with a series of private sector companies. This is an unclassified network, it is resilient, and assured in terms of being able to do that. We have special focus on USTRANSCOM.

The second piece is working with USTRANSCOM, USINDOPACOM, and other combatant commands to ensure that the partnership that we have built in the Pacific and Europe are

foundational to being able to ensure the cybersecurity of these nations as we continue to partner with them.

Senator HIRONO. I do have a few more questions that I will submit for the record. But I would also like to join the Chairman in expressing our congratulations to you, General Nakasone, for exposing Russia's aggressive intentions regarding Ukraine. That was very helpful to enable all of us to be much better prepared for this terrible war that is happening in the Ukraine.

Thank you, Mr. Chairman.

General NAKASONE. Thank you, Senator. I will pass that on to my people.

Chairman REED. Thank you, Senator Hirono.

Senator Rounds, please.

Senator ROUNDS. Thank you, Mr. Chairman.

First of all, let me begin by just saying, gentlemen, thank you for your service to our country, and General Clarke, to you and your team, what you have done over your years of service will make a difference in the safety and security for our country for years to come, and thank you.

General Nakasone, my understanding is that the Administration has launched an interagency review which could lead to revisions to the National Security Policy Memorandum Number 13, or NSPM-13. For my colleagues who may be unfamiliar with this document, the NSPM-13, along with NSPM-21, allows the delegation of well-defined authorities to the Secretary of Defense to conduct time-sensitive military operations in cyberspace. It is based on the idea of persistent engagement, which means continuously engaging in contesting adversaries in cyberspace.

Recognizing that you have just talked about dual-hattedness and the fact that that has worked successfully, I think you are absolutely correct with regard to the dual hat that you wear. Would you share with us, with regard to the cyber effects that you have been able to conduct? We have made a difference with NSPM-13 as well. Could you just share with us, before NSPM-13 was in effect, which came into effect after the first year or so of the Trump administration, but prior to that how many cyber operations or cyber-effect operations were conducted prior to that time in the previous 4 or 5 years?

General NAKASONE. Senator, I know of no effects operations ever conducted prior to 2018, but I would like to take that question just for the record to make sure that I look back, since it is before my time.

Senator ROUNDS. Thank you. I think recognizing that we are in an unclassified setting, would it be fair to say that the number of these operations greatly increased after NSPM-13 went into effect?

General NAKASONE. Senator, two critical events took place in 2018. One was this Committee allowing cyber to be a traditional military activity in the fiscal year 2019 NDAA. The second piece, as you highlighted, was National Security Policy Memorandum 13.

Senator ROUNDS. So would it be fair to say that the NSPM-13 would have been considered as playing an important role in enabling you to protect the 2018 and 2020 elections, along with recognizing that it is now part of a traditional military activity?

General NAKASONE. That is correct, Senator.

Senator ROUNDS. If they were to change the NSPM-13 and the authorities that you have, is there a possibility that your capability to conduct cyber effects operations may be affected?

General NAKASONE. So certainly, Senator, we would take a look at any changes, obviously, and we will adjust to those changes. But significant changes to that NSPM, it could affect what we need to do.

Senator ROUNDS. Thank you. General Nakasone, the members under your command are highly trained technical experts. There is a high demand in the global market for their skill sets. I understand that the service components are responsible for recruiting and retaining these individuals, but their retention directly affects your ability to conduct operations. Senator Manchin, as chair of the Cyber Subcommittee, and myself, as ranking member, I know we are having a specific subcommittee discussion on that this afternoon. But in this open setting I think it is critical to discuss the need about, number one, either the volume of individuals coming in, the ability to retain them for a longer period of time, but also when they come to you from the services, because they are theoretically supposed to be trained at the service level and then delivered to you for the operations, are they in a position today to be used directly in operations or do you have to go through an extensive retraining or additional training of these individuals?

General NAKASONE. Senator, first of all thanks to you and Senator Manchin for the hearing you are going to hold this afternoon. When I look at readiness, really three parts to the readiness with our cyber forces. First of all, what the services are responsible for, the man, train, and equip piece of that, for 6,187 cyber warriors.

Secondly, it is what we at U.S. Cyber Command and the National Security Agency must do to provide additional training. This is above and beyond what someone would come into the service and need to be able to be effective on our teams.

The third piece is I think the critical piece that you have highlighted, which is retention and the ability for our cyber warriors to continue to stay within our force. That is a shared mission between the service and U.S. Cyber Command. I take that very seriously. I have worked very closely with the service chiefs to make sure that all three of those areas are going to be balanced in the future. We have work to do.

Senator ROUNDS. So in other words, if you get them and they are not ready to go on the job day one, and you are training them, that takes time away from the time that they are then available for your use by a significant amount of time.

General NAKASONE. It does, but I would say, Senator, that there is a basic level that the services have to meet, and for the most part they meet that all the time. It is us being able to do the advanced training that is so necessary for them to be effective as part of our teams.

Senator ROUNDS. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rounds.

Senator Shaheen, please.

Senator SHAHEEN. Thank you, Mr. Chairman, and General Clarke, thank you so much for your service. Thank you all for testifying this morning.

General Clarke, I know that The New York Times has pointed out that you all had been very involved in Ukraine, and we discussed this yesterday, in terms of providing training to them that began in 2014. Can you talk about how important that has been in providing the expertise that we are now seeing on the battlefield in Ukraine?

General CLARKE. Senator, I hit a few highlights. One is the competency towards the security force assistance and specifically the high-end training that we did for the Ukrainian special operations forces. But I would also highlight for the Committee the military information support ops, or information warfare, that we had a dedicated team that was in the Ukraine for 8 years, providing that, and that was everything from billboard to print to using internet-based capabilities, along with civil affairs teams that were working with them. It really, as we see today, the resistance that the Ukrainian forces have held and the training that they were given I think directly contributed to the success on the battlefield.

Senator SHAHEEN. Thank you, and you mentioned the importance of the information warfare that has occurred there, and clearly Ukraine has been masterful at what they have been doing. Of course, Putin also has good a good job in preventing his citizens in Russia from knowing what is actually going on on the battlefield.

Can you talk a little bit about whether we should develop, or maybe we already have, a gray zone strategy to encompass that kind of information warfare as we are looking at particular conflict areas around the world.

General CLARKE. Senator, you are pointing at a really key factor, and yes, we have already begun this, in coordination with ASD SO/LIC and particularly with CYBERCOM, where much of the delivery of information resides. It is critical, and I would say we already have the authorities, in many cases, to conduct information operations. We just have to make sure that they are, in fact, directed at the right audiences and that we work very closely with our Department of State colleagues and the interagency so that we are delivering proper effects at the right point in time.

Senator SHAHEEN. Thank you. General Nakasone, what is CYBERCOM's role in defending the Homeland from foreign cyber threats beyond just the critical infrastructure protection, and how are you working with public and private partners to protect the country, as we have looked at the potential for the Russian Government to attack our critical infrastructure and we still are concerned that that might happen? What are you doing?

General NAKASONE. Senator, it begins outside the United States, where my authorities rest, and that is through a series of persistent engagement campaigns against malicious cyber actors that intend to do our Nation harm, with the National Security Agency being able to release that information, so when we do a hunt forward operation in a specific country, being able to understand the tradecraft and the malware. Then releasing it publicly provides an antidote to what they might do, and then within the United States, working closely in support of Department of Homeland Security and CISA, providing them any assistance that they need in terms of capacity or capabilities.

Senator SHAHEEN. Thank you. Mr. Maier, one of the things that we have seen, and you mentioned this in your opening statement, you talked about the effort to encourage more women to join SOF. We have seen, in Afghanistan, with the Female Tactical Platoon, and Syria, with the Women's Protection Units, we are now seeing in Ukraine the important role that women are playing in conflict, and they are actually getting more attention today than they were in years past.

So can you talk about what we are doing to work with our international partners to highlight the role of women and make sure that they have the attention and support they need when we are working in an area?

Mr. MAIER. Senator, I think we concretely say that women in SOF are an operational imperative because of the ability to do some of the things you described in your question. It is critically, and especially some of the areas we have traditionally worked, to be able to have women that are operators or have exquisite skills go to areas to be able to gather information that, frankly, men cannot go, or have a different outreach capability to different parts of communities. As we look toward the future fight, whether it is against gray zone competitors and non-state actors or state actors, we are going to need that capability. It is a force multiplier, ma'am.

Senator SHAHEEN. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Shaheen.

Senator Ernst, please.

Senator ERNST. Thank you, Mr. Chair, and gentlemen, thank you very much for your service to our country. General Clarke, to you and Suzanne, and Chief Smith, to you and Tina. Thank you very much for your collaborative efforts in supporting our SOF warriors and their teams.

There is no doubt that our special operations forces are the most capable of military elements on the globe, and of course our cyber forces, General Nakasone, are essential to the defense of this Nation. We have to ensure that both of these elements are fully resourced and modernized to defeat the current threats to our national security.

So General Clarke, the health of the force is the fifth pillar in your command, and it ties into directly the first SOF truth, which is humans are more important than hardware. I think we all believe that, and I, like you, want to make sure that we are providing our servicemembers with the best care possible.

So can you talk through SOCOM's efforts focused on brain and behavioral health for our servicemembers and, of course, for their loved ones as well?

General CLARKE. Thank you, Senator. Our people are our most precious resource and we have got to put the resources behind that to ensure they are taken care of. Specifically, the Brain Health Initiative falling with the Preservation of the Force and Family is one of the critical things we do.

We focused initially on the physical domain because that is what you could see. But what we are finding is through the invisible wounds, TBI [traumatic brain injury], multiple explosions, multiple breaches in proximity to those explosions is having an impact, and so we are working very closely.

I recently went up, with Chief Greg Smith, up to Boston, where we are working with Mass General and a couple of academic departments and universities up there to look at how we can do imaging that previous we could not do except on a cadaver. This may be groundbreaking for us to be able to determine beforehand what some of our operators may be going through.

As you are well aware, we stood up an additional pillar within our Preservation of the Force and Family specifically towards the cognitive domain, because we realize that this is the most important part for our people is what is inside their brain housing group, that they can make the right decisions, and it affects everything they do. So we are going to continue working to improve our operators' and their families' lives.

Senator ERNST. I appreciate that, sir. It is so important, and you brought up Preservation of the Force and Family, as did ASD SO/LIC Maier. But how can we take this program and sustain improvements in how our military approach is sustaining those SOF operators? Again, just focused on POTFF, how do we sustain and improve?

General CLARKE. Senator, the key for us is the sustained funding that we need in order to do that, and most of that funding attributes to the people that we have to support the Preservation of the Force and Family program.

Senator ERNST. Thank you, and just very briefly as well, I want to talk a little bit about your operational posture, General Clarke. I am frustrated by a number of mobilizations within terror networks, whether it is Russia and China across Africa, what we see in South America, Eastern Europe, all these hot zone conflicts that are currently ongoing.

What does supporting your unfunded requirement list, or what I like to think of as risk assessment list, by us in these particular theaters?

General CLARKE. Senator, what it provides us, if we find support for the unfunded, it buys down risk, because we are able to modernize faster, and then we are also to ensure readiness, that we are placing the appropriate dollars towards those unfunded requirements. We will buy some of that back.

Senator ERNST. For me, Mr. Chair, that is extremely important that we are able to focus on these unfunded requirements because they are so important within the area of SOCOM, and making sure that we are taking one of our smallest, most agile elements and being able to use them as a force multiplier.

So thank you, Mr. Chair. Thank you, gentlemen, very much for being here today.

Chairman REED. Thank you very much, Senator Ernst.

The vote has commenced, and as I indicated at the beginning of the hearing, and with the concurrence of Senator Inhofe, we will recess for approximately 10 minutes. We will rejoin the hearing at the call of the chair, but approximately 10 minutes, so we can accomplish this vote, and then get on with the hearing.

The Committee stands in recess.

[Recess.]

Chairman REED. Let me call the hearing to order again. I thank the witnesses for their understanding as we voted, and let me recognize Senator Rosen.

Senator ROSEN. Thank you, Chairman Reed. It pays to be the first one back from votes, does it not? So thank you. I want to thank you for testifying. Thank you for your years of service and continual service. I know you are going to continue to serve on, and for everyone else that is here.

But we have got a lot going on with Russia, so I want to talk about Russian cyber threats, General Nakasone, because last month President Biden warned that Russia is exploring options for cyberattacks targeting the United States. The elevated threat level comes as we know Russia is launching cyberattacks against Ukraine, hitting the country's national telecommunications industry just last week, and causing great denial of service, service disruptions.

Last week Senator Rounds and I called on the Administration to brief Congress on how we are protecting critical infrastructure right here in the U.S., and I am happy to report that just last night Director Easterly was with us in a classified briefing to talk about what CISA is doing.

Can you tell me how CYBERCOM has been coordinating with Ukraine to harden their networks, and as you conduct your hurt forward operations to identify network vulnerabilities are you sharing that not just with Ukraine but all the NATO [North Atlantic Treaty Organization] allies, particularly the border countries that are helping to provide that military and humanitarian relief?

General NAKASONE. Yes, Senator. As I mentioned, we had a hunt forward team that deployed to Ukraine at the end of 2021, and spent well over 2 months working with our partners there to harden their networks, focused on a number of key critical assets.

The big piece about hunt forward, though, is not only the fact that we understand the networks of our allies and partners as they invite us in there but it also understanding what our adversaries are doing, and then to your point, sharing that broadly, not only with our partners and NATO but also with the private sector. Critical infrastructure is within the private sector, so as we expose these types of things they are broadly being able to shine a light on this type of activity.

Senator ROSEN. Yes, I think it is important, and I know this is not classified but can you speak broadly about some of the insights that we have gained? Are they using their state-sponsored networks? Are they using criminal networks?

General NAKASONE. So broadly, Senator, what I would say is what we learned is obviously what we had a pretty clear indication, which is the fact that there is a persistence that the Russians have towards this type of activity, and they have been in the Ukraine for a long time. So being able to identify the persistence, being able to identify the adversaries, being able to share that information, again, broadly with our partners, broadly with our allies and NATO, and then, most importantly, with the private sector again reinforces this idea of you cannot hide in terms of what you are doing.

Senator ROSEN. Thank you. I look forward to some more classified briefings with everyone.

But I want to move on to you, General Clarke, because we know the world is watching. We know Iran is watching. We know this for sure, and so we have to combat Iranian aggression. In several previous hearings we know Iran and Iran-aligned militia groups, they are increasingly targeting the United States installations and servicemembers in Iraq, in Syria, via rocket and, of course, drone attacks. On a regular basis, Iran is, of course, we know the world's leading state sponsor of terrorism. They threaten the United States and they threaten our allied interests in the Middle East and around the world, via both direct attacks and through its support for Hezbollah and the Islamic Republic's other terrorist proxies such as KH [Kataib Hezbollah] and AAH [Asaib Ah al-Haq].

So can you discuss the threat Iranian-aligned militia groups in the Middle East are posing to our United States troops and allies, and do you believe the United States, how do you think we should respond as you are currently addressing this threat? Do you have the necessary authorities, besides the ability to act in self-defense?

General CLARKE. Senator, I have served a long amount of time in CENTCOM area, and specifically in Iraq, and I have watched the Shiite militia groups, as you accurately described, their capabilities, which are only growing, particularly, as General McKenzie identified to this Committee, in the missile and in their unmanned aerial systems, which threaten United States Forces.

I would leave the policy side to what we do with the authorities to Mr. Maier, but at the same hand I would say that we continue with our special operations forces to provide options for those policymakers by seeing and understanding how they conduct these attacks and try to be in front of those attacks to provide those options.

Senator ROSEN. Thank you. Oh, I see my time is up. I yield back. Thank you.

Chairman REED. Thank you, Senator Rosen.

Senator Tuberville, please.

Senator TUBERVILLE. Thank you, Mr. Chairman. Thank you for being here today. General Clarke, thank you for your service.

General Clarke, in January 2021, the DOD awarded Teledyne Brown Engineering a contract to continue production on the Mark 11 Shallow Water Combat Submersible. These subs are used to deliver Navy SEALs and their equipment, special operations. When do you expect these Mark 11s to be delivered, all of them?

General CLARKE. I will take that one for the record, because we do have a timeline over years, Senator. But what I am committed to, and take it broader, is that this capability for a maritime, undersea collection is critical for our Nation, to be able to work in the littorals and team with the Navy, to be able to do those type of operations.

Senator TUBERVILLE. Do we need more of them?

General CLARKE. Senator, I think what we have requested has been sufficient, and if we believe we need more of that unique capability—because it is not just that delivery system but it is other SEAL deliver systems that we are putting forward, to give

variances of the type of capabilities we will need. But if we need more I will come back to this Committee and to the Department.

Senator TUBERVILLE. Good. Thank you.

Secretary Maier, to what do you attribute the cost and time overruns of Block 2 of the Dry Combat Submersible, an important asset for the Pacific?

Mr. MAIER. Senator, I would also like to take that for the record. That is a complicated answer that I do not have all the details on. But we will get you written responses.

Senator TUBERVILLE. Take more than 5 minutes to explain that probably, would it not?

Mr. MAIER. Yes, it would, sir.

Senator TUBERVILLE. You know, in November, Acting Secretary of Defense Chris Miller enacted the fiscal year 2017 NDAA requirement to elevated SO/LIC positions to be on par with the other service secretaries, but last May, Senator Austin reversed this decision, burying SO/LIC back under the Under Secretary of Defense for Policy. SO/LIC is still understaffed and is not getting the routine direct access to the Secretary and Deputy Secretary as should, as directed by the NDAA.

As a service Secretary, do you control acquisition and budget items in your purview?

Mr. MAIER. So, Senator, by law I do not for acquisition, but I approve the special operations budget. So the answer is yes to one and no to the other.

Senator TUBERVILLE. Okay. Thank you. You know, I would like to say this, that Secretary Austin changed this back but this body, we believe in civilian oversight, and hopefully we can get back to that somehow.

General Nakasone, in July 2021, General Hayden said that the joint warfighting concept had, quote, "failed in many different ways," end quote, could not produce a victory against an aggressive red team, and needed a new emphasis on space and cyber.

Where, specifically, regarding Indo-Pacific, did the joint warfighting concept, JWC, fall short with cyber?

General NAKASONE. Senator, this is one that I certainly will take for the record, just because I want to provide a classified response to that. There are some very unique things that we have addressed, but again, I think it is better to put that in a classified response.

Senator TUBERVILLE. All right. What resources to ensure cyber protections across the joint force have you asked for and not received? Is there anything that you have not received that you have asked for?

General NAKASONE. Senator, not right now. I think the broader question which the Department is working towards right now is how big a cyber force, and that is a study that is being undertaken right now. We will grow by 14 different teams over the FYDP [Future Years Defense Program], but I think that, in our estimation that that is probably a down payment on a broader force that is going to be necessary for the Nation.

Senator TUBERVILLE. How can we help you in this coming budget?

General NAKASONE. I think the biggest piece is just the continued support of our talent initiatives. We have talked about this. The importance of being able to grow a force begins well before they ever are recruited for any of the services or enter civilian service.

Senator TUBERVILLE. Thank you, and I would love for you to come to Alabama and check out our new Cyber Technology and Engineering School, grades 9 through 12, top in the state, started 2 years ago. It is unbelievable and going to be unbelievably successful. It will open the doors of its new building this year, coming up in September, and we have over 150 in it now, and it is an amazing place of education, and I think it is going to be very beneficial to what you are doing. I am talking about high school kids. I am not talking about college, and these kids will be ready to go to work as soon as they get out of high school. So hopefully one day you can visit in Huntsville.

General NAKASONE. Senator, I would enjoy that. I would also, Senator, to solicit your assistance for our Academic Engagement Network for U.S. Cyber Command. We have four institutions within the state of Alabama. But given your long experience as an educator I think your propensity within the state of Alabama could double that number.

Senator TUBERVILLE. Thank you. Thank you very much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Tuberville.

Senator King, please.

Senator KING. Thank you, Mr. Chairman. Before beginning my questions I want to associate myself with the questions of Senator Rounds about National Security Presidential Memorandum 13. My understanding is that the Administration is considering changes. Substantial changes, I believe, would be a grave mistake, would undermine deterrence at the worst possible moment, and I have communicated that to the White House, along with Congressman Mike Gallagher, my co-chair of the Cyberspace Solarium Commission.

General Nakasone, if you can answer this in an open session, why no Russian serious cyberattack in Ukraine? We all thought that was going to be the first thing they did, and it did not happen. I know there were some attacks but nothing of the scale that we were expecting. Do we have an answer to that?

General NAKASONE. So Senator, I think I would begin by saying we are not out of Ukraine yet, so obviously our position right now is one of vigilance, in terms of anything that might still be done.

In terms of what the Russians decided to, I would anticipate that this was based upon a series of assumptions that they may have made, I think coupled with the defensive capabilities that we were able to work with a number of partners within Ukraine, and then thirdly, I think is just a realization that a lot of times these are very, very difficult attacks to be able to conduct.

Senator KING. I think their assumption was that the war would last a week so they did not really have to do that. That seems to be one of their gravest mistakes.

I am concerned about attribution. If we are going to respond to cyberattacks we have to have timely attribution. Are the U.S. Gov-

ernment's attribution assets adequate? Do we coordinate adequately? Who is in charge of attribution if a cyberattack occurred tomorrow? Is it you? Is it NSA? Is it the FBI? Is it CISA? Where does that responsibility fall?

General NAKASONE. So certainly, Senator, there is a combination of all of those that lead to attribution, to include our partners as we work very closely with them. I think the other one that I would add is the private sector. You know, when you consider some of our private sector entities that have over 300 million endpoints in the United States, being able to understand what is going on there is critical for what we are able to see.

But ultimately this is brought up to a policy-level decision based upon what we are able to provide from intelligence and our partnerships with industry and foreign nations.

Senator KING. It makes me nervous when I hear the first part of the answer being coordination. I like it when somebody is in charge and responsible, but I understand that the coordination is important.

One of the—I do not know if I would call it a gap, but you mentioned, for example, outside of our borders, that is where NSA's responsibility is, CIA's [Central Intelligence Agency] responsibility is. We are no longer in a world of borders, and what concerns me is a cyberattack that originates in a foreign country but goes through a server in New Jersey or California, and therefore it is a gray question as to where that cyberattack is coming from. Do we have adequate authorities and lines of authority and definitions to deal with a foreign cyberattack that comes through U.S. infrastructure?

General NAKASONE. I think that we are making much better progress in being able to address some of those authority gaps. You have identified one of the areas that we certainly were relevant during the SolarWinds most recently supply chain attack, when our adversaries had positioned themselves within the United States and we found that there was a blind spot there.

So again, the breach notification that has been done, the discussions in terms of upping the standards for both national security systems and government systems that the Administration has done I think have all contributed to this.

But you point out a key piece, Senator, which is this is much more difficult than one person being in charge. There is not one agency, one department, or even one entity that has all the information, and is so why this coordination is so important.

Senator KING. We talked about recruiting talent, and I know that is an issue that has been discussed in other questions. One of my questions is, what about tenure? Is it an issue in CYBERCOM that you have soldiers and sailors and marines, people that come through, but they are only there for a limited period of time and then they move on, or do they move on within CYBERCOM? Do we have enough continuity, or is that an issue that we need to address?

General NAKASONE. That is an area that each of the services handles differently, and I think each of the services has to focus on this. Once we train an operator within our force we are very, very reluctant to have them go back and do anything else but

cyber, and I would offer that most of the cyber operators that is all they want to do is cyber.

Again, the investment in this and the repeat tours is critical for us to maintain our readiness.

Senator KING. So we do have repeat tours now. That is a standard part of the way you operate.

General NAKASONE. We certainly do, but I think there could be more.

Senator KING. General Clarke, I am running out of time. Just a short question. Are you providing the kind of training that you did to the Ukrainians to other allies, particularly in Eastern Europe, in special operations?

General CLARKE. Yes, sir, we are, and I can give you more detail or provide that for the record, and we have continued that through what is going on in the Ukraine today.

Senator KING. Well I think what is going on in Ukraine in terms of success has been attributable to lots of factors, but one of them is the training that you have provided. Thank you.

General CLARKE. I agree with that assessment. Thank you.

Chairman REED. Thank you, Senator King.

Senator Blackburn, please.

Senator BLACKBURN. Thank you, Mr. Chairman, and thank you to each of you for the update.

General CLARKE. I want to talk about the small unit dominance for just a moment and see where you are with that, to provide solutions for SOF small unit dominance. What progress have you made to bolster the collaboration with external government and non-governmental organizations concerning advancement of adversary asymmetric advantages? Then when you look at your resource shortfalls when it comes to information gathering, situational awareness, where are you with that? As you are very well aware, and as we have talked, Fort Campbell and the men and women that are stationed there—and this is something that is important to them.

General CLARKE. Senator, you bring out a great point about our forces. Many times they are working in small teams and they are disaggregated, but they bring with that disaggregation some power of being able to work with foreign partners, and providing them all the assets and tools, and as we look at this, at a point forward that very few could do. It is accepting to the host nation that they can work there because they have the culture, they have the language, and most times they are combat-credible forces who have been tested on the battlefields in Iraq, in Afghanistan, in Syria, and providing them all the tools that they need.

What we are focused on is specifically giving them the most tools that they can have forward, what we call the hyper-enabled operator. That is one of my top five technology focus areas, to make sure that they have those tools, and a lot of that will be, as you referenced, making sure that we can put artificial intelligence and machine learning forward at the edge where they are.

Senator BLACKBURN. In the 2022 NDAA, SOCOM, we had the operating concept, you need to articulate an operating concept that supports the joint warfighting concept. When you are looking at

that joint landscape how do you seek to define that, and then how are you filling in those gaps as you bring in and avail technology?

General CLARKE. Senator, you are hitting a really key point, that working with ASD SO/LIC, who has given us guidance to actually look at our force structure and come up with that operating concept for 2040. I believe we have the force size that we need, but within that force size that we have we actually have to do some restructuring to ensure that we can properly compete with a nation state like China, and develop those unique capabilities that will be required for that future conflict.

Senator BLACKBURN. Okay, and then in that vein, as you look at all of this, how are you going to bring into review different levels and degrees of specialization and competence, and how do you do that with your existing force?

General CLARKE. The way we do it now, and it works best, is through experimentation. We actually create exercises and venues so that we can actually test those, and we are doing that today. So as you look at our operations and maintenance budget for this year, about \$9.7 billion, that is what directly contributes to that experimentation and building the future force that we will need.

Senator BLACKBURN. Okay. Before I run out of time, General Nakasone, I always appreciate your insights. I want you to talk for just a minute about the value of the current cyber defense partnerships that you have and how that affects your multi-domain partnerships, how that affects your multi-capable operations.

General NAKASONE. Senator, let me begin with the partnerships in a number of different phases. So first of all I would say our partnerships with the National Security Agency is critical to what we do. U.S. Cyber Command is powerful based upon our partnership with NSA.

The second piece is the partnerships that we have with the private sector. As I mentioned, the change that taking place in cyberspace is mainly taking place within the private sector. So having those partnerships, like our under advisement program that this Committee sponsored is critical for what we are doing.

The third piece is partnerships with our allies. Hunt forward teams, nine which were conducted in 2021, by the invite of foreign governments, coming into their networks and understanding is critical.

Senator BLACKBURN. Okay. I am over time but let me ask you. Having those partnerships, does that help you to retain some of the human capital and the troops that you need to retain?

General NAKASONE. Most definitely. I mean, people want to work with the private sector. They want to be able to deploy. They want to be able to work with academic institutions. There is an excitement that goes with that.

Senator BLACKBURN. Okay. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Blackburn.

Senator Manchin, please.

Senator MANCHIN. Thank you, Mr. Chairman. First of all, thank all three of you for your service, and General Clarke, thank you and your family. I know how a commitment that is and what a

commitment that is, but now you get to spend hopefully a little time with them.

To General Clarke and to Secretary Maier, this is for you all. I noted the comments in your advance testimony about special operation forces, unique training authority, and the need to maintain readiness in the diverse global environments that we are in.

I wanted to make sure you were both aware that in West Virginia we are working and making our state more available to SOCOM training operations—we are only 3 hours away now. We are not that far. You can hop, skip, and a jump—available for SOCOM operations. We have parts of the states that are in great condition for training opportunities, if it has not been brought to your attention, from subterranean complexes to austere rural environments. There is surface mine land—that is possible for transfer to DOD for nothing. Zero. One dollar to make it legal, probably—the East Coast-based units to train to significantly reduce cost compared to similar training that you are going to travel to the West Coast and do. It is right in your backyard.

My office has been working with J3 representatives from SOCOM and our state as well as the West Virginia National Guard to highlight what we have to offer, and I hope to have you out soon to do a site visit. If you could I would appreciate it very much.

So if your SOCOM staff has not briefed you on this program would you work with me and maybe come and visit and see what we have to offer?

General CLARKE. Senator, the SOCOM staff has briefed me. Having been appointed to West Point from Martinsburg, West Virginia, by Senator Byrd 42 years ago—

Senator MANCHIN. Oh, you have got to come. You have got no option.

General CLARKE.—I am very familiar with West Virginia and this initiative and your hosting of 2nd Battalion 19th Special Forces Group and our continuous assessment that we run in your state.

Senator MANCHIN. We are a state that is totally committed to the defense of this country, and think it proves that by the amount of veterans that we have who have fought in every war in conflict, and have even shed a lot of blood. So we are ready to go, and we would love to have you all there because you would be most welcome in whatever we have to offer.

I have always said this too, about West Virginians fighting. I say when there is not really a good fight going on around the world, we fight each other just to stay in practice, because we are ready. Just like Alabama.

So General Nakasone, this is for you. As Chairman of the Cyber Subcommittee I am particularly concerned that it is only a matter of time before cyber criminals and bad actors launch attacks on our commercial space assets, particularly our global positioning system. Cyber and space realms are intertwined and it is imperative for CYBERCOM and SPACECOM to work in lockstep, because every system SPACECOM uses has a cyber component that has to be secure and reliable.

So how are you all working together, and if there are things you can talk about. If not, we will do it in a secured setting.

General NAKASONE. So again it begins with the ability for us to work closely with U.S. Space Command. We put a cyber integrated planning element into Space Command headquarters last summer. This is our ability now to work hand-in-hand with General Dickinson and his staff to be able to plan those types of operations.

Senator MANCHIN. How about nitro?

General NAKASONE. Pardon me?

Senator MANCHIN. Nitro.

General NAKASONE. If I might come back to you on that, Senator.

Senator MANCHIN. That is what I thought. Okay. We will do that.

Also, General Nakasone, a few weeks ago we heard from STRATCOM and SPACECOM on their readiness posture. Maintaining our nuclear deterrent and preserving our ability to operate in space are fundamental to today's great power competition with Russia and China. I believe that both of these missions are connected to our cyber defensive and offensive capabilities. The cyberspace and nuclear missions have to be interconnected and cannot operate in a vacuum.

My question would be, given that CYBERCOM is operating in a highly complex and ever-evolving environment, how integrated would you say that the efforts are between STRATCOM and SPACECOM right now?

General NAKASONE. Totally integrated, and it begins with the assurance of our nuclear command and control and communications capabilities.

Senator MANCHIN. I know that Senator King asked the question about what is going on and why has Russia not—are you seeing indications that we should have some concern there, that there might be movement in that area of cyberattacks?

General NAKASONE. So again, Senator, I think that the President, as he announced last week with his indications of concern, we have concerns all the time. We remain vigilant, and we will continue to remain vigilant.

Senator MANCHIN. Do you believe that we are adequately capable of stopping these horrible cyberattacks that could harm just the well-being of the average United States citizen?

General NAKASONE. We are, along with our partners at CISA, and the private sector.

Senator MANCHIN. So everybody is on track. Thank you very much. No further questions.

Chairman REED. Thank you very much, Senator Manchin.

Senator Cotton, please.

Senator COTTON. Welcome, gentlemen. General Nakasone, let us talk a little bit about intelligence sharing with Ukraine. We have heard a lot about that over the last few weeks. You mentioned it a little bit today in your testimony. Can you tell us exactly, like how does that happen for you and your people, at NSA and CYBERCOM? Do you have partners in Ukraine that you are going direct to with intelligence we share? Is it going up in the United States Government and then going to them somehow? Just give us a little more visibility.

General NAKASONE. Senator, if I might, I think this is a great conversation for this afternoon, in closed testimony, just because I

can lay out the numbers and the procedures upon which we do this.

Senator COTTON. Okay. We will have that conversation in a closed session.

I would like to know what kind of limitations that you face on what you are able to share, if any. Has the Administration put limitations on your ability to share actionable intelligence with Ukrainians?

General NAKASONE. So, Senator, again there is policy guidance that we follow at the National Security Agency with regards to the sharing of that intelligence.

Senator COTTON. Are you allowed to share intelligence that would allow or facilitate strikes into the Donbas region?

General NAKASONE. Again, Senator, I think this is obviously better handled in closed testimony.

Senator COTTON. Okay. We will talk about it in closed testimony. I certainly hope that you and the rest of our Government is allowed to share such intelligence, since Russia has announced that that is the main effort in Ukraine now and that the White House is not nervous as a cat in a room full of rocking chairs about allowing Ukraine to retake some of its territory in the Donbas.

General Clarke, you have planned a mission or two in your life. Do you think it would complicate Russia's operations in the Donbas if they had to worry not just about Ukraine's defense operations there but also had to worry about potential offensive operations across the line of contact in the Joint Forces area?

General CLARKE. Senator, I believe that any time that any nation has increased capabilities and knowledge of their opponent it is helpful.

Senator COTTON. I bet it would complicate the hell out of their planning, if you asked me. But anyway, we will talk about it at closed setting.

General Clarke, I want to talk to you briefly about a couple of matters. The first is Afghanistan and the so-called over-the-horizon counterterrorism strikes we heard so much about last summer, in the lead-up to and during the collapse in Kabul. Since the last American soldier left Afghanistan, how many over-the-horizon strikes have we conducted in Afghanistan?

General CLARKE. Senator, I am not aware of any over-the-horizon strikes that have been conducted since we departed Afghanistan.

Senator COTTON. Yes. Unfortunately, neither am I. I think it might have been better called over-the-rainbow counterterrorism strikes at the time by the White House.

Another thing, General Clarke, I want to address with you is the authorities you have. Last year, when the Biden administration took office, one of the very first actions was to remove approval delegations for actions outside of Iraq and Syria, so places like, say, Yemen. We talked about it in this hearing last year, and you probably remember me referencing a story from the previous President about his first encounter with this question, when he was asked to approve a strike, and he did not understand why some captain or major or colonel who was on the ground was not approving it.

Has the Biden administration's policies affected your ability to get after terrorist targets in places like Yemen or Somalia or elsewhere?

General CLARKE. Senator, I defer those specific questions to the geographic combatant commander. We continue to give that capability to those combatant commanders to conduct those strikes with our SOF personnel. I defer policy over to Secretary Maier, if there is anything that he would want to add on top of that.

Senator COTTON. Secretary Maier, is there anything you would like to add on top of that?

Mr. MAIER. Senator, I think there has been no change in the policy from where we talked a year ago.

Senator COTTON. So at what level in the United States Government does a strike against a bad guy in Yemen or Somalia have to be approved? Do you have to wake the President up in the middle of the night and ask him?

Mr. MAIER. Senator, is that question for me?

Senator COTTON. Sure.

Mr. MAIER. I think it varies based on the geographic area, but there are very few that rise to the level of the White House. Most of those are within the DOD hierarchy, sir.

Senator COTTON. At what level in the DOD hierarchy? Would that go to the combatant commander?

Mr. MAIER. Oftentimes the combatant commander, sir, but I think it varies depending on how low they are delegated. In some cases it is well below the combatant commander.

Senator COTTON. Okay. General Clarke, I have a lot of confidence in you and your combatant commanders, but you know who else I have a lot of confidence in? People who are doing jobs that Major and Colonel Clarke used to do back in the day. Thank you. See you in the closed setting.

Chairman REED. Thank you very much, Senator Cotton.

Senator Blumenthal, please.

Senator BLUMENTHAL. Thanks, Mr. Chairman. Thank you for being here. Thank you all for your extraordinarily distinguished and dedicated service to our country.

General Nakasone, in your responses to Senator Cotton you did not mean to say that we are not sharing intelligence with Ukraine, did you?

General NAKASONE. I did not. I said that I believe, Senator, I wanted to make sure that we talked about the details in a closed setting.

Senator BLUMENTHAL. But the idea that we are denying intelligence or refusing to share intelligence is incorrect.

General NAKASONE. That is correct, Senator.

Senator BLUMENTHAL. Thank you.

General Clarke, I wonder if you could provide some background as to why use of undersea vehicles for inserting our special operators is important, whether it is through the Dry Combat Submersible or through the existing undersea warfare platforms that we have.

General CLARKE. Senator, our naval special operators can get into places that a larger maritime ship or an undersea vessel, one of the Navy submarines, cannot get into, and it provides us the op-

portunity—which I can cover specifics in a closed session—to get in places that we need to conduct reconnaissance in, and to be able to give the Joint Force insights for potential future conflict and for competition.

Senator BLUMENTHAL. So the smaller vehicles can enter places that submarines could not, which makes them potentially very valuable, and I think in response to Senator Tuberville you talked a little bit about the timeline. What is the fastest that we could see those Dry Combat Submersibles available?

General CLARKE. Senator, we are testing one now. I went on it personally within the last 12 months, and found that it is almost ready at this point. We are still going through some specific testing of it, and I can get back to you on the record with what that specific timeline is. But we are talking months, probably not years. We are operationally validating it now, to make sure it would be completely safe in an operational environment.

Senator BLUMENTHAL. Are you satisfied that the budget, the 2023 budget, includes sufficient funding to make it operational during the coming year, if it is a matter of months before it would be?

General CLARKE. Senator, I do, for this year's budget, but there are additional capabilities that we will continue to advocate for to build the modernization not just of the Dry Combat Submersible but other undersea, clandestine type vessels that will also assist us in the maritime and the littoral domain.

Senator BLUMENTHAL. I would appreciate hearing more, whether it is in a closed setting or on the record in writing more about this program.

General CLARKE. Yes, sir. I will take that for the record, Senator.

Senator BLUMENTHAL. Thank you. One other area. When I visited Ukraine just very shortly before the invasion, in January, and I think it is certain now it is a matter of public record that we had trainers there for the Ukrainian forces. How would you assess the effectiveness of the training that we gave to Ukrainians through our special operations as well as other personnel, and would such training now be useful for more of them outside of Ukraine? Obviously, we are not going to put any of our personnel into Ukraine, but if there were training outside the country for some of their special operators.

General CLARKE. I assess that training as very effective, and what we did for 8 years prior for both lethal capabilities but also in the information operations. I do believe that at Ukrainians' desire, based upon what they will need in the future, for what could become a protracted engagement with Russia, we should look at and assess what future capabilities they will need, because they will need to have a sustained effort, and I think we could provide those if the policy is decided. But I think that would benefit the Ukrainians in the future.

Senator BLUMENTHAL. Absolutely. Thanks so much, General. Thank you all.

Chairman REED. Thank you, Senator Blumenthal.

Senator Sullivan, please.

Senator SULLIVAN. Thank you, Mr. Chairman, and gentlemen, thank you for your service here. General Clarke, both you and General Nakasone, I think you are two of our best four-star com-

manders focused on lethality, warfighting, crushing our enemies when called upon, and I just really want to thank you for that, and General Clarke, for your service, if you are going to be retiring soon. I hope you are not retiring soon but I understand it is maybe close to 40 years now, so good luck with everything. But you have done an exceptional job. Both of you have.

I just want to emphasize what Senator Cotton mentioned, General Nakasone, on the intel-sharing piece. I know you cannot say a lot here, but I think it is strong bipartisan support to the extent we can share as much intel, of course, without compromising sources and methods, with Ukrainian forces, including in Eastern Ukraine. I think it is really important, and I think I am speaking for a lot of Senators on this Committee.

General Clarke, I have kind of a multi-part question. Could you elaborate a little bit on SOCOM's role in building out Ukrainian Special Forces over the last several years, and then what lessons are we applying with regard to what we have learned there to Taiwan Special Forces?

one of the things that you mentioned in the what-we-do section of your vision for SOCOM is helping shape the environment to reduce risk, prevent crises, and set conditions for success in competition and conflict, and I would like to get a little sense, to the extent you can talk about it here, on what we are doing to help Taiwan the way we have helped Ukraine, particularly in the SOF world.

General CLARKE. Senator, when we first started training with the Ukrainian special operations over 8 years ago they were a smaller force and they did not necessarily have a SOCOM-like headquarters. That force grew to three brigade equivalents, commanded by colonels, and a training regiment. They also, over the last 18 months, added a resistance company made up of what we—like a home guard, that was embedded in each one of those. That was through the persistent effort of not just the U.S., but we also brought in allies from other NATO countries.

Senator SULLIVAN. You are seeing, obviously, some of the success of that training and structure in the current conflict.

General CLARKE. Yes, Senator, we are.

Senator SULLIVAN. What about Taiwan, to the extent you can talk about that?

General CLARKE. Senator, I would prefer to talk about Taiwan in a closed setting. But broadly, building both resistance and resilience in the force—resistance being the ability to give the punch, but resilience being the ability to take the punch and make sure you can get back up, through medical training, through logistics, and through communications—is critical. I think we have got to work on both of those with other nations, writ large.

Senator SULLIVAN. Let me ask a question for both of you, kind of, again a two-part question. General Clarke, Rear Admiral Howard recently wrote a piece in USNI News and talked about making sure our special operations forces were combat ready for new tactics, techniques, particularly in some of the most stressing environment and hard-target conditions. He talked about SOCOM competition in the High North.

Are there initiatives that you are undertaking? General Nakasone, can you talk a little bit about what NSA Alaska has

been doing, the capabilities that they bring? Even a lot of Alaskans are not aware of the great work that goes on, particularly as it relates to Russia and other places that goes on in the High North of America and Alaska, with the buildout and exceptional work that NSA Alaska is doing.

General Clarke, can you take that question first, and then General Nakasone.

General CLARKE. Yes, sir. I just left Norway less than 10 days ago, where I observed our special operations forces working 200 miles north of the Arctic Circle, using all of their capabilities—insertion clandestinely, looking at hard targets, working with partners. Simultaneously, as you know, there was another exercise going on in Alaska, where we also had a large contingent of all elements of our special operations command that were practicing experimenting. This alone highlights the importance of training inside the Arctic for those hard targets in the future.

Senator SULLIVAN. Thank you. General Nakasone?

General NAKASONE. Senator, geography matters, and as we take a look at our ability to provide both indications and warning and awareness of the Pacific, a critical element of this is what the men and women at NSA Alaska are doing today. That location, in your home state, has provided us insights into our adversaries' actions and provided protection to our forces that are deployed in that region.

Senator SULLIVAN. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Sullivan.

Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman, and thanks to all of you for being here. Thank you for your service.

I want to come back to this question of Taiwan that Senator Sullivan was just asking about, and let me frame it this way. Secretary Maier, let me start with you.

I think the Ukrainians are showing how effective and important irregular warfare can be for defeating an enemy invasion. Obviously that has got a lot of potential relevance to the situation that we see in Taiwan. Our goal in Taiwan, I think hopefully we all agree, should be to prevent an invasion. We do not want to be behind the eight ball where we are trying to displace one. But we have got to plan for all scenarios, so irregular warfare has an important role to play.

You testified last year, and I am going to quote you here, that the United States should “strongly”—that is your word—“strongly consider options to strengthen Taiwan’s irregular warfare capabilities, including their ability to fight in depth”—that is you again—“using resistance networks or other capabilities after a Chinese amphibious landing.” Is that still your view?

Mr. MAIER. It is, Senator, and I think we are doing more work in that regard, as others have testified.

Senator HAWLEY. Perfect. Can I just ask you to expand on that? Can you give us an update on what you are doing, what the Pentagon is doing to help strengthen Taiwan’s irregular warfare capabilities?

Mr. MAIER. So, Senator, I think General Clarke already hit on some of that. Obviously we can only go so much in this session. But

I think consistent with the Taiwan Relations Act, we are doing all we can to look at a whole-of-resistance approach. So in some cases that means doing more exercises, more ability to touch aspects of the Taiwanese infrastructure and determine its both, as General Clarke said, ability to take a punch and give a punch. That is sort of the most basic level of our assessment at this point.

Senator HAWLEY. Very good. General, you testified also last year, and you just reiterated it to Senator Sullivan, but you testified that you thought the United States should help Taiwan strengthen its irregular warfare capabilities. I am assuming, based on your answer just a second ago, you think that is still a priority. Is that fair to say?

General CLARKE. All in accordance with our policies. But, Senator, if I could take it a bit broader.

Senator HAWLEY. Yes.

General CLARKE. It is not just about Taiwan either. It is also more than 15 countries that we are working with in the Indo-Pacific that are like-minded, have the same values, and have the same interests. Bolstering their defenses and ensuring they are seeing the same pernicious behavior that we have seen on behalf of the Chinese is critical, because we would rather be looking at 15 nations aligned or 20 nations aligned than just one or two.

Senator HAWLEY. Sure. Absolutely. I agree with that 100 percent. As you may or may not know, I have introduced a bill called the Arm Taiwan Act, which would create the Taiwan Security Assistance Initiative modeled on the Ukraine Security Assistance Initiative, that would help accelerate the ideas, help accelerate Taiwan's deployment of critical asymmetrical defenses. I think it is critical we learn the right lessons from what we are seeing in Ukraine. Obviously deterrence failed in Ukraine. We do not want to see deterrence fail in Taiwan—we just simply cannot afford that—and making sure that they are in a position, the Taiwanese are in a position to wage irregular warfare if necessary, and China knows they can do that I think is critical.

General, let me ask you a related question. What role do you see SOCOM playing in helping to deter or, if necessary, defeat a Chinese invasion of Taiwan?

General CLARKE. Senator, I described our role in that as the war around the edges, and being able to hold hard targets at risk to ensure that we provide the national command authority those options. That is set up by conducting reconnaissance and ensuring, as I addressed to other members, building the undersea capabilities that we need today, ensuring that we are postured in places around the globe that can pull that. That is combining elements like cyber, space, and special operations forces together to provide unique capabilities for our Nation.

Senator HAWLEY. Let me ask you if you have been able to use any resources freed up from our withdrawal from Afghanistan to invest in more capabilities relevant to the Taiwan scenario.

General CLARKE. Senator, we have put additional forces into both the Indo-Pacific theater and into the European theater over the last 3 years. I would say we started the rebalancing of some of the soft requirements based upon the 2018 National Defense Strategy that identified the threats from near-peer competitors.

Senator HAWLEY. But I guess my question is, has the withdrawal from Afghanistan, has that freed up resources that you have been able to repurpose to this theater for this pacing scenario?

General CLARKE. I cannot draw a direct correlation from one to another, but fundamentally we do not have as many people in Afghanistan today. We have no people in Afghanistan today.

Senator HAWLEY. Got it. I have got some additional questions that I will give to you each for the record. Thank you for your service. Thank you for being here.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Hawley.

Senator Scott, please.

Senator SCOTT. Thank you, Chair Reed.

General Clarke, what does the future operating environment look like for special forces, special operation forces over the next 5, 10, and 20 years, and do you expect to need more personnel and resources given the threats from Communist China, Russia, and emboldened Iran?

General CLARKE. Senator, I think we have the sufficient amount of forces that we need today that exist within the force. We have just now, this year, gotten to the first time to where we actually have a predictable schedule that all of our forces are on a 2-to-1 deployment to dwell, or greater, and so the force that we have is right.

In some cases, though, we actually need to make some changes within the force that we have, to be able to put towards the capabilities that we will need. For example, potentially more information operators that we will need in the future. So we may have less in one area but actually look at where we need to put more in the future. What we do need is a continuous, sustained budget that will allow for increased modernization and readiness so that we can build those capabilities in time for the Department.

Senator SCOTT. Thank you. General, as we know, President Biden's budget is in step with the raging inflation we are seeing right now. Are there any assets or any spending you would like to do that you will be unable to do because of the budget basically being cut when you look the inflation?

General CLARKE. Senator, we have submitted an unfunded requirement list that hits specifically to the points, and top line that asks for additional funding in the information operations, in artificial intelligence and machine learning, and it hits on the speeding up of some of our modernization of our clandestine insertion maritime, but also looks a developing counter-UAS, unmanned aerial systems, to be able to protect our forces that are forward, and that will speed those processes up in the future.

Senator SCOTT. We watched Vladimir Putin's aggression against Ukraine, and I think we are all disappointed that President Biden did not do enough to deter it. But what can special operations continue to do to assist Ukraine and support our other partners that hopefully will help Ukraine win against Russia and also make sure that Putin does not feel emboldened to invade a NATO country?

General CLARKE. Senator, I would highlight a few. Number one is continue to ensure the lethal aid makes it into the Ukraine and for special operators to make sure that it gets to the Ukrainian

special operations forces. I think they are doing a fantastic job today inside the Ukraine.

But we also have to be predictive and work with the Ukrainians on not what they need today but as this potentially goes into protracted conflict what will they need in the future? It may not be as much on the lethal side but it may be other capabilities, whether it is mobility or whether it is first aid or whether it is protection. I think we have to be predictive to that.

The other one that was already hit is the continued info and intel sharing about what is going on, and we can talk about that separately.

Senator SCOTT. Are there any lessons learned from how United States special operations forces have been able to help Ukraine that we can apply to potentially what is going to happen when China invades Taiwan or, you know, Iran continuing to threaten Israel?

General CLARKE. Yes, sir. Number one is it is not just the United States and Ukraine. While we are sitting here we have 16 NATO nations all on their own accord that are currently working with our Special Operations Command Europe, and they are collaborating, they are sharing, and they are sensing what is happening in that environment that we will then collectively be able to provide the best support to Ukraine. I think the same lessons could be applied in other theaters.

The second one is, though, getting ahead of it. The more than you can set up for success today, the better off you will be. Having the urgency to see that in advance and not waiting until the end.

Senator SCOTT. Thanks. General Nakasone, what has CYBERCOM been able to do to increase its efforts to protect our public and private infrastructure from bad actors from Russia?

General NAKASONE. Senator, several things. First of all, deploying a team to the Ukraine to see what our adversaries are doing and being able to capture their malware and their tradecraft and share that broadly with the private sector.

Secondly, it is working with the lead for this, which is DHS CISA, and providing the capacity, if necessary, and also the collaboration that is ongoing.

The last piece is working broadly with the private sector, particularly our defense industrial base, to ensure that they have an understanding of the tactics and techniques our adversaries are using.

Senator SCOTT. Thank you. Thank you, Chair Reed.

Chairman REED. Thank you very much, Senator Scott, and gentlemen, thank you too. I will adjourn the open session. We will reconvene in SVC-217 in approximately 10 minutes, to begin the closed session. Thank you very much, gentlemen.

[Whereupon, at 11:41 a.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR KIRSTEN GILLIBRAND

CYBER ACADEMY

1. Senator GILLIBRAND. General Nakasone, do you have any views on the development of the National Cyber and Digital Services Academy?
General NAKASONE. [Deleted.]

CHINA

2. Senator GILLIBRAND. General Nakasone, the joint efforts in New York City with assets from the National Guard, NSA, NYPD, and FBI are collaborating with over 50 critical infrastructure entities and the efforts are working extremely well. What are your thoughts on that type of collaboration, and making sure it can become more robust and more formalized?
General NAKASONE. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR MAZIE K. HIRONO

EXPERIMENTATION

3. Senator HIRONO. General Nakasone what opportunities has CYBERCOM had for experimentation in techniques and procedures in order to maintain our cyber professionals' competitive edge?
General NAKASONE. [Deleted.]
4. Senator HIRONO. General Clarke, you mentioned that SOCOM has conducted experimentation between its components and their respective services. Can you describe what is involved in these experimentations?
General CLARKE. [Deleted.]
5. Senator HIRONO. General Clarke, what have been the most beneficial results of these efforts?
General CLARKE. [Deleted.]

SPECIAL OPERATIONS TRAINING

6. Senator HIRONO. General Clarke, SOCOM's efforts to train Ukrainian special operations forces since the annexation of Crimea has no doubt given their military a great deal of expertise, and has helped Ukraine be able to defend itself against invasion. Where else can global security best stand to benefit by the partnerships U.S. Special Operations Forces has with foreign militaries?
General CLARKE. [Deleted.]

RECRUITMENT OF WOMEN AND MINORITIES INTO SOF UNITS

7. Senator HIRONO. General Clarke, what progress have you made in the last year in recruiting more women and minorities into Special Operations Forces?
General CLARKE. [Deleted.]
 8. Senator HIRONO. General Clarke, how have you been able to encourage more women and minorities to join SOF?
General CLARKE. [Deleted.]
 9. Senator HIRONO. General Clarke, how many women are part of Special Operations Forces teams currently?
General CLARKE. [Deleted.]
 10. Senator HIRONO. General Clarke, what measures are you using to assess SOCOM's progress in this initiative?
General CLARKE. [Deleted.]
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QUESTIONS SUBMITTED BY SENATOR ANGUS S. KING

UKRAINE LESSONS LEARNED

11. Senator KING. General Nakasone, what are some of the preliminary lessons learned from USCYBERCOM's efforts supporting network fortification prior to Russia's invasion?

General NAKASONE. [Deleted.]

12. Senator KING. General Clarke, what is USSCOCOM's strategy in Ukraine and Eastern Europe after the conclusion of conflicts in Ukraine.

General CLARKE. [Deleted.]

UNCLOS

13. Senator KING. General Nakasone and General Clarke, do you support the ratification of the United Nations Convention on the Law of the Sea (UNCLOS)?

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

14. Senator KING. *China Commission*—I believe we must establish an unbiased and non-partisan commission to examine a grand strategy for our approach to China, similar in intent to President Eisenhower's Solarium Project. We need to think of a holistic approach to create a stable international order in which China (or Russia) cannot dictate regional developments.

General Nakasone, General Clarke, and Secretary Maier, what are the 'toughest problems' OUTSIDE of military imbalances?

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

Secretary MAIER. China's ability to mobilize State resources and leverage all levers of national power is a significant challenge to a stable international order. Within the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (ASD(SO/LIC)), we work across U.S. Government (USG) departments and agencies and with international partners to leverage collective expertise and contribute to a USG holistic approach. Three issues stand out as key challenges.

First, China's exploitation and manipulation of populations through information operations are pervasive. As we saw with COVID-19, China's efforts include shaping the information environment through disinformation and proactively shaping the narrative about China and its activities. Coordination amongst our allies and partners and a proactive approach to address Chinese disinformation will be an ongoing focus in the near term.

Second, China uses paramilitary and civilian elements in operations short of armed conflict in furtherance of political objectives. The People's Liberation Army ships and aircraft are augmented by large numbers of China Coast Guard ships, fishing boats, and other paramilitary forces that serve as force multipliers in territorial disputes. These ships often engage in intimidating activities, including illegal, unreported, and unregulated fishing, to inhibit other nations' access to offshore resources, diminish economic development, and raise regional tensions.

Finally, we need to focus on Chinese efforts in pursuit of foreign technology, including through illicit means. Tactics of coercion take many forms, including obtaining foreign technology through foreign direct investment, overseas acquisitions, legal technology imports, the establishment of foreign research and development centers, joint ventures, research and academic partnerships, talent recruitment, and both industrial and cyber espionage and theft. China also has a domestic policy of military civil fusion using domestic industry to bolster military technology development.

15. Senator KING. General Nakasone, General Clarke, and Secretary Maier, in order to avoid the US trying to "spend our way out of conflict," how can we specifically counter China's major activities in your area of responsibility?

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

Secretary MAIER. The keys to a sustainable U.S. response are building partner capacity and resilience and encouraging allies and partners to work together to counter China's malign activities. Allies and partners are on the frontlines of China's irregular warfare activities, including information operations, paramilitary, and civilian operations. Our allies and partners are often in a position to respond first and shape the environment in which China is operating.

16. Senator KING. General Nakasone, General Clarke, and Secretary Maier, what would be the greatest benefit this commission could deliver?

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

Secretary MAIER. I rely on the considered expertise of outside groups across the spectrum of activities in my area of responsibility as ASD(SO/LIC). Thoughtful recommendations for how to incorporate Special Operations Forces (SOF) capabilities as part of a broader, whole-of-government strategy, is always useful.

17. Senator KING. General Nakasone, General Clarke, and Secretary Maier, what would put us in the best position to avoid the U.S. and China from escalating conflict and careening into a war with China?

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

Secretary MAIER. Open and routine senior leader engagement with People's Republic of China counterparts to ensure better understanding of actions taken, and their intent, will help reduce misperceptions and reduce the likelihood of escalation.

18. Senator KING. *Expeditionary Tactical Operations Center*—the shift to a more scalable, lethal, and mobile combat elements such as the Marine Littoral Regiment and Multidomain Task Force is critical to the countering the dynamic threats in your Area of Responsibility. The DOD's recent investments in the University of Maine's composites and advanced manufacturing initiatives has resulted in improving blast and ballistic resistant structures and materials. Maine small businesses are the direct benefactor of the growing talent and innovation in this sector and are concurrently providing critical capabilities to the warfighter. The Modular Panelized Shelter System (MPSS) is one system of note and is currently employed by NORTHCOM in Alaska, EUCOM in Italy, and AFRICOM headquarters.

General Nakasone and General Clarke, could your command and service component commands further benefit from an expeditionary, affordable, all weather, TS/SCI certified structures such as the MPSS?

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

19. Senator KING. *Arctic*—I supported Senator Sullivan's Arctic Security Initiative amendment last year, and helped get it into law with the Chairman.

General Nakasone and General Clarke, what specific resource shortfalls does your command possess that would limit your ability to conduct exercises/operations in the High North? Please be specific to include operations and sustainment funding for exercises, equipment shortfalls such as weather gear for soldiers or unique platforms.

General NAKASONE. [Deleted.]

General CLARKE. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR MARK KELLY

OFFENSIVE CYBER CAPABILITIES IN UKRAINE

20. Senator KING. General Nakasone, the Russian invasion of Ukraine has demonstrated that cyber operations are no longer simply a gray zone tactic. Open-source reporting now suggests that the Russians launched at least two major cyber-attacks in the lead-up to their invasion, both of which affected Ukraine's military and government agencies. How has the Russians' use of offensive cyber capabilities in Ukraine influenced or changed our thinking on this type of warfare?

General NAKASONE. [Deleted.]

CYBERSECURITY RISKS FOR COMMERCIAL OFF-THE-SHELF TECHNOLOGY

21. Senator KING. General Nakasone, I understand that in 2019, the DOD Inspector General released a report that provided an audit of the Department's management of the cybersecurity risks for government purchased Commercial Off-the-Shelf (or COTS) items. The report specifically found that if the DOD continues to purchase and use commercial IT items without identifying, assessing, and mitigating the known vulnerabilities associated with these items, "missions critical to national security could be compromised." Is the Department today procuring computers from any companies that are either owned or partially owned by the People's Republic of China?

General NAKASONE. [Deleted.]

22. Senator KING. General Nakasone, is it possible to purchase systems that avoid PRC-compromised supply chains?

General NAKASONE. [Deleted.]

23. Senator KING. General Nakasone, if not, and understanding that our networks are only as secure as the devices that are connected to them, what steps have been taken to protect our cyber infrastructure and what other actions are being considered?

General NAKASONE. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

TAIWAN

24. Senator SULLIVAN. General Clarke, in the Special Operations Forces Vision Statement under the “What We Do” section, you State, “[s]hape the environment to reduce risk, prevent crises, and set conditions for success in competition and conflict.” How are we setting conditions in Taiwan and the first-island chain to accomplish those tasks you outlined?

General CLARKE. [Deleted.]

NSA ALASKA

25. Senator SULLIVAN. General Nakasone, as you know, my great State is home to the Alaska Mission Operations Center (AMOC), a US National Security Agency facility located on Elmendorf Air Force Base in Anchorage. It is considered one of two “consolidated intelligence centers” in the country and provides combat intelligence to battlefield commanders, commands, and DOD leadership. Could you speak to the capabilities and contributions of this facility to the strategic imperatives of our national defense?

General NAKASONE. [Deleted.]

JOINT FORCE CYBER INTEGRATION

26. Senator SULLIVAN. General Nakasone, as you know, Alaska is home to the DOD’s premier training venue, the Joint Pacific Alaska Range Complex or JPARC, that integrates all domains—land, air, sea, space, and cyberspace. The Secretary of the Air Force has directed JPARC modernization to provide Threat Matrix Framework Level 4 training capability. This requires the JPARC to migrate its networks and infrastructure to the TS-SCI/SAP level. Currently, no such suitable facility exists to support this function, but the Air Force is working to create a Joint Range Operations Center to provide this capability and ensure adequate integration of space, cyber, and command and control into training there. Do you believe adequate cyberspace integration is of primary importance to Joint Force lethality?

General NAKASONE. [Deleted.]

27. Senator SULLIVAN. General Nakasone, would you support the creation and funding of the Joint Range Operations Center at JPARC to ensure space and cyber are properly integrated into the Joint force training there?

General NAKASONE. [Deleted.]

AUTHORITARIAN AGGRESSION

28. Senator SULLIVAN. Secretary Maier and General Clarke, from Xi Jinping’s predatory economic initiatives, repeated neighbor-nation coercion, and brutal repression of individual freedoms; to now Vladimir Putin’s heinous invasion of Ukraine, there is little doubt that we are now in a new era of authoritarian aggression. This aggression spans the entire spectrum of conflict, from open military warfare to gray zone activities below the threshold of armed conflict. What does SOCOM’s piece of integrated deterrence look like?

Secretary MAIER. USSOCOM’s contributions to integrated deterrence are twofold. First, SOF capabilities support U.S. efforts to deny adversaries’ ability to overcome conventional and nuclear deterrence at the lower end of the conflict spectrum. The SOF global footprint, persistent engagement, low profile, and unique skills and authorities enable SOF to counter adversaries’ gray zone activities, both directly and indirectly through allies and partners.

Second, SOF capabilities strengthen deterrence by shaping the environment and enabling the Joint Force to prevail against adversaries in conflict. SOF core activi-

ties support access and placement, gather information, and establish relationships and infrastructure to set conditions necessary for achieving military success.

General CLARKE. [Deleted.]

29. Senator SULLIVAN. Secretary Maier and General Clarke, what must SOCOM do to make dictators like Xi Jinping and Vladimir Putin think twice about their geopolitical ambitions?

Secretary MAIER. SO/LIC and USSOCOM must develop, provide, and employ forces in ways that reinforce overall Joint Force combat credibility, while diminishing that of adversaries. Adversary decisions to act aggressively rely on perceptions regarding overall risk, as well as the probability and cost of success. SOF employment must increase adversary perception that the probability of success is low and that the cost of aggression will be high. SOF must continue to strengthen relationships and build allied and partner capabilities, increase resilience, and enhance resistance to coercion.

General CLARKE. [Deleted.]

FISCAL YEAR 2023 BUDGET

30. Senator SULLIVAN. Secretary Maier and General Clarke, amid the extensive loss of purchasing power from an extended continuing resolution this past fiscal year, as well as the currently unprecedented inflationary pressures, are current and projected SOCOM funding levels adequate to keep pace against our authoritarian adversaries?

Secretary MAIER. Yes, the current and projected USSOCOM funding levels are adequate to meet USSOCOM's current requirements.

General CLARKE. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR MARSHA BLACKBURN

ASSISTANT SECRETARY OF DEFENSE FOR SPECIAL OPERATIONS/LOW-INTENSITY CONFLICT (ASD SO/LIC)

31. Senator BLACKBURN. Mr. Maier, how often do you meet with the Secretary or Deputy Secretary concerning SOCOM civilian oversight responsibilities?

Mr. MAIER. I meet with the Secretary of Defense, the Deputy Secretary of Defense, and the other Secretaries of the Military Departments every other week in our regular Service Secretary meeting, chaired by the Secretary of Defense. Separately, I meet regularly with the Deputy Secretary on SOF administrative responsibilities. As part of the Department's implementation of my office's civilian oversight responsibilities, I or a member of my leadership team participate in a number of Secretary and Deputy Secretary-led senior leader fora to include: Senior Leaders Council, Secretary's Large Group, Program Budget Review Small Group, Defense Management Action Group, Defense Workforce Council, Defense Strategy Steering Group, and the Legislative Review Panel.

32. Senator BLACKBURN. Mr. Maier, what is SO/LIC's plan to address current staffing shortfalls?

Mr. MAIER. In fiscal year 2022, SO/LIC received ten new billets to establish and fill civilian positions related to my office's administrative oversight responsibilities. We have recently hired civilians with expertise in budget and financial management, SOF capabilities, special access programs, strategic analysis, logistics, force management, personnel programs, and legislative affairs. In fiscal year 2023, we will hire against 15 additional billets. To help inform future hiring needs, my office is working with the Air Force Manpower Analysis Agency to conclude a manpower assessment for the Secretariat for Special Operations. This study will help us determine the full manpower requirement for my USSOCOM civilian oversight responsibilities as laid out in Title 10 U.S. Code and the Department of Defense Directive 5111.10, "Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict," May 5, 2021.

33. Senator BLACKBURN. Mr. Maier, what specifically is SO/LIC doing to hire qualified candidates to fulfill the responsibilities required by law for U.S. Special Operations Command (SOCOM) oversight?

Mr. MAIER. We have prioritized the open billets and are hiring across the full range of our statutory area of responsibility. We are hiring analysts with expertise in programming, budgeting, strategy, civilian personnel programs, operation research analysis, legislative affairs, and special access programs. We are working

closely with Washington Headquarters Service to ensure we have effective job announcements with appropriate subject matter experts reviewing resumes and filtering and interviewing candidates. I am pleased with the number and quality of candidates those announcements have produced, and we have made steady progress in filling existing needs with highly qualified personnel.

PRESERVATION OF THE FORCE AND FAMILY'S (POTFF)

34. Senator BLACKBURN. General Clarke, the Government Accountability Office (GAO) recently identified shortfalls in POTFF overarching vision and data, what steps have been taken to create an integrated and holistic system of care?

General CLARKE. [Deleted.]

35. General Clarke, what do you assess are the limitations with the current POTFF staffing allocation model?

General CLARKE. [Deleted.]

SOMALIA

36. Senator BLACKBURN. General Clarke, how are your operations impacted by the reduction in U.S. troops in Mogadishu?

General CLARKE. [Deleted.]

37. Senator BLACKBURN. General Clarke, what is the assessment of terror groups in the Horn of Africa threatening American personnel abroad?

General CLARKE. [Deleted.]

UKRAINE AND TAIWAN

38. Senator BLACKBURN. General Clarke, what lessons have we learned from the Ukrainian special operations forces efforts?

General CLARKE. [Deleted.]

39. Senator BLACKBURN. General Clarke, what lessons learned from the Ukrainian SOF can the U.S. apply to other partners—particularly Taiwan?

General CLARKE. [Deleted.]

40. Senator BLACKBURN. General Clarke, how does the crisis in Ukraine differ from the requirements in a Taiwan scenario?

General CLARKE. [Deleted.]

RANSOMWARE ATTACKS

41. Senator BLACKBURN. General Nakasone, as ransomware groups target American logistics and shipping companies, what can be done to improve deterrence across multiple domains simultaneously?

General NAKASONE. [Deleted.]

SOCOM

42. Senator BLACKBURN. General Clarke, how do you plan to divest and prioritize SOCOM's focus geographically?

General CLARKE. [Deleted.]

43. Senator BLACKBURN. General Clarke, as SOCOM embraces specialization, can you articulate the potential limitations in overall flexibility to respond to crisis?

General CLARKE. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

EUROPEAN BURDEN-SHARING

44. Senator HAWLEY. General Clarke, our European allies are beginning to ramp up defense spending. This is long overdue, but it's an important step in the right direction. In your view, what kind of special operations capabilities should our Allies—including Germany—be investing in to strengthen deterrence along NATO's eastern front?

General CLARKE. [Deleted.]

45. Senator HAWLEY. General Clarke, what are some of the missions that U.S. special operations forces are doing in Europe now that our European allies could help with, or even take over, as they build out their own special operations forces?
General CLARKE. [Deleted.]

UKRAINE CONFLICT

46. Senator HAWLEY. General Nakasone, it was widely expected that large-scale cyber operations would precede Russia's attack on Ukraine, yet that does not appear to be the case. Could you speak to how cyber operations factored into Russia's military strategy during this conflict, and if Russia's use of cyber operations deviated from Russian doctrine in any particularly notable ways?
General NAKASONE. [Deleted.]

47. Senator HAWLEY. General Nakasone, have you noticed adaptation in Russian cyber conduct during this conflict?
General NAKASONE. [Deleted.]

48. Senator HAWLEY. General Nakasone, have you noticed adaptation in Chinese conduct in cyberspace during the conflict in Europe?
General NAKASONE. [Deleted.]

49. Senator HAWLEY. General Nakasone, it has been publicly reported that cyber mission teams in Europe conducted defensive operations prior to and during Russia's invasion of Ukraine. As the entire forces manages multi-theater demands, how do ongoing cyber operations during this conflict impact CYBERCOM's readiness to defend against Chinese aggression in the Western Pacific?
General NAKASONE. [Deleted.]

COUNTERTERRORISM IN AFGHANISTAN

50. Senator HAWLEY. General Clarke, have U.S. special operations forces been active in Afghanistan under Title 10 or Title 50 authorities since September 1, 2021, and if so, what have they been doing?
General CLARKE. [Deleted.]

51. Senator HAWLEY. General Clarke, what is SOCOM's role more broadly in our current over-the-horizon CT approach in Afghanistan, and how is performing this role impacting SOCOM's ability to regenerate readiness and focus more on China?
General CLARKE. [Deleted.]

52. Senator HAWLEY. General Clarke, General McKenzie told this Committee that we have not conducted any over-the-horizon operations in Afghanistan since August 2021. Do you feel the rules of engagement governing over-the-horizon strikes in Afghanistan are too restrictive, or do they provide the flexibility needed to find and neutralize terrorists on the ground there?
General CLARKE. [Deleted.]

DETECTING CHINA

53. Senator HAWLEY. General Nakasone, the 2022 NDS identifies China as the pacing challenge for the Department. How have NSA and USCYBERCOM improved our cyber posture vis-&-vis China, and what challenge persist in conducting cyber operations against China?
General NAKASONE. [Deleted.]

54. Senator HAWLEY. General Nakasone, how would you describe Chinese and Russian cyber targeting priorities are they prioritizing influence operations, going after critical infrastructure, military targets, or something else entirely?
General NAKASONE. [Deleted.]

55. Senator HAWLEY. General Nakasone, how confident are you in our ability to use cyber operations to help degrade and deny a Chinese assault on Taiwan?
General NAKASONE. [Deleted.]

56. Senator HAWLEY. General Nakasone, are there particular capability or capacity gaps at CYBERCOM that need to be filled so you have the tools you need degrade and deny a Chinese assault on Taiwan, in particular?
General NAKASONE. [Deleted.]

57. Senator HAWLEY. General Clarke, how many SOF have been allocated to the Indo-Pacific region following the withdrawal from Afghanistan?
General CLARKE. [Deleted.]

58. Senator HAWLEY. General Clarke, which Indo-Pacific countries with which SOCOM engages are most able to help bolster deterrence against Chinese attack?
General CLARKE. [Deleted.]

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

THURSDAY, APRIL 7, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

DEPARTMENT OF DEFENSE BUDGET POSTURE

The Committee met, pursuant to notice, at 9:32 a.m. in room SD-G50, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Warren, Peters, Manchin, Rosen, Kelly, Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Cramer, Scott, Blackburn, Hawley, and Tuberville.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. Good morning. The Committee meets today to receive testimony on the President's Budget Request for the Department of Defense (DOD) for fiscal year 2023.

Our witnesses this morning are Secretary of Defense Lloyd Austin, Under Secretary of Defense (Comptroller) Michael McCord, and Chairman of the Joint Chiefs of Staff General Mark Milley. Thank you for appearing before us today, and please extend the Committee's thanks to the uniformed and civilian men and women of the Defense Department who selflessly serve the Nation.

Last week, President Biden released his Defense Department budget request for fiscal year 2023 with a top line of \$773 billion. The request focuses on several key areas, including prioritizing China as our key strategic competitor, addressing the acute threats posed by Russia and other adversaries, and modernizing the Defense Department. Our national security challenges have never been more stark.

One month ago, Russia unleashed its illegal and unprovoked, and indeed, a barbaric attack on Ukraine, upending peace and stability in Europe. Putin's invasion has inflicted horrific suffering upon innocent civilians in Ukraine, threatened European security, and caused serious consequences for the global economy.

The Ukrainian military has performed heroically in the face of this overwhelming violence and the Ukrainian people have shown the world what true courage looks like.

If Putin thought his actions would drive a wedge between NATO [North Atlantic Treaty Organization] members and within the international community, he was badly mistaken. The conflict in Ukraine has reinvigorated the NATO alliance and exposed the brittle nature of Putin's regime. Since the start of the conflict, the international community has implemented a severe and far-reaching series of economic and energy sanctions against Russia, increased military and humanitarian assistance to Ukraine, and reinforced NATO's military presence along the eastern flank. The international community has united in a way not seen in decades, and our potential adversaries around the world are taking note.

With that in mind, this budget request appropriately recognizes China and then Russia, as the key strategic competitors for our military. Concurrent with the release of the budget, the Defense Department submitted to Congress classified versions of the National Defense Strategy, the national Nuclear Posture Review, and the Missile Defense Review. These, along with other strategic planning documents yet to be released, will serve as key guideposts for this Committee as we take a clear-eyed approach to what is necessary to succeed in our long-term strategic competition.

An essential element of our strategy going forward is the need to build the joint capabilities of our armed forces across all domains, including space, cyber, and information operations, and I am interested to hear from our witnesses how this budget supports joint capabilities to ensure our military remains the world's premier fighting force.

I am encouraged that this budget includes the largest-ever request for research, development, testing, and evaluation: a total of \$130 billion, or a 9.5 percent increase over last year's enacted levels. The budget includes significant funding for modernization areas such as microelectronics, artificial intelligence, hypersonics, and 5G; technologies which will be critical for our national defense.

Our strategy toward China and Russia should not be solely defined in dollars by "how much," but rather "where" and "why" to achieve the greatest comparative advantage. I am also pleased to see that this budget request places a priority on taking care of our men and women in uniform and the civilians who serve alongside them, by including an across-the-board pay raise for military and civilian personnel of 4.6 percent. While this pay raise is required by law for military personnel, too often Defense Department civilians have been overlooked. This increase in civilian pay sends an important message to the workforce.

Keeping our strategic competition with China front and center, this budget request includes \$6.1 billion for priorities covered by the Pacific Deterrence Initiative, or PDI. Although we are awaiting the specific details of the Department's PDI request, I am encouraged by the progress we have made thus far and this Committee will continue working to help improve the design and posture of the joint force in the Indo-Pacific region, including by improving logistics, modernizing infrastructure, conducting exercises and training, and building the capabilities of our allies and partners.

This budget request also includes \$12.1 billion for military construction projects, and I am particularly pleased to see increases in the Energy Resilience Conservation Investment Program. The im-

provements to our facilities' sustainment, repair, and modernization will go a long way toward the Joint Force's readiness. This effort is further supported by the budget request's initiatives to weapons platform propulsion efficiencies to save fuel.

With regard to our nuclear strategy, I understand that the budget request supports important steps for the modernization of our nuclear triad. Given the reckless statements by Putin over the past several months, including an out-of-cycle nuclear exercise before invading Ukraine, our allies and partners depend on our extended deterrence now more than ever.

We must also be acutely aware of China's rapidly growing arsenal. Modernization of our strategic forces is needed to reassure not only our allies but deter any attack on our Homeland by either of our near-peer, nuclear-armed competitors. But even as we modernize, we should seek ways to promote strategic stability, including follow-on talks beyond New START to cover all types of nuclear weapons and, if possible, reduce nuclear stockpiles when verifiable for all parties.

Given these strategic threats, the proposed investment in tried-and-true platforms like the *Columbia*- and *Virginia*-class submarines is a prudent decision. Similarly, this budget supports the development of a new long-range stealth bomber, strengthening the fighter fleet, and building up the defense industrial base, including upgrades to the Navy's public and private shipyards. Keeping the nature of strategic competition in mind, however, it is also necessary to divest of platforms and capabilities that are either not necessary or inefficient for supporting our strategy.

Belt-tightening in any department, particularly Defense, is always a challenge, but it is also an opportunity to evaluate what is necessary and what drives innovation. The Department has taken the first difficult step in proposing \$2.8 billion worth of divestments and retirements of platforms, and I will work with my colleagues to evaluate these proposals and make hard, but necessary, choices.

Amidst a global pandemic, climate change, economic uncertainty, renewed Russian aggression in Europe, and disruptive technologies in the hands of competitors, we have to recognize the interconnected nature of the threats before us. Congress must make thoughtful decisions about how we resource and transform our tools of national power. Now that President Biden has issued his budget request, the Committee can begin our work of crafting an NDAA that meets America's needs now and in the future.

Again, I thank the witnesses for their participation today and I look forward to their testimonies.

Chairman REED. Let me now recognize Ranking Member Inhofe.

STATEMENT OF SENATOR JAMES INHOFE

Senator INHOFE. Thank you, Mr. Chairman. I thank you, and I join in welcoming our witnesses.

For 4 years, this Committee has been using this 2018 document, the National Defense Strategy Commission and I don't recall ever having one document hanging around for so long. The 12 who got involved with this to start with did a good job in putting us where we are now.

Last week, we received the classified version of the Biden administration's new NDS; that is this. From what I have seen so far, it appears that the new strategy document does a good job expanding our understanding of the scale and the scope of the threat from the Chinese Communist Party and its military modernization.

There are some things that we will probably have disagreements about. We have done that in the past, but we continue to consider the new strategy. For example, there are, there may be some areas of the strategy that the administration is willing to take risks, and the Congress may or may not agree.

But it is clear, and I really can't stress this enough, the Chinese threat is beyond anything that we have dealt with before in our lives.

General Milley, last year, you told us that the Chinese and Russians, combined, spend more than we did on national defense. This year, Beijing announced an additional 7.1 percent increase in their defense budget. This is a scary thing; this is a big deal.

Mr. Secretary, I do appreciate that based on the new NDS, that you went to the White House to ask for more resources, and I appreciate that very much. But even then, the budget just doesn't rise to the moment. It doesn't deliver the real growth our military needs, and it says it very clearly in this document, in the very beginning of the document, the 3 percent to 5 percent range is where we need to be. That real growth is a recommendation that comes from the bipartisan committee.

The budget also doesn't reckon with record-high inflation we are seeing today in the realm of 7 to 8 percent, and on the bipartisan basis, Congress tried to give our defense budget real growth in 2022, but the military will end up losing buying power due to inflation. This historic inflation is a new, I call it the "new sequestration." We all remember when we went through sequestration together.

For me, this isn't just about how much money we spend on defense; this is about how we spend that money.

We need a higher top line because what is in this budget right now is not nearly enough to make up for lost time.

This budget shrinks both, our naval fleet and our Air Force aircraft fleet. It cuts end-strength. The end-strength has been very disturbing to all of us and I am glad to see the investments in research and development. So some good things are out there working and we are all doing it together.

The reason I took so long in this opening is that this is the first budget hearing of the season. You know, people don't realize that this goes on 12 months a year, and that is what this is all about, and we are going to do a good job.

Thank you, Mr. Chairman.

Chairman REED. Well, thank you very much, Senator Inhofe.

Thank you, Mr. Secretary, the Chairman, and Secretary McCord.

We have been informed that there is a vote that will commence at 10:00 a.m. There will be three votes in order.

So, we will be slipping out, ones and twos, but we will continue the hearing throughout the morning and then we will go into the classified section at the conclusion of this open session.

With that, let me address a question to Secretary McCord.

I am trying to anticipate the votes, so I jumped ahead.
Secretary Austin, let me recognize you for your opening statement.

[Laughter.]

**STATEMENT OF THE HONORABLE LLOYD AUSTIN III,
SECRETARY OF DEFENSE**

Secretary AUSTIN. Well, thank you, Chairman.

Good morning. Chairman Reed, Ranking Member Inhofe, distinguished Members of the Committee, thanks for the opportunity to testify today in support of the President's Budget Request for fiscal year 2023.

It is great to be here with General Milley, who has been an outstanding partner. I am also glad to be joined today by our comptroller and chief financial officer, Mike McCord.

Mr. Chairman, we are still focused on three key priorities at the Department of Defense and they include defending our Nation, taking care of our people, and succeeding through teamwork. The budget request that we have submitted to you helps us meet each one of those priorities.

Our budget seeks more than \$56 billion for air power platforms and systems and more than \$40 billion to maintain our dominance at sea, including buying nine more battle force ships and almost \$13 billion to support and modernize our combat-credible forces on land. Our budget request also funds the modernization of all three legs of the nuclear triad do ensure that we maintain the safe, secure, and effective strategic deterrent.

Of course none of these capabilities matter without our people and their families. So, we are seeking your support for a 4.6 percent pay raise for our military and civilian personnel and other special pay and benefits. We also plan to invest in outstanding and affordable childcare and the construction of on-base child-development centers and ensuring that all our families can always put good and healthy food on the table.

We are also deeply focused on the terrible problem of suicide in the U.S. military. I will keep on saying it: mental health is health, period. So, we are increasing access to mental health care, expanding telehealth capacities, and fighting the tired, old stigmas against seeking help. With your support, I have just ordered the establishment of an independent review committee to help us grapple with suicide, to better understand it, to prevent it, and treat the unseen wounds that lead to it.

At the same time, we are still working hard to implement the recommendations of the Independent Review Commission on Sexual Assault, because we know that we have a long way to go to rid ourselves of this scourge. Our budget seeks nearly \$480 million for that enterprise. Sexual assault is not just a crime; it is an affront to our values and to everything that we are supposed to represent to each other and to this country, and this is a leadership issue and you have my personal commitment to keep leading.

Now, while I am on the topic of leadership, let me briefly address our military's role in the world, because, as I have said, we succeed through teamwork. As I have witnessed myself in the last several weeks, countries around the world continue to look to the United

States to provide that sort of leadership. With help from Congress, we have been able to rush security assistance to Ukraine to help the Ukrainian people defend their lives and their country and their freedom.

Last October, I visited Kyiv to meet both, my Ukrainian counterpart and President Zelenskyy, and we discussed our deepening defense partnership and our unwavering support for Ukrainian sovereignty in the face of Russian aggression.

Even before Russia's unprovoked and illegal invasion, we provided Ukraine with a billion dollars' worth of weapons and gear through presidential drawdown authority. Now, we are delivering on another billion dollars pledged by President Biden.

Our budget includes \$650 million more for security assistance in Europe, including \$300 million for the Ukraine Security Assistance Initiative. Just a couple of days ago, the President authorized an additional \$100 million to send more Javelin anti-armor systems, weapons that will provide critical support to the Ukrainians as they continue to resist Russian offenses in the east and in the south of the country. We are also helping to coordinate the delivery of material provided by other nations, which continues to flow in every day, and let me thank you for your strong leadership toward our shared goal of helping Ukraine defend itself.

Since the invasion, I have spoken and met frequently with Minister Reznikov, my counterpart, including on Monday, and I have assured him that we will continue this effort and we will get him and his troops the tools and the inventory that they need most and that they are using most effectively against Russian forces.

We have also reinforced our NATO allies. We sped additional combat power to the alliance's eastern flank, raising our posture in Europe to more than 100,000 troops. These reinforcements include dozens of aircraft, an aircraft carrier strike group, two brigade combat teams.

As President Biden made clear, we will defend every inch of NATO territory, if required, and we are making good on that promise.

Mr. Chairman, as you have heard me say many times, we need resources to match to strategy and strategy matched to policy and policy matched to the will of the American people; This budget gives us the resources that we need to deliver on that promise, as well. It reflects our recently submitted National Defense Strategy, which highlights the pacing challenge of China. That is why we are investing some \$6 billion of this budget in the Pacific Deterrence Initiative. It is why we are realigning our posture in the Indo-Pacific toward a more distributed footprint.

We are going to enhance our force posture, infrastructure, presence, and readiness in the Indo-Pacific. This includes the missile defense of Guam. That is why we are making broad investments in such key areas as undersea dominance, fighter aircraft modernization, and advanced weaponry, including Hypersonic Strike.

Many of these investments will pay dividends in countering the acute threat of Russia, as well, which our strategy underscores. At the same time, we must be prepared for threats that don't observe borders, from pandemics to climate change, and we must tackle the

persistent threats posed by North Korea, Iran, and global terrorist groups.

Now, the National Defense Strategy advances our goals in three main ways: forging integrated deterrence, campaigning, and building enduring advantages. An integrated deterrence means combining our strengths across all warfighting domains to maximum effect to ward off potential conflict. Campaigning means day-to-day efforts to gain and sustain military advantage and to counter acute forms of coercion by our competitors and to complicate their preparation for aggression. To build enduring advantages, we need to accelerate force development, acquiring the technology that our warfighters need.

So, our budget seeks more than \$130 billion, as you point out, Mr. Chairman, for research, development, testing, and evaluation, and that is the largest R&D [research and development] request this Department has ever made. It is nearly a 10 percent increase over last year, which was the Department's previous high-water-mark.

This includes \$2 billion for artificial intelligence, \$250 million for 5G, nearly \$28 billion for space capabilities, and another \$11 billion to protect our networks and develop a cyber mission force. This budget maintains our edge, but it does not take that edge for granted and, quite frankly, Mr. Chairman, in the twenty-first century, you either innovate or you get left behind.

Through the President's Budget and with the help of this Committee, we will continue to innovate, and with your help, we will continue to defend this Nation, take care of our people, and support our allies and partners. With your help, I know we will continue to lead.

Thank you, and I look forward to your questions.

[The statement of Secretary Lloyd J. Austin follows:]

PREPARED STATEMENT BY SECRETARY LLOYD J. AUSTIN III

OVERVIEW

Chairman Reed, Ranking Member Inhofe, distinguished Members of the Senate Armed Services Committee: thank you for the opportunity to testify in support of the President's Department of Defense Budget Request for fiscal year 2023.

On behalf of myself, Deputy Secretary Hicks, the leadership of the Department of Defense, and the men and women of our Department and their families, let me also thank you for the support that Congress continues to provide. Thank you also to the Chairman of the Joint Chiefs of Staff, General Milley, who is testifying alongside me and is a critical partner in realizing the Department's priorities. I am also pleased to be joined by our Comptroller, Under Secretary Mike McCord.

The President's \$773 billion defense budget request would provide the Department of Defense with the resourcing we need to address the threats that America faces and to advance the Department's four key strategic priorities: to defend the Homeland, deter strategic attacks, deter aggression while being prepared to prevail in conflict when necessary, and build a resilient Joint Force and defense ecosystem. As always, the Department is determined to match resources to strategy, strategy to policies, and policies to the will of the American people.

For more than seven decades, American vision and leadership have been pillars of international peace and prosperity. A strong, principled, and adaptive U.S. military remains central for U.S. leadership in the 21st century as we face dramatic geopolitical, technological, economic, and environmental changes. The Department stands ready to meet these challenges and seize opportunities with the confidence, creativity, and commitment that have long characterized our military and the democracy that it serves.

We face rapidly evolving military capabilities on the part of our competitors, accelerated by emerging technologies and intensified by the potential for new threats to strategic stability and the U.S. Homeland. We also face an escalation of our competitors' coercive and malign activities in the "gray zone," as well as transboundary challenges that impose new demands on the Joint Force and the Defense enterprise. Our competitors seek to exploit our perceived vulnerabilities, including by developing conventional and nuclear capabilities that pose all-domain threats to the United States and could jeopardize the U.S. military's ability to project power and counter aggression.

The People's Republic of China (PRC) is the Department's pacing challenge due to its coercive and increasingly aggressive efforts to refashion the Indo-Pacific region and the international system to suit its interests and preferences. The PRC has expanded and modernized nearly every aspect of the People's Liberation Army (PLA), including its conventional forces and nuclear capabilities, with a focus on offsetting U.S. military advantages. The PRC seeks to fragment U.S. alliances and security partnerships in the Indo-Pacific region, and the PRC's leaders hope to leverage their economic influence and the PLA's growing military strength to coerce China's neighbors and threaten their vital national interests.

The PLA is also rapidly advancing and integrating its space, counter-space, cyber, electronic, and information-warfare capabilities to support its holistic approach to joint warfare.

As we have seen in recent weeks, Russia also remains an acute threat, requiring close and sustained coordination across the NATO alliance to prevent further aggression in Europe. Russia's flagrant attack on its peaceful, sovereign, and democratic neighbor, Ukraine, poses a huge challenge to transatlantic security. Russia's nuclear capabilities also pose significant challenges now and in the future.

While the PRC and then Russia pose the greatest challenges to United States security, we must also remain vigilant against other dangers. We face persistent threats from North Korea, with its nuclear arsenal and developing missile capability, and Iran, with its nuclear ambitions and support for proxy groups that threaten the security of our forces and our allies, partners, and interests in the Middle East.

Meanwhile, other threats persist. We have degraded the capabilities of global terrorist groups—including al Qaeda and ISIS—but some may be able to reconstitute in short order. The whole world has learned how deadly and destabilizing a pandemic can be, and we must also be ready for other transborder challenges, such as cyber attacks and the existential threat of climate change.

To address these challenges, we have developed a budget that we believe offers the right mix of capabilities across all domains, while retiring certain platforms that no longer meet the needs of the Joint Force. We are grateful for our partnership with Congress as we seek to ensure that the Department can successfully address present and future threats.

As we work to defend the Nation, the Department will continue to invest heavily in our people, who are the most important element of our national defense. Our All-Volunteer Force, with the support of their families, and our civilian and contractor defense enterprise, work tirelessly every day to defend the United States.

After decades of leadership and investment, the United States enjoys an unparalleled network of allies and partners, who together provide an enormous strategic advantage that our competitors cannot match. This advantage has been on full display in Europe, where a galvanized NATO has risen to the moment and shown extraordinary unity in the face of unprovoked Russian aggression against a democratic neighbor, Ukraine.

Countries around the world share a vital interest in a free and open international system. Close cooperation with allies and partners is foundational to protecting United States national security interests and to our collective ability to address the risk of aggression from the PRC and Russia, while responsibly managing the full array of other threats we face. In all cases, we strive to be the partner of choice for our friends. We will continue to work with our allies and partners to advance our shared interests and maintain the rules-based international order that relies on U.S. global leadership.

The President's fiscal year 2023 defense budget request seeks to address these national security imperatives in three major ways: integrated deterrence, campaigning, and building enduring advantage.

Integrated deterrence entails working seamlessly across military domains and the spectrum of conflict, using all instruments of U.S. national power and our extraordinary network of alliances and partnerships. It applies a coordinated, multifaceted approach to reducing competitors' perceptions of the net benefits of aggression relative to restraint, tailored to specific circumstances. Integrated deterrence is en-

abled by combat-credible U.S., allied, and partner forces, and it is backstopped by a safe, secure, and effective nuclear deterrent.

Campaigning is the way that we tie together the global, day-to-day actions of the Joint Force to achieve deterrence. From joint exercises to military diplomacy, from advanced weapons tests to short-notice operations with close allies and partners, we campaign to make our competitors question the efficacy of coercion and aggression. Simply put, we aim to convince them that today is not the day to challenge the United States or our friends around the world.

To shore up the foundations for integrated deterrence and campaigning, we are moving urgently to build enduring advantages across the defense ecosystem—the Department of Defense, the defense industrial base, and the array of private-sector and academic enterprises that spur innovation and support the systems on which our military depends. We will continue to swiftly modernize the Joint Force, with a focus on innovation and rapid adjustments to new strategic demands. We will make our supporting systems more resilient and agile in the face of any and all threats, and we will cultivate the talents of our exceptional team, recruiting and training a workforce with the skills, character, and diversity that our Nation needs to creatively tackle today's national security challenges.

Ultimately, this year's budget request seeks the resources for a Joint Force that can deter competitors and campaign across the spectrum of competition and conflict each and every day. But most critically, it also seeks the resources that the U.S. military needs to fight and win decisively should deterrence fail.

INTEGRATED DETERRENCE

Integrated deterrence aims to bring to bear the right mix of capabilities to demonstrate beyond doubt that the United States can respond across domains and the spectrum of conflict, working closely across the U.S. Government and with our global allies and partners—all in the manner, time, and place of our choosing.

This requires that the Joint Force maintain our superiority in the air, on land, at sea, undersea, in space, throughout cyberspace, and anywhere in the gray zone where our competitors may seek to challenge us. Integrated deterrence also requires a safe, secure, and effective nuclear deterrent, which remains the ultimate backstop of our national security posture, and we will keep our capabilities networked and ensure that our warfighting concepts are integrated and optimized for a potential future fight.

To maintain superiority in the air, the Department is focused on modernizing our global strike capabilities and continuing to provide rapid global mobility to the Joint Force, so that we can respond to any conflict or crisis effectively and swiftly. The President's fiscal year 2023 defense budget request invests in our air command-and-control framework; in our surveillance and reconnaissance capabilities; in our Next Generation Air Dominance system of systems; in resilient basing, sustainment, and communications in contested environments; and in long-range strike and fires capabilities, including the B-21 family of systems and investments in long-range stand-off weapons and hypersonics. We have also made significant investments in 4th, 5th, and 6th generation fighters, logistics, and uncrewed aircraft systems.

On land, the fiscal year 2023 budget continues to build a combat-credible, ready, and lethal force that can tackle challenges around the world. Our budget request seeks to invest in additional Security Force Assistance Brigade rotations in the Indo-Pacific region and Europe, and it works to build capacity and improved capabilities in the Arctic. We are also focused on developing our long-range hypersonic weapons and mid-range capability prototypes on land, and we are increasing the command and control and domain awareness capability in our forces focused on defending the Homeland. This will require unified network investments to facilitate the Joint All Domain Command and Control efforts across the Joint Force.

At sea and undersea, we are investing in mobility, self-reliance, and survivability, and our budget request seeks to produce a balanced fleet that remains capable of a high level of readiness for power projection, sea control, maritime security, and sealift. Investments in this year's budget focus on force design to deliver a ready force now and in the future, including through investments in ship and aviation maintenance, training, and facilities. We have also invested in long-range precision fires and platforms that ensure our future combat capability, including guided missile destroyers, attack submarines, and globally responsive, combat-ready naval expeditionary forces in the maritime littorals. The construction of our new battle force fleet ships and the incremental construction of *Ford*-class nuclear-powered aircraft carriers will ensure we maintain our dominance at sea.

In space and cyberspace, we must continue to build and maintain our advantages over our competitors. The PRC has made significant investments in space-based and

cyber capabilities. To protect our space architecture, the President's fiscal year 2023 defense budget proposes significant investments in space resilience and a more distributed space architecture. This includes investments in missile warning and tracking architecture, launch enterprise investments, protected satellite communications, and the Global Positioning System (GPS) enterprise.

In cyberspace, our budget will help defend national security systems, including the Department of Defense Information Network; enhance the Department's own cybersecurity by implementing Zero Trust; build more redundancy and resilience into our cyber infrastructure; organize, train, and equip cyber mission forces; advance our cyber partnerships with like-minded countries; and reinforce international norms in cyberspace promoted by the United States.

To defend the Homeland, the fiscal year 2023 budget invests in the development of the Next-Generation Interceptor for Ground-Based Midcourse Defense, and it extends the service life of the current Ground-Based Interceptor. The budget also includes significant investment in the defense of Guam. We also improve our ability to see over the horizon, with investment in new homeland defense radars. Just as important is our investment in multi-Service, multi-domain, long-range fires, including hypersonic capabilities on land, at sea, and in the air. The budget request would also procure more than 3,500 highly survivable subsonic weapons for new and existing launch platforms.

We must be able to track, understand, and respond to malign activities in the gray zone, including the information space, and maintain a strategic hedge against unexpected, rapidly emerging threats, including from violent extremist organizations or an adversary's use of weapons of mass destruction. We also need to sustain a robust crisis-response capability. This budget invests in theater integration, including irregular warfare capabilities, internet-based military information support operations (MISO), armed overwatch, and efforts to counter unmanned aerial systems (UAS) before they launch.

Our nuclear triad remains the ultimate backstop of our national defense. Maintaining global strategic stability—particularly in light of Russia's significant nuclear capability and China's expanding nuclear arsenal—requires the United States to maintain a safe, secure, and effective nuclear capability. The President's fiscal year 2023 defense budget provides for that investment through the modernization of our nuclear command, control, and communications system. It also fully funds the *Columbia*-class ballistic missile submarine; ramps up production funding for the B-21 bomber; fully funds both the Ground-Based Strategic Deterrent and the Long-Range Standoff weapon; and funds the revitalization of science and technology (S&T) research and development to keep pace with the evolving nuclear threat. The Department's nuclear modernization investments will ensure our extended deterrence commitments for years to come.

CAMPAIGNING

Day after day, the Department will strengthen U.S. deterrence and increase our advantage against our competitors' coercive measures through campaigning: the conduct and sequencing of coordinated military initiatives aimed at advancing well-defined, strategic priorities over time. The United States will operate forces, synchronize broader Departmental efforts, and align our activities with other instruments of national power to counter our competitors' coercion, complicate their military preparations, and develop our own warfighting capabilities, along with those of our allies and partners.

In the Indo-Pacific region, campaigning requires thinking, acting, and operating differently every day, including by re-aligning our posture toward a more distributed footprint and building and exercising the preparatory elements needed in crisis and conflict, including infrastructure, logistics, dispersal and relocation. To that end, the President's fiscal year 2023 defense budget request makes clear that China is the Department's pacing challenge, and it makes investments that robustly support the requirements of United States Indo-Pacific Command, as well as the development of capabilities and operational concepts aligned to those requirements. This includes leveraging existing and emergent capabilities, posture, and exercises to influence China's perception of asymmetric, temporal, and geographic advantages.

Specifically, the budget invests in site surveys and the planning and design for potential future military construction projects, in achieving initial operating capacity for new missile warning and tracking architecture, in defense of Guam efforts, in a framework for multinational information sharing and multi-domain training and experimentation, and in other security cooperation efforts to improve allied and partner capability and capacity in the region. The fiscal year 2023 budget request includes significant investments in the Pacific Deterrence Initiative, and we remain

grateful for congressional partnership in our efforts to address challenges posed by the PRC.

Russia's unprovoked invasion of Ukraine poses a historic challenge to transatlantic security. We need to continue robust investments in all domains relevant to European security. The fiscal year 2023 budget makes significant investments to support Ukraine's self-defense efforts through the Ukraine Security Assistance Initiative and includes funding to support security cooperation programs throughout Europe, strengthening the capability and capacity of our allies and partners in the region.

The Department was able to swiftly deploy additional forces to the European theater through our enhanced presence efforts, increasing readiness, operational flexibility, and interoperability with our allies. All of this was made possible by sustained investments in the European Deterrence Initiative (EDI). EDI has been vital to efforts to improve indications and warning, command and control, and mission command in Europe. Investments in EDI helped prepare United States and allied forces for the current situation in Europe, for credibly deterring an attack on alliance territory, and for ensuring we are ready to fight and win should deterrence fail. The Department is grateful to Congress for your leadership in the provision of EDI authorities and resources.

Meanwhile, Iran challenges Middle East stability and poses threats to United States forces, our partners, and the free flow of energy. At the same time, ISIS, al-Qa'ida, and other violent extremist organizations remain a proximate threat to the security of the United States, our citizens, and our interests in the Middle East and South Asia. In response, our forces increasingly need to operate forward with a sustainable military posture and an operationally ready force capable of deterring security threats.

Our fiscal year 2023 investments in support of campaigning activities across the Middle East and South Asia are focused on technological advancement, partner engagement and coordination, and focused military operations. We also continue to bolster integrated air and missile defense and counter-UAS systems. We are proud to cooperate with our partners through regional multilateral exercises, MISO, foreign military sales, and efforts to secure access, basing, and overflight. Throughout the region, we remain committed to countering Iran's malign influence and to counterterrorism operations that degrade groups that have the will and capability to harm the United States.

In Africa, we face a series of intersecting challenges—from malign PRC activity, the evolution of violent extremist groups, and destabilizing transboundary dynamics across the continent. China and Russia have invested heavily in Africa to challenge United States influence and undermine our partners. In response, our forces in Africa are focused on day-to-day campaigning to counter violent extremist organization activity, strengthen the capability of our partners in the region, and observe, assess, and frustrate Chinese and Russian coercive behavior.

Our military personnel are engaged in campaigning activity throughout the Western Hemisphere to combat cross-cutting threats. Intelligence, surveillance, and reconnaissance solutions offer low-cost capabilities to compete in the gray zone. Through increased security cooperation and the sharing of information, our strong, willing partners in the region have become force multipliers.

In the Homeland and the High North, our forces are working to sustain and strengthen United States deterrence to defend the United States and our allies and partners. The scale and scope of homeland vulnerabilities have fundamentally changed, and the United States faces multiple, simultaneous challenges from highly capable and advanced competitors, including nuclear and conventional missiles. Meanwhile, strategic competitors, rogue states, and non-state actors seek to strike institutions and critical infrastructure in the United States through cyber means to exploit our vulnerabilities, offset our military advantages, and disrupt our power-projection capabilities. At the same time, climate change is creating opportunities and vulnerabilities in the Arctic, requiring that we develop resilient infrastructure to support Arctic operations and train and equip our Joint Force to compete in this important region.

A globally integrated, layered defense remains critical to deterring and thwarting potential attacks against the U.S. Homeland. Our campaigning efforts in the U.S. Homeland support homeland defense by helping our forces gain and maintain domain awareness, information dominance, and decision superiority. Annual exercises in the Arctic, including ARCTIC EDGE, ICEX, NORTHERN EDGE, and COLD RESPONSE, provide valuable experience and lessons-learned for conducting multi-domain operations while simultaneously demonstrating the U.S. commitment to a free, peaceful, stable, and open Arctic region.

BUILDING ENDURING ADVANTAGE

Finally, the Department must maintain our enduring advantage to continue to field the best joint fighting force in the world. That means changing and adapting the ways we operate across domains and within our Joint Force and the Department to ensure that the Joint Force will deter conflict across all theaters and domains now and in the future.

To construct a durable foundation for our future military advantage, the Department—working in concert with other U.S. departments and agencies, Congress, the private sector, and our valued allies and partners—will move swiftly in five key ways.

Transform the Foundation of the Future Force. Building the Joint Force requires modernization of the Department's force development, design, and business management practices over time. That starts with establishing a framework for strategic readiness. This framework will keep the Department's eyes on the horizon, ensuring that the urgent and competing demands of the present are balanced with preparations for the future.

This effort requires investments in training, exercises, sustainment, and mission capability in all Military Services, the special operations community, and across the Joint Force. The Department is also updating and advancing its centerpiece joint training program to support integrated deterrence and campaigning by demonstrating and exercising our capabilities alongside our allies and partners.

The fiscal year 2023 budget supports the exercise and engagement requirements of the 11 combatant commands, increases joint integration in Military Service exercises, and trains individuals and staffs in key joint skills. Our Department training efforts will better integrate major force elements across multiple levels of command and control in the conduct of Joint All Domain Operations against a strategic competitor, with live forces, virtual forces, allies, and partners.

Make the Right Technology Investments. The United States' technological edge has long been key to our military advantage. To keep that edge razor-sharp, the Department will support the innovation ecosystem, both at home and in expanded partnerships with our allies and partners. That is why the fiscal year 2023 budget request includes the largest research, development, testing, and evaluation (RDT&E) budget in the Department's history—more than a nine percent increase over last year's already historic RDT&E request.

Our investments to build enduring advantages include resources for science and technology research, the National Defense Education Program, and the Department's educational and STEM programs, ranging from K–12 to the postgraduate level and continuing through employment.

The Department will also invest further in the Rapid Development and Experimentation Reserve (RDER), which brings together the Military Services and combatant commands to experiment with advanced and emerging technologies. RDER's continuous, coordinated iteration across global and virtual exercises moves advanced capabilities into the hands of warfighters earlier, while developing new operational concepts and demonstrating our capacity for innovation to our competitors.

In addition, the Department is committed to making the United States a world leader in 5G by working with the commercial sector and fielding 5G to the warfighter. We are enhancing the cybersecurity of the defense industrial base by sharing information and providing tools and expertise. By fielding resilient GPS and alternative Position, Navigation, and Timing capabilities to our most critical systems, we are enabling continuous operations in degraded environments. We are also prioritizing the Artificial Intelligence and Data Accelerator initiative to support combatant commands with urgently needed data, analytics, and AI-enabled capabilities.

Adapt and Fortify Our Defense Ecosystem. The Department will prioritize joint efforts with the full range of domestic and international partners in the defense ecosystem. This will help us fortify the defense industrial base, our logistical systems, and relevant global supply chains against subversion, compromise, and theft.

The fiscal year 2023 budget request includes significant investment in microelectronics, casting and forging, batteries and energy storage, strategic and critical minerals, and kinetic capabilities. The Department will also adapt and fortify the defense ecosystem by fostering supply chain resilience, including by making use of the Defense Production Act Title III and the Industrial Base Analysis Sustainment Programs and maximizing Made in America manufacturing and procurement where appropriate.

The Department's ability to strengthen the defense ecosystem and project military force is inextricably linked to industry. Our industrial partners provide critical transportation capacity and the global networks to meet our day-to-day and wartime

requirements. Our forces in U.S. Transportation Command spend approximately \$7 billion with industry each year in transportation services to execute defense requirements. Our proactive approach and vibrant relationships with our commercial partners ensure that we have sufficient military capacity to satisfy wartime demands at acceptable levels of risk, making use of our industry emergency preparedness programs, such as the Civil Reserve Air Fleet, the Voluntary Intermodal Sealift Agreement, and a newly implemented Voluntary Tanker Agreement. We also maintain a strong relationship with the National Defense Transportation Association.

Strengthen Resilience and Adaptability. The Department must maintain our ability to respond quickly and effectively to emerging and transboundary threats such as climate change and pandemics. To that end, the budget invests in installation resilience and adaptation, operational energy and buying power, science and technology, and contingency preparedness. We will also invest in the Energy Resilience and the Conservation Investment Program, which allows us to carry out military construction projects that make our installations more energy resilient.

To further fight the damage wrought by climate change, the Department will strengthen resilience on several fronts. Climate change is a fact of life for Department of Defense installations around the country and the world that are facing rising sea levels and increasingly severe storms and droughts. The resilience of our installations is a critical component of our military readiness. Further, investing in more fuel-efficient platforms eases the logistics burden on the Joint Force and can extend the reach of our weapons systems. Finally, we must move with the commercial market toward electrification where it makes sense if we are to avoid being left behind, stuck with old technologies that are expensive and difficult to sustain.

We must also learn from the current global pandemic and be more prepared for future outbreaks. Fighting COVID-19 will continue to be a priority for the Department, and our activities will be informed by the best science, the most rigorous evidence, and the need to maintain readiness.

The Department has worked hard to tackle the COVID-19 challenge, providing urgently needed support across the United States. That has included vaccinating our force, their families, and Americans around the country, sending vaccines around the world, and supporting stressed healthcare systems. Our determined COVID-19 response has also included procuring personal protective equipment, therapeutics, and tests on behalf of the Federal government. Safe and effective vaccines against COVID-19 help ensure that we remain the best and most ready fighting force in the world.

Additionally, the fiscal year 2023 budget request supports the Biological Threat Reduction Program (part of the DOD Cooperative Threat Reduction Program), which will help strengthen the Department's capacity to prevent, detect, and respond to global outbreaks of disease. The program also strengthens partner countries' capacities to mitigate biological threats—whether deliberate, natural, or accidental.

Cultivate the Workforce We Need. Strategies mean little without the right people to execute them. To recruit and retain the most talented workforce, we must advance our institutional culture and reform the way we do business. The Department must attract, train, and promote a workforce with the skills and abilities to tackle national security challenges creatively and capably in a complex global environment. Investments included in the fiscal year 2023 budget request aim to diversify and dynamically shape the mix of skills and expertise among our workforce to meet the needs of our missions, now and in the future.

The Department must improve its capacity to find, support, and nurture an innovation-minded workforce to support our warfighters and encourage innovative best practices throughout the armed forces. The across-the-board pay raise of 4.6 percent is critical to compete for, hire, develop, and retain our force. Authorities for incentives, special pay rates, and workforce-development programs will be vital to growing our team.

Enhancing diversity, equity, inclusion, and accessibility is fundamental to our strategy. Building a talented workforce that reflects our Nation improves our ability to compete, deter, and win in today's increasingly complex global security environment—and doing so is a national security imperative.

Taking care of our workforce is also a national security imperative. Every day, Americans who answer the call to serve need the Department's support to do their best work to defend our country. Across the Department, we have implemented initiatives to make sure that Service members and their families, and our civilian and contractor employees, can stay safe, be healthy, and thrive.

That includes numerous efforts to combat sexual assault in the military. Sexual assault is an affront to our values and a threat to our readiness. Implementing the approved recommendations from the Independent Review Commission (IRC) on Sex-

ual Assault in the Military requires a long-term culture change. We will not compromise on the safety of our teammates, and we will get this right.

In furtherance of these efforts, the fiscal year 2023 budget request provides significant resources to reform military justice by putting prosecution decisions for sexual assault and other named offenses in the hands of trained, experienced attorneys; fielding a specialized prevention workforce in every Military Service to reduce sexual assault, suicide, and domestic violence; and providing sexual-assault response coordinators and victim advocates with independence and increased expertise needed to foster recovery and to ensure that victims have the resources they require.

The Department is deeply committed to the health and well-being of Service members and their families—in body and mind. That is why we have been clear: mental health is health. We are steadfastly committed to preventing, identifying, and treating mental health conditions across the force.

One suicide in the U.S. military is too many. Suicide stems from a complex interaction of factors, and there is no single fix. We are addressing the problem of suicide in the military comprehensively to increase access to mental health care, to reduce barriers to getting support, to combat old stigmas on getting help, and to reach out to populations at highest risk. Our fiscal year 2023 budget request expands telehealth, implements programs to end stigma, optimizes use of mental health providers, embeds mental health providers in units, and conducts comprehensive mental health screening throughout one's service.

Serve Military Families. Child care support is essential to many in our Joint Force, and it is critical to the readiness, efficiency, and retention of our people. The Department provides high-quality, affordable child care for children from birth to age 12, through installation-based Child Development Programs and community-based fee assistance. To help meet the child care needs of our Service members and civilian workforce, the Department will invest in the construction of additional on-base child development centers, expand fee assistance programs, extend eligibility for fee assistance programs to lower income Department civilian employees, and support public-private partnerships to increase child care capacity in high-demand, low-capacity areas. The fiscal year 2023 budget request also continues a promising pilot program that provides financial assistance to Service members to offset the cost of in-home child care.

The economic security of our Service members and military families is also critical. Military compensation must remain competitive with private sector pay, and we must address the high stress and demands on the force, today's tight labor market, and the effects of inflation on our Service members.

We will work across the Department to enhance support to military families, increase access to healthy food, improve financial resources, and increase awareness of available resources. The Department is focused on the food security of our military families, and we continue to gather data to better understand the problem of food insecurity. But we will not wait to take action. This is a multifaceted problem, without a single solution, and we will pursue several angles to get at this challenge.

The Department will also continue to improve the environment in and around our installations. This includes transitioning from the use of potentially harmful chemicals and cleaning up the soil and groundwater on and around our bases, to ensure that our military families and the surrounding communities have access to safe, clean drinking water. The budget invests in programs and initiatives to ensure that we are meeting these obligations.

CLOSING

Providing the resources for our strategy requires hard choices, which are reflected in the President's fiscal year 2023 defense budget request. We have made some tough but necessary decisions already, such as shifting our posture, ending the United States war in Afghanistan, transitioning our combat forces in Iraq, and prioritizing modernization to meet future challenges. The Department undertook a rigorous analytical process to retire vulnerable systems and programs that no longer meet mission needs. That included the decommissioning of certain ships, including some Littoral Combat Ships, and divestment of some A-10s, E-3s, and KC-135s. Taken together, these savings will enable the Department to improve the Joint Force's efficiency and to redirect resources to higher national defense priorities.

We are focused on the most important security challenges facing the United States, while ensuring that we maintain the capabilities required to protect our global interests and respond to emerging crises around the world. We must maintain that discipline to move the Department forward—and we look forward to Congress's support and partnership as we build the force of the future.

The United States has advantages that no other country can match. We have the right strategy, resources, people, and partners around the globe to do precisely what the Department has always been called upon to do: defend the Nation, protect our national interests, take care of our outstanding people, and work as a team with those who share our values. We will continue to help lead the free and open international system through this tumultuous period to a place of greater peace, prosperity, and stability.

Ultimately, America's strength stems not just from our military might but from our democratic values, our Constitution, our open society, our diversity, our creativity, our hard-fought operational experience, our unmatched network of allies and partners, our valued colleagues across the U.S. Government, our civilian and contractor workforce, and above all, the extraordinary patriots of our All-Volunteer Force and their stalwart families. We will meet the Nation's security challenges with the vigor to prevail in the near term and the strategy, resilience, and wisdom to remain strong in the long term.

Chairman REED. Thank you very much, Mr. Secretary.
General Milley, please?

**STATEMENT OF GENERAL MARK MILLEY, USA, CHAIRMAN OF
THE JOINT CHIEFS OF STAFF**

General MILLEY. Chairman Reed, and Ranking Member Inhofe, and Members of the Committee, I am privileged to represent the soldiers, sailors, airmen, marines, and guardians of the United States Joint Force.

Our troops are the best led, best equipped, best trained, most lethal, and most capable military force in the world. Alongside our allies and partners at any given time, approximately 400,000 American troops are currently standing watch in 155 locations around the world, conducting operations every day to keep Americans safe.

Currently, we are supporting our European allies and guarding Europe's eastern flank in the face of an unnecessary war of aggression by Russia against the people of Ukraine and the assault on democratic institutions and rules-based international order that have prevented the great power war for the last 78 years, since the end of World War II.

We are now facing two global powers: China and Russia, each with significant military capabilities, both of whom intend to fundamentally change the current rules-based global order. We are entering a world that is becoming more unstable and the potential for significant international conflict between great powers is increasing, not decreasing.

The United States military comprises one of the four key components of America's national power: diplomatic, economic, informational, and military, to protect the Homeland and sustain a stable and open international system.

In coordination with the other elements of power, we constantly develop a wide range of military options for the President, as Commander-in-Chief, and for this Congress to consider.

As the U.S. military, we are prepared to deter and, if necessary, fight and win against anyone who seeks to attack the United States, our allies, or our significant, vital national security interests.

The Joint Force appreciates the work that our elected representatives do to ensure that we have the resources needed to train, equip, and manage the force in order to be ready. We thank this

Congress for increasing last fiscal year's level of funding and we look forward to your support for this year's budget.

The Joint Force will deliver modernization and readiness for Armed Forces and security to the people of the United States at the fiscal year 2023 budget request of \$773 billion. This budget will enable the decisions, the modernization, and the transformation of the Joint Force in order to set and meet the conditions of the operating environment that we are likely to face in 2030 and beyond; the so-called changing character of war that we have discussed many times in the past. We will work diligently to ensure the resources of the American people entrust to us are spent prudently and in the best interests of the Nation.

In alignment with the forthcoming National Defense Strategy, the classified document is out. In the national military strategy, this budget delivers a ready, agile, and capable Joint Force that will defend the Nation, while taking care of our people and working with our partners and allies.

We are currently witness to the greatest threat to the peace and security of Europe and, perhaps, the world, in my 42 years of service in uniform. The Russian invasion of Ukraine is threatening to undermine not only European peace and stability, but global peace and stability that my parents and generations of Americans fought so hard to defend.

The islands of the Pacific and the beaches of Normandy bore witness to the incredible tragedy that befalls humanity when nations seek power through military aggression across sovereign borders. Despite this horrific assault on the institutions of freedom, it is heartening to see the world rally and say, never again, to the specter of war in Europe.

Your military stands ready to do whatever it is directed in order to maintain peace and stability on the European continent, a peace that ensures global stability and international order where all nations can prosper in peace. We are also prepared and need to sustain our capabilities anywhere else on the globe, as well as our priority effort in the Asia-Pacific region, measured against our pacing challenge of the People's Republic of China, and in defense of our Nation, we must maintain competitive overmatch in all the domains of war: space, cyber, land, sea, and air.

The United States is at a very critical and historic geostrategic inflection point. We need to pursue a clear-eyed strategy of maintaining peace to the unambiguous capability of strength relative to China or Russia. This requires that we simultaneously maintain readiness and modernize for the future. If we do not do that, then we are risking the security of future generations and I believe that this budget is a major step in the right direction.

I look forward to your questions.

[The statement of General Mark A. Milley follows:]

PREPARED STATEMENT BY GENERAL MARK A. MILLEY

INTRODUCTION

I am privileged to represent the soldiers, sailors, airmen, marines and guardians of the United States Joint Force. Our troops are the best led, best equipped, best trained, most lethal and capable military force in the world. Alongside our allies and partners, American soldiers, sailors, airmen, marines and guardians are currently

standing watch in 155 countries and conducting operations every day that keep Americans safe. We are supporting our NATO allies and guarding the Eastern flank in the face of the unnecessary war of Russian aggression against the people of Ukraine and the assault on the democratic institutions and rules-based international order that have prevented great power war for 78 years.

The United States military is a key component in the efforts to sustain a stable and open international system and an important component of our national power. In cooperation with our diplomatic corps, economy, and democratic institutions, we are part of the range of options available to this legislative body and the Commander-in-Chief. As the U.S. military, we are prepared to fight and win if those who seek to attack the United States, our allies, and partners are undeterred.

The Joint Force appreciates the work that our elected representatives do to ensure that we have the resources needed to train, equip, and manage the force in order to be ready. This legislative body increased the level of military funding for the last fiscal year and with that additional funding we are ensuring that the future modernization of the armed forces along with funding the security requirements of today remain on track.

The Joint Force will deliver modernization of our armed forces and security to the people of the United States at the fiscal year 2023 budget request of \$773 billion. This budget will enable the decisions, modernization, and transformation the Joint Force needs to set the conditions for the Force of 2030. This budget allows the Joint Force to remain on a stable glide path toward that future.

The people of the United States through Congress provide the military the resources we need, and we will work diligently to ensure it is spent prudently in the best interest of the Nation. In alignment with the forthcoming National Defense Strategy and National Military Strategy, this budget delivers a ready, agile, and capable Joint Force that will defend the Nation, while taking care of our people and working with our partners and allies.

STRATEGIC ENVIRONMENT

We are witness to the greatest threat to the peace and security of Europe and perhaps the world in my 42 years of service in uniform. The Russian invasion of Ukraine is threatening to undermine the global peace and stability that my parents—and generations of Americans—fought so hard to defend. The islands of the Pacific and the beaches of Normandy bore witness to the incredible tragedy that befalls humanity when nations seek power through military aggression across sovereign borders. Despite this horrific assault on the institutions of freedom, it is heartening to see the world rally and say never again to the specter of war in Europe. Your military stands ready to do whatever is asked to maintain peace and stability on the European continent, a peace that ensures global stability and an international order where all nations can prosper in peace.

THE PEOPLE'S REPUBLIC OF CHINA

The People's Republic of China (PRC) remains our #1 long term geo-strategic pacing challenge. The PRC continues to challenge the stability and security in the Pacific and is increasingly exporting their ability to destabilize countries abroad.

The PRC has and continues to develop significant nuclear, space, cyber, land, air, and maritime military capabilities, and they are working every day to close the technology gap with the United States and our allies. In short, they remain intent on fundamentally revising the global international order in their favor by midcentury, they intend to be a military peer of the United States by 2035, and they intend to develop the military capabilities to seize Taiwan by 2027.

Furthermore, they are actively watching the events in Ukraine and intend to exploit efforts in order to weaken the United States and our allies supporting Ukraine. Where Russia is an acute threat, the PRC is our long-term, geo-strategic national security pacing challenge. As President Biden's Interim National Security Strategic Guidance stated, China is the only country "capable of combining its economic, diplomatic, military, and technological power to mount a sustained challenge to a stable and open international system."

History is not deterministic; war with the PRC is not inevitable. The PRC is clearly a strategic competitor, and it continues to improve its technology and modernization of its armed forces. It is imperative that we keep our relationship with the PRC a competition and not allow it to become a conflict.

INTEGRATED DETERRENCE

Integrated deterrence, as defined in the National Defense Strategy, is how we will align the Department's policies, investments, and activities to sustain and strength-

en deterrence – tailored to specific competitors and challenges and coordinated and synchronized to maximum effect inside and outside the Department. We must act urgently to develop deterrence approaches – including denial, resilience, and cost imposition – across domains, theaters, and spectrums of conflict. If we remain militarily superior to our adversary, then conflict is less likely. As history has shown, peace through strength is a time-tested approach and our best approach for a strategic way ahead.

RUSSIA

In recent months, Russia – under the direction of Vladimir Putin – has taken unprovoked, premeditated actions to violate a sovereign nation. With the invasion of Ukraine, Putin has created a dangerous, historical turning point and has invaded a free and democratic nation and its people without provocation. Shoulder-to-shoulder with our allies, we have bolstered NATO's Eastern Flank and imposed wide-ranging costs on Russia, demonstrating our willingness to defend the international, rules-based order. Russia retains a large and varied nuclear capability to threaten the United States and our allies and partners, and we have heard very provocative rhetoric concerning Russia's nuclear force alert levels from Russian senior leaders. Russia has repeatedly demonstrated its capability and will to conduct complex malicious cyber activities targeting American protected digital infrastructure, both military and commercial.

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

The Democratic People's Republic of Korea's (DPRK) continued weapons testing and development poses real threats to our allies and partners in the Indo-Pacific as well as the Homeland. The DPRK continues to enhance its ballistic missile capability and possesses the technical capacity to present a real danger to the U.S. Homeland as well as our allies and partners across the Indo-Pacific. They show no signs of relenting in their myopic focus on military capability at the expense of their citizens and peace of the Korean Peninsula as well as the entire region.

IRAN

Iran is likely to remain a significant regional threat to the United States and our partners and allies. Through its support of terrorist activities and a proxy army inside the borders of its neighbors, along with its ballistic missile programs, Iran seeks to revise the Middle East regional order and balance of power in Iran's favor. Iran has continued to develop its nuclear program as leverage towards that end. Furthermore, if not constrained through a new diplomatic agreement, their continued nuclear program threatens the emergence of a regional arms race. Additionally, Iran continues to openly threaten to assassinate current and former members of United States Government and our military, which is unacceptable.

VIOLENT EXTREMIST ORGANIZATIONS

Following the conclusion of two continuous decades of United States presence in Afghanistan, terrorist organizations such as al Qaeda, ISIS, Al Shabaab, and others continue to export terror, destruction, and destabilization. Until and unless the root causes of instability that give rise to these types of groups are resolved, we will continue to deal with their attacks to undermine legitimate governments worldwide. The root causes can only be effectively addressed by governments of the region and we can best influence outcomes with diplomatic, economic, information and stability efforts along with train, advise, assist and intelligence sharing combined with an effective counter-terrorism capability that can find, fix, disrupt, and destroy an emerging specific terrorist threat. Through coalition efforts in support of local governments and an aggressive counter-terrorism strategy, we will continue to ensure they do not possess the capacity and capability to exert their terror in the U.S. Homeland.

ALLIES & PARTNERS

Our alliances and partnerships are our most significant asymmetric advantages and are key to maintaining the international rules-based order that offers the best opportunities for peace and prosperity for America and the globe. This budget allows us to build our partners and allies capabilities, foster interoperability, and strengthen relationships. Doing so allows us, our allies, and partners to counter the coercion of our strategic competitors, the malign activity of regional challengers, and meet the varied security challenges state and non-state actors, terrorism or any other threat that may emerge. We are stronger when we operate closely with our allies

and partners. Simultaneously, we must be ready for today and prepare for tomorrow.

READINESS AND MODERNIZATION

Continued modernization is imperative for the Joint Force. We cannot allow ourselves to create the false trap that we can only either modernize or focus on today's readiness, we must do both. The United States has always had the advantage of time to conduct a long build up prior to the beginning of hostilities, we have the fortunate geography of having the Atlantic and Pacific oceans as our east and west borders and having friendly neighbors to our north and south. With advances in technology, we will no longer have the luxury of a long protected buildup prior to conflict. Having modernized forces in sufficient size and readiness that can rapidly respond at scale will be the key to sustaining deterrence and maintaining the peace, and if deterrence fails, being able to fight and win.

Our Strategic competitors are modernizing their militaries, weapons and capability. We will continue to modernize ours to ensure we deter and, if necessary, defeat adversaries. We will divest legacy systems to enable the modernization of our forces not only in terms of materiel, but also in terms of doctrine. In the fall of 2019, the Joint Staff began to develop the Joint Warfighting Concept (JWC) to address the changing character of war, fully informed by the future operating environment and threats we will face. The JWC guides how we organize, train, and equip the Joint Force. It further guides us in shaping our strategic environment and future operations. JWC continues to evolve and is being refined through robust experimentation and war-gaming. Among the enablers for JWC, Joint all domain command and control (JADC2) is a warfighting capability to sense, analyze, and act at all levels and phases of conflict, across all domains, and with partners, to deliver information advantage to our forces and decision makers at greater speeds than our adversaries can react. JADC2's data-centric approach to command and control will dramatically increase the speed of information sharing and decision-making in a contested environment. Conceptual frameworks like the JWC and JADC2 will ensure capabilities such as Long Range and Hypersonic Fires, Logistics and Information Advantage are employed to the full extent. This combination of operational concepts and technology will enable integrated deterrence.

As important is the education of our military leaders. The Joint Chiefs of Staff and their senior enlisted advisors unanimously endorsed two documents: shared visions for both officer and enlisted joint professional military education. We increased the time our developing leaders spend studying the changing character of war and a greater focus on both the PRC as the pacing challenge and Russia as our immediate threat, which seeks to create leaders fully versed in the Joint Warfighting Concept. Furthermore, our shift to outcomes based military education will help us better measure progress and the return on our investment.

Our staff college and war college curriculum are being streamlined to focus on the warfighter skills necessary to execute the JWC and prevail in future conflict. Also underway is the first class of GATEWAY, the Joint Staff's newest in-person enlisted development course introducing the Joint Environment to E-6s and E-7s from across the force. GATEWAY is designed to develop joint enlisted leaders capable of operating in Joint Interagency, Intergovernmental, and Multinational (JIIM) organizations, and we, the Joint Force, must also focus on recruiting the most capable talent so we can develop our leaders of the future.

We are focused on building a more lethal Joint Force ensuring that we continue to modernize our concepts, doctrine, training, and military education. It is imperative that we continue to invest in capabilities that sustain our advantages, while strengthening alliances and attracting new partners. Investments in this budget will ensure that the requirements our Nation levees on the Joint Force are executable. The investments made in this budget will specifically ensure that we remain a relevant and ready force while ensuring that nuclear modernization, long range fires, hypersonic technology, shipbuilding, missile defeat and defense, space and cyber remain at the center of our funding priorities.

NUCLEAR MODERNIZATION

The nuclear triad is the cornerstone of our strategic deterrent. Our adversaries are improving their nuclear stockpiles and potential nuclear threats continue to emerge. While today's nuclear TRIAD is safe, secure, and effective, most U.S. nuclear deterrent system are operating beyond their original design life, increasing concerns about mission effectiveness, reliability, and availability. Replacement programs are in place, but there is little or no margin between the end of useful life of existing systems and the fielding of their replacements. Managing the pro-

grammatic risk is a key feature of our approach going forward, however we must also account for geopolitical, operational, and technical risks that could pose new deterrence dilemmas in the future. Risk mitigation in the programs is one aspect, the other area encompasses the nuclear weapons complex, infrastructure, and the nuclear command, control, and communications (NC3). All of which remain a high priority in the Department and the Joint Force.

LONG RANGE FIRES

One need look no further than the current conflict in Ukraine to see the devastating effect that long range fires provide. Ensuring we have a strike capability without having to also maintain air superiority is a critical asset. We must field multi-domain, long-range offensive capabilities that are both cost-effective and cost-imposing as a means of improving deterrence. By enabling power projection from standoff ranges, the risk to critical United States assets decreases while the defensive burden imposed upon the enemy increases. The PRC has thousands of ground-launched theater-range missiles in its arsenal that would be difficult for the United States to counter given its current inventories. Investments in long range missiles are a cost-effective strategy that improves our ability to compete with the PRC.

HYPERSONIC TECHNOLOGY

This technology is going to continue to be developed by our adversaries and the means and mechanisms for delivery will be varied and difficult to detect and defeat. At the very core of this technology is a speed that is almost unbeatable. It is for this reason that we must invest in this technology. Hypersonics are a suite of capabilities that provide transformational warfighting capability to our Joint Force.

MISSILE DEFEAT AND DEFENSE

Missile Defeat is all whole-of-government activities to counter the development, acquisitions, proliferation potential, and actual use of adversary offensive missiles of all types, and to limit damage for such use. As the scale and complexity of missile capabilities increase, we must continue to develop, acquire, and maintain credible U.S. missile defeat capabilities as necessary to protect against possible missile attacks on the U.S. Homeland, allies, and partners. The Ground-Based Midcourse Defense (GMD) system, and continued modernization and expansion of it, will remain an important and effective element of our comprehensive missile defeat approach to defend the Homeland from DPRK long-range missiles.

OPTIMIZING FORCE STRUCTURE

To pace the PRC threat, we can no longer afford to maintain weapons that are not relevant in the future fight and whose capabilities can be matched by superior technology. Sustaining such equipment takes needed defense dollars away from the acquisition of systems that are needed for modernization. We need to retire aging platforms, and ensure that every defense dollar is spent on programs and equipment that will be relevant to the high-end fight in contested environments. We cannot continue to mortgage our future by being wedded to technology of the past.

NAVAL FORCES

Strategically, the United States has always been and remains a maritime Nation, and we cannot have a world class Navy without world class ships. Manufacturing our warships overseas is simply not in our national interest. Our shipbuilding and supporting vendor base are a national security capability that needs support to grow and maintain a skilled workforce. The Fiscal Year 2023 President's Budget reflects the Administration's strong commitment to continued American naval superiority, including a properly sized and well-positioned industrial base to meet the demands of our current and future defense needs. The conclusions from past force structure analyses have been fully considered and are simple: ship count is an incomplete metric, as it fails to fully capture the capability, payload capacity, and employment of ship classes in the fleet. We must have the right ships, with the right crews, and the right capabilities in the theaters where they matter. This budget specifically procures warships and submarines with credible combat power to deter China while continuing remotely operated ship development and investing in the industrial base to support fleet modernization and on time delivery of the *Columbia*-class submarine. Sealift recapitalization is a critical component of our fleet, 90 percent of war material moves by sea and the DOD fleet is reaching its end of life with an average vessel age of 46 years. Our overall sealift readiness rate is consistently below our stated requirements. We must recapitalize our fleet.

SPACE FORCES

More so now than ever, space is essential to our way of life; space capabilities are essential to our economy, quality of life, our exploration initiatives, and our ability to wage war. Every day we see additional commercial space launches and increased competition for low earth orbit as well as increased reliance on these space assets by Americans. Adversaries are testing and fielding counterspace weapons that threaten not just our National interests and advancements in space, but those of all nations that rely upon space. Russia recently tested both a ground-based anti-satellite missile and an on-orbit anti-satellite weapon prototype which will threaten our space capabilities once fielded. Left unsecured, our capabilities in space will become strategic vulnerabilities, and if we begin to lose our freedom of maneuver in space, this impact will be felt by Americans of all walks of life. This year's budget submission provides a significant investment in resilient space architectures so U.S. and allied partners will be able to continue to derive the national security and societal benefits from space in the face of these threats.

CYBER FORCES

Our adversaries are leveraging the open commerce platform that is the modern cyber environment to further their own nefarious ends. The PRC consistently uses the cyber domain to collect intelligence from the United States Government and to extract proprietary commercial information from the private sector. Malign cyberspace actors increasingly exploit supply chain vulnerabilities, such as commercial software, to gain network access and conduct cyber operations against U.S. citizens, organizations, and institutions. The low cost combined with deniability and the frequency with which non-state actors conduct operations make this domain a priority focus for adversaries to asymmetrically compete without escalation in other domains. Therefore, we must increase our ability to compete in cyberspace and ensure all elements of informational power are integrated into operations, activities, and efforts to deter our adversaries and protect the U.S. Homeland. This requires investment in partners and technology, building and maturing cyber operations and readiness, reducing risk to weapon systems and critical infrastructure, strengthening cybersecurity, and improving network resiliency.

GROUND FORCES

Decision in war is ultimately achieved on land, and maintaining a capable land force in the United States Army and Marine Corps is key to our overall deterrence capability and national security. The Army is rapidly modernizing with innovation, creativity, and entrepreneurship in the application of combat power. Modern battlefields are increasingly faster, more lethal, and more distributed. To meet emerging challenges, the Army is transforming to provide the Joint Force with the speed, range, and convergence of cutting edge technologies that will generate the decision dominance and overmatch required to win the next fight. By 2035, the Army aims to realize its vision of a multi-domain force. Similarly, the Marine Corps is deliberately transforming its capabilities, capacity, and composition through its expeditionary advanced base operations to meet future challenges.

AIR FORCES

Maintaining the role as the global leader in airpower requires our Air Force to accelerate change or lose. In an environment of aggressive global competitors and technology development and diffusion, the Air Force must have the capabilities to control and exploit the air domain, while also underwriting national security through nuclear deterrence. To best address these necessary changes, we must balance risk over time. The Air Force will develop and field new capabilities expeditiously while selectively divesting older platforms not relevant to our pacing challenge—all while maintaining readiness. The Air Force must ensure its path continuously drives towards readiness to be best prepared when called upon by the Nation. Accelerating change means both getting the direction right and moving as fast as possible.

In last year's budget submission, the Air Force began the process of making hard decisions to modernize the Force. Last year's budget highlighted the Air Force needs for 2030 and beyond, and the message has not changed: the need to modernize is critical to counter strategic competitors. The Air Force is taking measured risk in the near-term, while simultaneously prioritizing an affordable, defensible force structure that grows readiness over time and accelerates investment in critical capabilities to deter and defeat the advancing threat.

SPECIAL OPERATIONS FORCES (SOF)

SOF's full range of core activities, tailored capabilities, and enduring partnerships provide critical options for campaigning to bolster deterrence. The access, placement and influence generated by SOF long-term commitments to building partner capacity and improving Ally interoperability provide expanded, low-cost options to gain awareness and present an adversary with multiple dilemmas, if necessary. Additionally, SOF remain ideally suited to identify an adversary's challenge in the "gray zone" and counter those malign activities with firmness while managing escalation. USSOCOM continues to prioritize its operations, activities and investments in the Indo Pacific and Europe while maintaining prioritized posture to counter threats from the Middle East, Africa, and other regions.

SOF continue to optimize our global posture to counter violent extremists and other non-state actors while sustaining the ability to respond to crises worldwide. Focused, deliberate campaigning in Eastern Europe over several years has supported our recent response in conjunction with critical Allies and Partners. This will enhance their resistance capabilities if threatened with territorial aggression or abrogation of sovereign territory.

PEOPLE FIRST / PEOPLE AND FAMILIES

We must take care of our people. Taking care of our people is a fundamental component of readiness. People are our most important resource in the Joint Force. We must ensure that we are doing all that we can do to take care of and guard our most critical resource in order to attract both our troops and their families and retain the best talent in the world. Taking care of people decisively impacts unit cohesion, recruitment, retention, and confidence in leadership.

Just one example in the Budget of taking care of our troops and families is ensuring that the services increase their childcare capacity. The DOD childcare system is the gold standard of childcare with 98 percent of centers being accredited. Funding support from Congress is vital for fully-staffed military childcare. Childcare is key to keeping military families serving and ensuring the safety of our children.

The Joint Force is committed to growing a bench of talent and ensuring that all who meet the requirements to serve are able to serve. The Joint Force competes for the talent of America's youth along with every other business, and organization who seeks our Nation's best and brightest. The Joint Force's objective is to field the most lethal and combat effective fighting force in the world. We will continue to support the accessions of all qualified people to all jobs and positions within the Joint Force.

Finally, another example of taking care of our people and emerging realities is the Secretary of Defense's decision to close Red Hill. The Secretary made the decision to close the Red Hill fuel storage location earlier this year, and this decision demonstrates that we will ensure we do all we can to safeguard our most important resource. Closing Red Hill is not only an opportunity to demonstrate to our people that we care, but also an opportunity to modernize how we distribute fuel to our fleet in the Pacific. Moving away from a large legacy bulk storage system to a distributed system improves our warfighter campaign and ensures safe water for our troops, their families, and the local community. Looking for opportunities to take care of our people and modernize our force and capabilities is something we will continue to prioritize.

CONCLUSION

The United States is at a very critical and historic geo-strategic inflection point. We are entering a world that is becoming more unstable and the potential for significant international conflict between great powers is increasing, not decreasing. The United States needs to pursue a clear-eyed strategy of maintaining the peace through unambiguous capability of strength relative to the PRC and Russia. This requires we simultaneously maintain readiness and modernize for the future. If we do not, then we are risking the security of future generations. This budget is a major step in the right direction.

It remains imperative that we redouble our efforts to improve readiness and to modernize so that we remain the most capable and lethal Force on the planet. Our job as the Joint Force, our contract with the American people is that we, the United States military will always be ready to deter our enemies and if deterrence fails then to fight and win.

Chairman REED. Well, thank you very much, General, and Mr. Secretary.

I would like to address my first question to Secretary McCord, and that is, one of the concerns everyone has right now is the impact of inflation on the budget.

Can you explain how the Department calculates inflation and how it was taken into account in this budget request, both in terms of personnel and in major contracts.

Secretary MCCORD. Yes, Chairman.

We paid just as much attention to this as we did to the program content that we are going to spend most of the hearing discussing. So, when we saw prices changing last year, we jumped on it at the same time we were doing our program review. We took all the information available to us at the time, up to the time we had to finish, which is basically the end of last calendar year, built that into our budget.

What did that mean?

The GDP deflator, which is what we use at DOD, not the CPI, the CPI does not reflect what we buy, so we weren't chasing 7 percent, but we were chasing an increase up to 4 percent vice two. We built that into the pricing of what we buy from contractors and then we also, the pay rates, which you described, the 4.6 pay raise, we took the increase in wages into account.

The result of both of those things, we added \$20 billion a year to our program from 2023 through 2027. Working with the White House, the Secretary made both points to the President both, on the content of the program and on the cost of the program. On top of the twenty to \$30 billion of programming content that we added, we added \$20 billion a year to catch up on this pricing increase that we saw last year.

Then comes the tricky part, Mr. Chairman, is the world keeps changing. After we finished the budget, the invasion of Ukraine spiked, rattled the markets, spiked energy prices. You know, we do not have that in our budget. So, the world keeps evolving. The global economy, let alone the U.S. economy, are very complex and hard to predict what is going to happen next.

So, what we saw happen last year is not what we see happening today and may not be what we see happening tomorrow. But with all the information we had when we finished, we caught up so that we would not start behind on our pricing.

The last point I would want to make, I want to acknowledge that we have a letter from Ranking Member Inhofe and Ranking Member Rogers with a detailed set of questions.

That would be another opportunity for us to explain this in more detail going forward.

Chairman REED. Thank you very much, Mr. Secretary.

Secretary Austin, could you highlight for us some of the key capabilities that are included in this budget that will implement the National Defense Strategy that you just proposed and the President has proposed.

Secretary AUSTIN. Well, thank you, Chairman.

You know, one of the tenets of this strategy is, as you heard me say earlier, is this concept of integrated deterrence and the principle here is that we maximize the capability, capacity resident in every warfighting domain: air, land, space, sea, cyber, and that we are able to network those capabilities in new and different ways.

So, you can see from this budget that we are investing in space in a significant way, \$27 billion. Cyberspace is another \$11 billion. Missile defeat and defense, \$24 billion. Long-range fire is another \$7 billion.

So, a significant investment in the types of capabilities that we know we will need to be relevant, not only relevant, but dominant in future conflict.

Chairman REED. Thank you, Mr. Secretary.

I indicated in my statement the difficult choices you had to make with respect to retiring platforms, et cetera, which I presume, and I will ask you, is essential to being able to, first, have the efficiency to continue to operate, have the innovation to anticipate problems going forward. Might you and General Milley talk about the needs for this disinvestment?

Secretary AUSTIN. Absolutely, Mr. Chairman.

As you know, it becomes very difficult and costly to try to maintain platforms that will not be relevant and effective in a fight with a peer competitor, and so because these platforms, in many cases, are very difficult to continue to maintain, we need to choose to off-ramp those capabilities and invest in capabilities that we know that will provide us what we need in a future fight.

Chairman REED. Thank you.

General Milley, please?

General MILLEY. Thank you, Senator.

The divestment to invest strategy that retires a variety of platforms, mostly Navy and Air Force that are quite expensive, and the cost-benefit analysis to sustain them over time doesn't add up, number one. Number two is the technologies in those systems, many of those systems that we are divesting are old, so we are trying to modernize the force for the future operating environment, 2030 and beyond, and that is where the investments are in this budget.

Chairman REED. I appreciate that.

I think looking at not just the fighting in Ukraine, but also the fighting recently in Azerbaijan or Armenia, the impact of drones, for example, vis-à-vis, tanks, they symbolize, I think, in a way, the future, where large systems which we assumed in the past were difficult to defeat have been handled quite adroitly by the Ukrainians.

So, with that, let me recognize Senator Inhofe.

Senator INHOFE. Thank you, Mr. Chairman.

Mr. McCord, the chairman asked a question and led off with, which I was going to do, but currently now, the question would be in 2022, do you want to expand a little bit on that year?

Secretary MCCORD. Yes, Senator.

On inflation in 2022, the GDP deflator, which is what the Department has always used, was the budget that you got last year at this time was built on 2 percent. We now saw the year ended at 4 and that is what we caught up on, so that that pricing going forward, building it into our program going forward would not be behind.

The tricky part from now is assessing what is going to happen in 2023 going forward, given how hard it is to predict these things

and whether oil-price spikes are going to persist or not persist, things like that.

Senator INHOFE. Uh-huh. Which I think they will be persisting. Secretary Austin, there are some who say that we shouldn't be talking about the top line; we should be talking about how the budget aligns with the strategy. I think we need to talk about both, but we only have a classified defense strategy and we have no National Security Strategy.

So, how are we supposed to connect the dots between the strategy and the budget? Is there any timeline for the White House to release the National Security Strategy to that we could have a debate in public about the strategy? Secretary AUSTIN. Well, if you, Senator.

I can't offer you a timeline on when that is going to be released. I would only say that as we construct the National Defense Strategy, we used the guidance that was available in the very detailed national security—security strategy guidance that was published very early on in this administration. That was very helpful to us to allow us to map out the strategy that you now see.

If you look at that strategy and you look at the budget, you will see direct linkages between the budget and the strategy, because we used the strategy to fabricate the budget.

Senator INHOFE. That is good. Thank you very much.

General Milley, I am going to ask you one question, and I already know the answer, because I know you, and I think it needs to be stated in this hearing. I want to follow-up on this Congresswoman Turner's question from the task hearing earlier this week.

You said your position on the sub-launch nuclear missile hadn't changed. I just wanted to confirm, Admiral Richard and General Walter your best military advice is to continue development of this missile for deterrence purposes.

General MILLEY. That is correct, Senator.

My position didn't change and I think that it is important to have as many options as possible for this President or any other President.

But I do want to state, also, that we have lots of options and we have a significant nuclear capability, so I don't want any foreign adversary to misread what I am saying. I just happened to believe that this President and every President needs lots of options, which we have, but I think more options are better.

Senator INHOFE. Okay. Great.

Chairman REED. Thank you, Senator Inhofe.

Senator Shaheen, please?

Senator SHAHEEN. Thank you.

Thank you, Secretary Austin, Chairman Milley, and Under Secretary McCord for being here this morning and for your service.

Secretary Austin, the Senate NATO Observer Group, which I co-chair with Senator Tillis, recently sent a letter to President Biden, and one of the things we raised in the letter was in view of what is happening in Ukraine, whether we should have a more strategic and comprehensive approach toward the Black Sea region, which, as we are watching Russia is freely using to attack Ukraine and has the potential to shut off that region.

As we think about our future strategy, how are we factoring in efforts to address what is happening in the Black Sea region, particularly?

Secretary AUSTIN. Well, thank you, Senator.

This unlawful and unprovoked aggression by Putin has had the effect of changing the security architecture in the region for some time to come. So, what NATO is now doing is taking a look at what has changed and what NATO will need to do to make sure that we continue to do what is necessary in protecting our NATO countries, defending our NATO countries.

That work has just commenced. It is ongoing. I expect that we will have a robust discussion as we go to the summit in June, but, again, it is ongoing work.

We recognize, however, that change has occurred and that change needs to be accounted for.

Senator SHAHEEN. Well, again, the Black Sea region is a particular vulnerability right now, given what is happening, and are we working with our allies in the region on what that strategy should look like?

Secretary AUSTIN. Absolutely, Senator.

Prior to this, we were working with the countries in the region on, in terms of their capability and capacity and what needed to do to evolve that. That will all be a part of the ongoing discussion, but, clearly, they will have a voice in that discussion.

Senator SHAHEEN. As we look, as you pointed out, the architecture of Europe is going to be different because of this war, and it appears that we are, right now, looking at a much more robust presence in Europe.

How do we think that is going to affect our long-term military posture in Europe?

General MILLEY. I wouldn't care to speculate at this point, Senator. I would say that as we look at that posture, we are going to look at capability in all five warfighting domains and we are going to look at capability across NATO.

We do expect that it will change our footprint. In terms of how much it changes the U.S. contribution, that is left to be seen, and whether or not it includes permanent stake, permanent basing forward or, you know, additional rotational forces in and out of the eastern flank, or a combination of both. These are things that have to be worked out.

Again, we will work with NATO on this and to your point, it, no doubt, will be different going forward.

Senator SHAHEEN. Chairman Milley, would you like to speculate?

General MILLEY. I won't speculate, Senator.

We are developing options for the Secretary and President to consider on the future force posture in Europe to achieve the two fundamental purposes, which is to assure our allies and deter any adversaries, specifically, Russia. But right now, those are under development.

Senator SHAHEEN. Well, I was pleased to see that the President's Budget included \$4.2 billion for the European Deterrence Initiative, but in view of what is happening in Ukraine, do we not think we are going to have to increase that request?

I don't know if that is for Under Secretary McCord or for you, Mr. Secretary.

Secretary AUSTIN. Well, certainly, that is something that we will look at, but let me take this opportunity to thank you for what you did in the past to provide us with that. That enabled to us very rapidly flow forces into theater. You saw us flow a brigade combat team from Georgia into Europe, fall in on pre-positioned equipment, and we are ready to go in a very short period of time.

That, in addition to a number of other things that you helped us with, created some great capability. But to your point, I think we will need more of that going forward. Exactly how much, unknown.

Senator SHAHEEN. Thank you.

I am almost out of time, but I do want to raise an issue around Per- and Polyfluoroalkyl substances (PFAS) because the 2022 NDAA and the omnibus budget bill contained funding for PFAS testing and remediation at DOD installations, and for those of us who have constituents who are affected by what has happened with PFAS exposure at military installations, it is nice to be able to say help is on the way.

So, are you committed to ensuring that all of the initiatives that are funded as part of both of those bills get out on time and as quickly as possible?

Secretary AUSTIN. I am absolutely committed, Senator.

Senator SHAHEEN. Thank you.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Shaheen.

Senator WICKER, please?

Senator WICKER. Thank you, Mr. Chairman.

In your opening statement, Mr. Chairman, you talked about the acute threat we are facing. You termed the challenges as being stark.

In the statement by General Milley, he said the danger is increasing, not decreasing. Certainly, Senator Shaheen is correct about a more robust presence in Europe and of course that is going to require more funds from the Congress, the branch of our government that has the power of the purse.

I don't see how we can view the current climate as being one in which budget tightening is appropriate. So, I would just challenge my colleagues on this Committee and in the House and Senate to assert our authority as the appropriators and as the branch of government charged with providing enough funds to provide for the common defense under the Constitution.

Now, Secretary Austin, let me talk about amphibious ships. To your credit, you assured Senator Kaine and me that you would fund the Commandant's need for amphibious ships to conduct Marine Corps missions. You did this in the Department's fiscal year 2023 budget; it calls for full funding of LPD 32 and funds LHA 9. So, thank you for working with Senator Kaine and me on that.

However, I have significant concerns for the future of amphibious ships. The Department of Defense has not delivered the Navy's 30-year shipbuilding plan for Congress. When are we going to get that?

Further, the Department of Defense has not delivered its amphibious ship study to Congress; again, when will we get that?

Yet, even without these two documents, the Department is proposing to end the LPD amphibious ship construction line after LPD 32. Now, by contrast, the Commandant of the Marine Corps has been clear: he needs a minimum of 31 amphibies.

The math is simple. If you end the LPD line after LPD 32, you cannot reach the 31 traditional amphibious ships. The Marine Corps even included funding for an entire LPD 33 as its number one, unfunded priority in fiscal year 2023.

So, Secretary Austin, why did you not include funding for LPD 33 in the fiscal year 2023 budget? How do you propose filling the operational gap that this is going to cause? Do you think we should take note of the fact that the Marine Corps chose LPD 33 as its top choice for additional funding?

Secretary AUSTIN. Well, thanks, Senator.

Let me also thank you for what you have done to continue to support us and continue to support our Navy and our Marine Corps.

As you pointed out, there is \$2.8 billion in the 2023 budget focused on amphibies. Amphibies are important to us today. That will be important to us going forward. There is \$5 billion allocated to amphibies across the FITA.

As you know, based upon the Commandant's vision of the future Corps, we will track along with what the Commandant's needs are, we will continue to work with him. We are also investing in an amphibious warfare ship, which is a lighter version of an amphib, and we will make those investments.

But we will continue to work with the Commandant going forward and those two reports that you mentioned earlier, the ship-building plan and also the amphib study, those are forthcoming in the next several weeks.

Senator WICKER. In the next several weeks. Well, very good.

Let me ask you this, Secretary Austin, with regard to Ukraine. You said on Tuesday it is the objective of the Government to deter Putin, but as General Milley describes, it is very difficult to do so unless you put forces on the ground.

In the Omni, Congress provided you with \$3 billion in authority to further arm the Ukrainians, yet we have only used \$900 million of this, less than a third of the amount authorized. This could also be used to backfill the eastern flank NATO partners.

Why hasn't the administration provided the full \$3 billion? Does the administration not want to send it yet? Is it not available yet? Are there throughput problems at the Pentagon and how do we fix these problems to get our friends in Ukraine, the equipment, the weaponry they need to defeat the Russians?

Secretary AUSTIN. Well, we communicate with the Ukrainian leadership routinely. As I indicated, Senator, I just talked to Minister Reznikov on Monday. I will talk to him again this afternoon. The chairman is in close contact with his counterpart, as well. We base what we are doing on their needs and those needs are identified in those frequent engagements.

We are flowing resources into Ukraine faster than most people would have ever believed conceivable. Now, from a time, in some cases, from a time that authorization is provided, you know, 4 or 5 days later, we see real capability begin to show up.

Senator WICKER. You are not suggesting they are receiving everything that they are asking for?

Secretary AUSTIN. If I said that, I certainly didn't mean to say that.

What I meant to say, Senator, was we are providing them with those capabilities that are relevant and effective in this fight, and you have seen us do, provide a tremendous amount of anti-armor, anti-aircraft capability and also communications capabilities, as well as Unmanned Aerial Vehicles (UAVs). We are also looking to help them in a number of other ways.

But we are providing those capabilities that have proven to be absolutely effective in this fight.

Senator SHAHEEN. [Presiding.] Thank you, Senator Wicker.

Senator Gillibrand?

Senator GILLIBRAND. Thank you, Madam Chairwoman.

General Milley and Secretary Austin, I just want to commend the fine work you are doing in Ukraine, with regard to being supportive of the Ukrainian people's will to fight and will to win.

I went with a delegation with Senator Ernst just a few weeks ago and we were able to meet with the 82nd Airborne, as well as our troops in Poland, as well as troops that are doing exercises in Germany. I can say it was extremely inspiring and something I think that you should be very proud of.

Do you believe our current strategy is sufficient for Ukraine to win the war against Russia and if not, what shifts in strategy would you suggest, and second, we talked about how this conflict could ultimately be resolved and I want to know if you are engaging with any Russian counterparts or whether any NATO allies are doing so?

Secretary AUSTIN. In terms of whether or not we are engaging with Russian counterparts, both the Chairman and myself have frequently reached out to our counterparts in Russia to try to ensure that we maintain a dialogue; that is, in the last, since mid-February, that has not been very, we have not been very successful because the Russians have not responded.

In terms of whether or not, you know, this is the right approach, you know, our goal, our objective has been to make sure that we help Ukraine defend itself, protect its sovereign territory. They have done a credible job of doing that, because they have the will, the determination to defend their sovereign territory; that has been really, really impressive.

But you also need the equipment, as well, to do that, and so, we provided them those anti-armor and anti-aircraft weapons and also the UAVs that they have been really somewhat decisive, for lack of a better term, in a number of these fights.

Putin thought that he could very rapidly take over the country of Ukraine, very rapidly capture the capital city, but he was wrong. He was wrong, in part, because he made a number of bad assumptions, but also, in part, because of the stiffness of resistance that he encountered.

I think, you know, Putin has given up on his efforts to capture the capital city. He is now focused on the South and East of the country and our goal is to make sure that we give the Ukrainians everything that they need, that we can possibly get to them, as fast

as we can get it to them, and we are pushing it very, very quickly, so that they can be successful in that fight, as well. That will be our focus going forward.

Senator GILLIBRAND. General Milley?

General MILLEY. Yes, Senator, I would say that, you know, what does winning look like?

I think winning is Ukraine remains a free and independent nation that it has been since 1991, with their territorial integrity intact. That is going to be very difficult; it is going to be a long slog. This is not an easy fight that they are involved in.

The first part of it has probably and successfully been waged here in the last 6 weeks. They have managed to defeat the Russian onslaught on to Kyiv, but there is a significant battle yet ahead down in the Southeast, down around the Donbas-Donetsk region, where the Russians intend to amass forces and continue their assault.

So, I think it is an open question right now, how this ends. Ideally, Putin decides to ceasefire, stop his aggression, and there is some sort of diplomatic intervention, but right now, that doesn't look like it is on the horizon, the immediate horizon.

Senator GILLIBRAND. Do you believe we need any shifts in strategy or are you, do you believe that the current course is the best course? Are there any concerns about escalation that you need to mitigate?

Secretary AUSTIN. Yes, I do think the current strategy is the right strategy, which is, number one, do not engage in armed conflict with Russia; United States forces don't engage in armed conflict with Russia. Second is to continue to support the Ukrainian people and their government with sufficient weapons and arms, et cetera, so that they can help defend themselves. Third is to maintain the cohesion of NATO, because NATO is a very powerful organization in its both, the military and political alliance in many ways, and it definitely acts as a deterrence.

So, those are the three main objectives the President has laid out for us as the uniform military and we will continue to execute those and I think that is the right track.

Senator GILLIBRAND. Thank you.

I have expired my time, but I want a question for the record. Secretary Austin, the People's Republic of China have rapidly advanced their cyber and information warfare capabilities and Russia's ongoing cyberattacks against Ukraine are an indication of how this dimension of warfare is bound to become more complex.

What are some broad strategies and approaches that we should be considering to recruit more civilians and uniformed personnel to improve our cyber readiness?

You either do a short answer now or submit your answer for the record; it is your choice.

Secretary AUSTIN. I will take the question for the record, Senator. Thank you.

Senator GILLIBRAND. Thank you very much.

Chairman REED. [Presiding.] Thank you, Senator Gillibrand.

Senator Fischer, please?

Senator FISCHER. Thank you, Mr. Chairman.

I want to begin by noting my frustration with the timing of this hearing. We are here today to review the Department's budget, but we have no detailed budget justification data. My understanding is that the J book will be released mid-April.

We can't talk about any strategy, either. The administration's National Defense Strategy, the Nuclear Posture Review, and the Missile Defense Review, were submitted to Congress last week, but all of those documents are classified. Last year and in 2017 and 2018, this Committee delayed the Secretary's testimony so that there was ample time to review the budget and have a meaningful oversight hearing and I am disappointed that that is not the case.

With respect to the NDS and the NPR, I would note that the previous administration released these documents publicly in early 2018 and the committee had almost 3 months to review them before Secretary Mattis and General Dunford appeared to testify.

Secretary Austin, in your opening comments, you said that in this budget, resources are matched to strategy, matched to policy, matched to the will of the people.

I think having this hearing without any detailed information about the budget and when we are unable to openly discuss any of the administration's strategy documents directly undermines the Committee's ability to conduct its oversight work and it is contrary to the spirit of transparent government that these public hearings are intended to support.

I will be deferring most of my questions to the classified portion, but I do have a few that we were able to glean from the top lines that we were given.

Secretary Austin, in Section 1684 of the 2017 NDAA, it was directed that the Department would designate an acquisition authority to be responsible for defense of the Homeland from cruise missile threats, but the Department has still not made such a designation.

What is the status of this and does the Department intend to make a designation and when or can we expect that to happen in the near future?

Secretary AUSTIN. Well, thanks, Senator.

We do intend to make a designation and we will, again, we will move out smartly on that.

In terms of being transparent and when the budget, detailed budget is released, I would like to ask, invite Mr. McCord to make a couple of comments there. But it is our goal, it is our desire, it is our mandate to be as transparent with you as possible and we will do that.

Senator FISCHER. I would like to continue with my questions, since I will run out of time here, but I would point out that one of my missions, and I have talked to you about it, I have talked to all of the service chiefs to the Joint Chiefs, to be able to declassify much of the material that we see as members of Congress. I think there are ways to do that, and we have to be able to do that so that the people of this country understand the threats that we face. So that when they have the information and can review that for themselves, they will support our national defense.

They will support our national security, and I feel that we have gone backwards here in making these classified documents and not being transparent.

But if I could continue, given the increasing cruise missile threat to the United States, again, I think it is important that we make this designation. It was in the 2017 NDAA and that was a long time ago, so I hope that you will step up and do this.

Also, Secretary Austin, under this budget, the Air Force is divesting 369 aircrafts this year and buying 87, which is a net loss of 282. The 5-year plan projects buying 467 aircraft and divesting 1,468, a loss of 1,001. The Navy's battle force shrinks as well, under this budget, dropping from 298 ships today, to 280 in fiscal year 2027.

You know, I am open to the concept of divesting of legacy platforms, but I think that is dangerous and a dangerous way to put stress on the force that we have.

So, how are we planning to deal with that dilemma and are we expecting operational demands to fall, you know, how realistic is that?

Secretary AUSTIN. Well, thanks, Senator.

First, let me just highlight that there—affirm that there will be an unclassified version of the strategy that comes out a bit later.

Again, in terms of a divestment and investment, we are investing in those capabilities that will enable us to be decisive in the future fight. Those capabilities that are not survivable in that fight, I think that we have divest of them, and also, because they are very expensive to maintain.

We can use those resources to invest in future capabilities, the kind that we need to the next fight, and so, that is our strategy. Again, as you match the budget to the strategy, I think you will find a direct match there.

Senator FISCHER. Thank you. I hope you remember it has to be matched to the will of the American people, as well.

Thank you.

Chairman REED. Thank you, Senator Fischer.

Senator Blumenthal, please?

Senator BLUMENTHAL. Thank you, Mr. Chairman.

Thank you both for your service. I will say on my own behalf, that we are very, very fortunate at this very dangerous time in our Nation's history to have one of the most impressive defense and national security teams in recent history. So, thank you for your service to our Nation at this very perilous time.

You know, I have visited Ukraine, as well as more recently, Poland, the Ukrainian border with a number of my colleagues; Since 2014, I have very vocal, indeed, vehement, in support of more lethal arms delivered more quickly to Ukrainians while they have lost 14,000 of their men and women in this fight for close to a decade against the Russians.

Now I must say that I continue to feel that we need to do more and do it more quickly in providing lethal arms to Ukraine, including fighter jets, air defense systems, ammunition, Javelin missiles, Stingers, and other systems that the Ukrainians can use.

Now, I agree that it is going to be a long slog, Mr. Chairman. It is a protracted war going to the east, but we need to be there for the Ukrainians in the midst of this long slog.

You have said that the outcome is an open question, but what troubles me is that saying it is an open question is a prediction. The objective is to enable the Ukrainians to win and it seems to me that often our strategy seems somewhat schizophrenic.

We want the Ukrainians to defeat the Russians, but we are afraid that pushing Putin into a defeat may provoke escalation. It seems to me that we need to address those fears and realistically provide Ukrainians what they need to win.

Let me ask you whether you feel, for example, that we can do more to train the Ukrainians in anticipation of that long slog to use more advanced weapon systems that we could provide. Number two, can we provide systems such as the A-10s that we are, in fact, diminishing in use in our own armed services? Can we provide more enabled assets to be more effective in the kinds of aerial defenses that will stop Putin's reign of terror?

Can you give me an assurance that we will do whatever it takes to enable the Ukrainians to win, while avoiding the escalation into a nuclear confrontation?

Secretary AUSTIN. Well, thank you, sir.

Well, first of all, I have to tell you that providing the Ukrainians what they need is at the top of my list of things to focus on every day, and this is a thing that the Chairman and I talk about with our subordinate commanders every day. We are personally involved in engaging countries in the region and around the world, quite frankly, in trying to make sure that we not only provide what we can, but that we are getting some assistance from other countries.

There are some 30 nations that are providing assistance, in addition to us, and that is the part that you don't see on a daily basis, because we don't talk about it very often. Many of these systems are systems that the Ukrainians are used to using. They have been very effective, thus far, and we will continue that work.

Can we provide them training?

Our focus right now is to provide training, where necessary, on those systems that we are providing them, you know, that we can get that training done in short order.

They are in a knife fight and so, you know, taxes large numbers of people out for long periods of time is not helpful to them.

On the A-10, I will invite the Chairman to comment on this, but, again, this is a high-threat, air defense environment and the A-10, we have to do the analysis to ensure that if you did that, it could survive and I question whether or not it would survive in the current environment.

Senator BLUMENTHAL. Let me ask you this, Mr. Secretary, shouldn't we be using, now, the Defense Production Act to produce more of the Javelins, the Stingers, all of the stocks that we are using and diminishing and running low on and our allies, as well, shouldn't we be applying the Defense Production Act?

Secretary AUSTIN. We are pushing hard and engaging industry to make sure that we move the production of these items as quickly as we can, and that is not an easy task with at least one of the

items there. But we will move this, continue to move this in terms of additional production as fast and efficiently as we can.

Senator BLUMENTHAL. Are you alarmed that the Russians are not returning your call, that they are not communicating with you? Shouldn't we be alarmed?

Secretary AUSTIN. Disappointed, for sure. But, you know, again, based upon what they have done, nothing surprises me, but it doesn't mean that we will stop reaching out to engage them. I think we have to have the ability to talk to the leadership.

Chairman REED. Thank you, Senator Blumenthal.

Senator Cotton, please?

Senator COTTON. Secretary Austin, why will you not say the words "win" and "victory" when it comes to Ukraine?

Senator Blumenthal just gave an impassioned speech about this. It is clear that it is what both parties want.

I reviewed your written testimony. You talk about deterrence 29 times. You never once used the word "win" or "victory" in reference to Ukraine, nor does the Secretary of State, the National Security Advisor, the vice president, or the President.

Have the words "win" and "victory" been purged from the administration's vocabulary when it comes to Ukraine?

Secretary AUSTIN. The word "win" has certainly not been purged from our vocabulary.

Senator COTTON. Do you want Ukraine to win or do you want this war merely to end?

Secretary AUSTIN. I think the Chairman pointed out very accurately what our desired end state would be: Ukraine maintains its sovereignty and its ability to protect its country, defend itself; it maintains its government.

Russia is weakened militarily and Russia, from a geopolitical standpoint, has, you know, is a pariah and, you know, countries will not volunteer to align itself with Russia. Some of that will happen, but we can see those kinds of things beginning to happen.

Senator COTTON. I thought, I mean, I thought the Chairman's response to Senator Gillibrand was pretty good on this point about what Ukraine winning looked like: a free and independent Ukraine with sovereignty and control over its own territory.

Does that include the territory that Russia or Russian proxies controlling the Donbas, as of February 24, the day before the invasion?

Secretary AUSTIN. I think it is appropriate to let President Zelenskyy and the Government of Ukraine define what that is going forward, sir.

Senator COTTON. Are you or anyone else in the administration discouraging President Zelenskyy or your counterparts from launching attacks that would involve taking back any part of the Donbas or the Crimea?

Secretary AUSTIN. No.

Senator COTTON. Are you providing them intelligence to conduct such attacks?

Secretary AUSTIN. We are providing them intelligence to conduct operations in the Donbas; that is correct.

Senator COTTON. In the Donbas, on the territory that Russia or its proxies controlled before the invasion?

Secretary AUSTIN. Yes. We are going to make——

Senator COTTON. Offensive operations to reclaim their own territory, are you providing that intelligence to them?

Secretary AUSTIN. We want to make sure that is clear to our force, and so updated guidance that goes out today, we will make sure that that is clear.

Senator COTTON. Updated guidance. So, that means that the current guidance has said, don't provide that information?

Secretary AUSTIN. Well, certainly, the current guidance was not clear in that regard, so we will make sure it is clear.

Senator COTTON. I think this is part of what you heard from both parties in this Committee, is that as much as we have done, we are still engaged in too many half-measures. There is still too much hesitancy intended to miss in our posture towards this war.

I just want to talk about our own posture. Admiral Richard testified to the Committee that he had advised that we should go forward with a normal routine, regularly scheduled test of our ICBMs. That test was postponed and now it has been canceled.

Why did you cancel that test, Mr. Secretary?

Secretary AUSTIN. Well, we postponed it so that, you know, again, we are at a very tenuous point. We wanted to make sure that we were doing prudent things and managing escalation, and we reached a point where I made the decision that we had postponed it to the degree that it was best to go ahead and cancel it.

I would tell you that I am confident in our ability to maintain our programs and to stay on track and to provide a credible deterrence and to protect our allies and partners.

Senator COTTON. Well, this, see, I am confident, as well. I am confident because we do conduct these routine tests. We don't cancel them because Volodymyr Putin has decided to invade one of his neighbors.

The fact that we postponed it and then we canceled it because it is escalatory, to me, just says to Volodymyr Putin, that we are nervous about what he is going to do, as opposed to trying to make him nervous about what Ukraine and America and NATO is going to do next. This is a form of——

Secretary AUSTIN. If we were concerned about him being nervous——

Senator COTTON. This is a form of self-deterrence. I mean, the Chairman has said this war could go on for years.

If a missile test in March of 2022 is escalatory, is it going to be escalatory in 2023 and 2024 and 2025?

Secretary AUSTIN. It really depends on what is going on at that point in time.

Senator COTTON. All right.

Secretary AUSTIN. If you will look at, I know it is not lost on you, Senator, that we have rapidly deployed forces to the eastern flank. We have pushed in a tremendous amount of security assistance to Ukraine, and none of those actions indicate that we are afraid of Mr. Putin.

Senator COTTON. All right.

One final question for the Mr. Chairman. General Milley, I constantly hear concerns about professional military education across

the services, that it is not focused enough on rigorous, operationally focused education.

There is too much things that are kind of beyond the core warfighters' domain like, you know, international studies, or development, economics. You put out a very strong memo on this in May of 2020. Unfortunately, I still hear that some of the schools are not implementing that fully.

Could you talk to me a little bit about your concerns in that memo and what plans you have to make sure that that is driven down to the lowest level at our professional military education schools?

General MILLEY. Yes, thanks, Senator.

Look, the U.S. military has two tasks: prepare for war and fight and win wars. That is it, and the PME is designed to do that.

We set out that guidance in 2020 to emphasize that, warfighting, operational skills, strategic thought, et cetera, and we do periodic reviews. I just got a report probably about a couple of weeks ago, actually.

I said, how many contact hours do we do in the war colleges and staff colleges? It came out to, round figures, just under 5,000.

I did the math, my guys did the math, the analysis, and 80 percent of that time was spent on warfighting, operational art, and strategy. The others are spent on things like congressional engagement, public affairs, administrative tests you have to do to run the military.

So, it is focused, 80 percent of the time is focused on the warfighting skills necessary for command and leadership at the staff level at different organizations.

Chairman REED. Thank you, Senator Cotton.

Senator COTTON. I would really like to take it to 100 percent.

General MILLEY. Sure.

Senator COTTON. I bet the one thing you would like to strike is the congressional engagement?

General MILLEY. No, it is an important——

Chairman REED. Thank you, Senator Cotton.

Senator HIRONO, please?

Senator HIRONO. Thank you, Mr. Chairman.

Secretary Austin, I want to commend you for reaching the decision that you did to de-fuel and permanently close the Red Hill storage facility on Oahu. Ensuring the health and safety of our citizens has been my number one priority, and this decision not only protects the island's drinking water, but will ultimately benefit operations in INDOPACOM as we look to expand our ability to operate in a distributed manner across the AOR.

I also would like to particularly thank Deputy Secretary of Defense Katherine Hicks for her diligent work on this issue and her communicating with me personally. The closure of Red Hill is going to be a multi-year, multi-phase endeavor. There is a de-fueling process, itself; the closure of the facility; the cleanup of the site. The entire effort will require significant planning and resources for years to come.

I ask you to work closely with the Hawaii Department of health and the Environmental Protection Agency (EPA) as we go forward. The funding in the President's Budget shows DOD's commitment

to the long-term closure and cleanup of Red Hill and demonstrates, very importantly to the people of Hawaii that the environmental remediation will not fall to the wayside.

Secretary AUSTIN, would you like to add any comment to this?

Secretary AUSTIN. Just a couple, Senator.

First of all, I want to thank you, personally, for your leadership and that of your colleagues in doing the work that you did to help us work our way through this and we remain grateful to that. I would also highlight that the safety and security and the health of our troops, our families, the people in the community, it is absolutely important to the Department of Defense.

You are correct, we have allocated funds that will help us begin to address the critical components here going forward. The de-fueling process, remediation, will be, no doubt, carry a significant expense, and I certainly hope that Congress will continue to support us, as you have done to this point. So, thank you.

Senator HIRONO. Thank you for your continued leadership.

Secretary, it is my understanding that this year, the National Defense Strategy and the Missile Defense Review were developed simultaneously for the first time to ensure alignment of decision-making across these documents.

In the NDS, one of your four stated priorities is defending the Homeland, which will make sense to ensure that missile defense is in line with that priority. Though the budget justification books are not out yet, one concern I have is for the defense of Hawaii for missile threats.

To date, the Department has spent significant resources on HDR—Hawaii, which I have supported, because we were told many times that this was required by the operational commanders. While we wait for greater detail on the Department's decision relating to the future of HDR—Hawaii, I would like to understand the Department's position on defense of Hawaii and how, if HDR—Hawaii is not funded, how the Department plans to upgrade radar discrimination capability for the defense of Hawaii.

The question is, Secretary Austin, what is your plan for the future defense of Hawaii from missile threats?

Secretary AUSTIN. In terms of the defense of Hawaii right now, we are absolutely committed to defending this country. Hawaii is a key part of that defense and certainly is defended as we speak.

Now, going forward, Senator, you will note that we are investing \$24.7 billion in—

Senator HIRONO. Yes.

Secretary AUSTIN.—in missile defense and defeat, and so, you know, we are developing the next-generation interceptor and, you know, our goal is to stay two steps ahead of our adversaries' emerging technologies and Hawaii will absolutely be a key part of that.

Senator HIRONO. So, just to be clear, then, if we are not going to be continuing to fund HDR—Hawaii, that you are developing, as you mentioned, the next-gen interceptors to make sure that Hawaii is defended against missile threats?

Secretary AUSTIN. Absolutely, Senator.

Senator HIRONO. Thank you.

I just want to add my voice of concern regarding Senator Wicker's line of questioning, relating to amphibious ships and the fact

that there will be only 3 of the 13 planned purchases of the *San Antonio*-class ships. So, I just want to add my concern that General Berger had asked for 31 ships and we are falling short of that, so I hope that you have said that you are continuing to work with General Berger, so I hope that we can come to a positive resolution of the need that he has for these ships.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Hirono.

Senator Rounds, please?

Senator ROUNDS. Well, thank you, Mr. Chairman.

Gentlemen, let me begin by saying thank you to all of you for your service to our country.

Secretary Austin, I appreciated the comments, the clarifications, and so forth that you shared with Senator Cotton. I think it is really important that the American people understand that we want the Ukrainians to win and that we will support them with the appropriate background intelligence information and weapons so that they can regain the territory that has been lost to Russia, and that includes the area in the Donbas. I think that is a very important, clarifying point, so I thank you for that, sir.

I also, Mr. Secretary, and if this is an issue which you would prefer to have Mr. McCord address, that is fine with me, sir, but the industrial base that we have today in the United States is one that we, particularly, the Defense Industrial Base is one that sometimes comes under question with regard to our long-term capabilities and, yet, it is something that has been of concern to this Committee. I think that the Joint Chiefs have expressed their concern in the past about our ability to respond and to build the weapons and to maintain the weapon systems that we have.

I want to point out one that we have in the past, and while it did not start on your watch, sir, I think it is critical that we fix it as soon as possible. What I would like to talk about is an example that I have talked about before. The ability of the Navy, and I am going to use the Navy, because we have used the Navy in the past, the ability of the Navy to manage scheduled maintenance for its vessels is beyond concerning.

The USS *Boise* is a case in point, but far from being the only example. Now, the USS *Boise* is a *Los Angeles*-class nuclear attack sub. It was commissioned in November of 1992. The *Boise* has not been on patrol since 2015. It lost its dive certification in 2017.

Now, we have had some of our folks, my MLA was onboard the *Boise* in September of 2019, as its crew executed pre-maintenance procedures. Here we are, 7-years-plus later since it was last on patrol and it is still awaiting its engineered overhaul and there is no funding to allow this to happen until at the earliest, fiscal year 2024, but probably fiscal year 2025.

Now, this is what is concerning. Multiple captains of the *Boise* have spent their entire command at sea tour while it has been stuck in limbo. American taxpayers continue to pay for a nuclear attack submarine that hasn't executed its mission in 7 years.

Now, myself and my colleagues have asked tough questions of Navy leaders for at least the last 5 years and yet nobody in the Navy has been able to solve the problem.

Now, I am hearing that the Boise may be decommissioned without ever receiving an overhaul.

I think this is simply not acceptable to have the taxpayer-funded, nuclear attack submarine with those capabilities out of service for more than 7 years and we can't seem to get to the bottom of what the problem is.

Mr. Secretary, I am not sure if you are prepared to discuss this or if you would like to have Mr. McCord attempt it, but I would sure like to hear your thoughts.

Secretary AUSTIN. Well, thanks, sir.

I would certainly invite Secretary McCord to make comments as well, but a couple of points that I would make up front is that, as you have heard me say, we continue to invest in our sub capability, especially the *Columbia*-class and that will continue going forward. We think it is critical.

But the issue that you raise, I think, is an issue of capacity in our shipyards and so this budget invests \$1.7 billion in public shipyard capacity and the industrial base. I think it is critical and we will continue to do our part to make sure that we are helping industry have what it, are helping create the capacity to take care of our capabilities here.

Senator ROUNDS. Mr. Secretary, thank you.

Perhaps rather than spending the rest of my time on this particular one, could I ask, would you get back with us and let's find a solution to this problem.

Secretary AUSTIN. Sure. Absolutely.

Senator ROUNDS. Thank you.

General Milley, I have just one question for you and that is, I know that you have been an Army officer and that you have commanded ground troops and you understand the need to have all possible systems available for their use.

There was and there continues to be a question as to whether or not land mines should be a part of our systems of operations and, yet, sometimes I think people get a misunderstanding of the difference between anti-vehicle land mines and those which are anti-personnel land mines and they don't understand the differences on them.

This is a needed capability for our Armed Forces, is to have the ability for these land mines to be able to be used in certain situations. You understand that.

The Army has been developing land mine alternatives for over 12 years, yet the objective capability is not scheduled to be fielded until at least fiscal year 2030 or 2031. To me, the results are unacceptable to the mission and to the force.

General Milley, could you, using your best professional military advice, share with this Committee, the need or without the need for the upgrade of land mines and its critical importance to our Armed Forces.

General MILLEY. Thank you, Senator.

I do think land mines are important, especially if you are in the defense, but also in any other capability in order to shape enemy operations. We need to look no further than what is happening, actually, in Ukraine. Land mines are being effectively used by the Ukrainian Forces to shape the avenues of approach by Russian ar-

mored forces, which puts them into engagement areas and makes them vulnerable to the anti-tank, the 60,000 anti-tank weapon systems that we are providing the Ukrainians. So, that is one of the reasons why you see column after column of Russian vehicles that are destroyed.

So, anti-tank or anti-personnel mines are a very effective use in combat. There is a policy governing those for the United States for use and we are, the reason we are developing a newer one is so that they time out and they don't present harm after the conclusion of hostilities and they would self-detonate or self-, you know, destroy. They become inert at the end of hostilities. So, but land mines are a very effective use in combat.

Senator ROUNDS. Thank you.

Thank you, Chairman.

Chairman REED. Thank you, Senator Rounds. Thank you very much.

Senator Kaine, please?

Senator KAINE. Thank you, Mr. Chair.

Thank you to our witnesses for your service and for your effective work in recent months.

So, as Russia moves the focus on their military operations to Donbas and the South, how would you, Secretary and Chairman, characterize North and West Ukraine, now, is it battlefield or non-battlefield?

Secretary AUSTIN. Well, I would still categorize it as part of the operating environment, the battlefield, the battle space. There is no telling what Mr. Putin will decide going forward. Certainly, we expect that he will continue to conduct strikes throughout that landscape and so, in my view, it is still part of the battlefield.

Senator KAINE. General?

General MILLEY. Yes, the same thing.

I mean, the main effort, if you will, of the Russians is shifting to the South and the city of Donbas, as reported through the news. That really goes from Kherson all the way up through Kharkiv with the main effort in the vicinity of Izium.

But the rest of Ukraine is still a battlefield, because there is air and missile strikes that still go on and, you know, Russian Special Operations Forces are still operating in some of those areas. So, it is clearly still a combat zone and the rest of Ukraine, as well.

Senator KAINE. As the war ratchets up in the South and East, do you agree with me that it is likely that Ukrainians in that region, in some numbers, will try to flee the region, either to other parts of Ukraine or to other countries?

General MILLEY. I think for civilians, the answer, you know, the human instinct to survive is very powerful, so as they recognize the danger they are in, I think there will be a high likelihood that additional refugees or internally displaced persons will leave. We already have got five million or so refugees and another five million, I think, of internally displaced. We are well over 10 million right now and I would imagine more will leave that area.

Senator KAINE. As a general matter, I think Ukrainians would like to say in their own country.

If we could shape it, wouldn't it be better for those fleeing the East to go elsewhere in Ukraine if they were safe, rather than to

go into other nations, where they are a significant burden on other countries?

General MILLEY. Sure.

Senator KAINE. If President Zelenskyy were to appeal to the United States, NATO, the U.N., and say, the ratcheting up of the war in the East is going to create such a pressure for people to flee, these people want to stay in Ukraine, can you guys, our allies and NGOs flood humanitarian relief into Western Ukraine, shelter, medical capacity, food, so that displaced persons in large numbers, will be able to come to a place in Ukraine, rather than flee across the borders and if President Zelenskyy were to ask for the United States' assistance in doing that, should we seriously entertain that request?

General MILLEY. I would say that is a policy question, but in terms of humanitarian aid, there is a lot of humanitarian aid moving into Ukraine in addition to the military. But the latter question, or the question, itself, I think is more appropriate as a policy question.

Senator KAINE. Mr. Secretary?

Secretary AUSTIN. I agree with the Chairman, Senator. It is a question that our leadership will have to take on and be very deliberate about. One of the things that we would need to consider is what we need to do if we are going to put people in there to protect that area, and that is a decision that takes you to, you know, to fighting the Russians.

That is a pretty significant decision, but I would emphasize what the Chairman has said, United States Agency for International Development (USAID) and others are flowing a lot of humanitarian assistance across the border now and the Europeans are pretty good at providing this kind of assistance.

Senator KAINE. Right. Let me switch topics.

Some of my colleagues have raised the concern about inflation and what that means with respect to the defense budget. There is other economic trends, other than inflation: historic job growth right now, historic growth in the GDP, historic growth in wages and salaries.

This morning, new unemployment claims were announced and it is the lowest number since 1968. In January of 2021, we are seeing 965,000 new unemployment claims a week. It is 166,000 now.

Many of us met with Admiral Gilday and Secretary Del Toro this morning. We asked about, hey, that is fantastic, the strong job growth is great, but it also creates workforce challenges, both within the uniform service, but also in our industrial base.

How are you tackling the workforce needs of our defense system today when the unemployment rate is dropping so quickly?

Secretary AUSTIN. Well, that certainly does, one of the things that creates headwinds for us going forward in terms of recruiting not only uniform personnel, but also getting the right kinds of talent that we need to fill our ranks here. We will continue to, you know, devote resources to making sure that we are doing the right things and marketing and advertising and outreach.

But these are challenges that we faced before and we are just going to have to double-down and make sure that we are active in

the right areas and we are committing the right resources to make sure that we get the quality people that we need to be successful.

Chairman REED. Thank you, Senator Kaine.

Senator Ernst, please?

Senator ERNST. Thank you, Mr. Chair.

Gentlemen, thank you so much for your continued service to our great country. We are appreciative.

Secretary Austin, there has been a lot of discussion about Ukraine and Russia this morning. In your opening statement, you did say that United States security policy must reflect the will of the American people. The American people right now, we are calling on the administration to do more and to be tougher on Russia and bring more capability to bear for Ukraine.

The Washington Post just this morning, in one of their polls, found that 56 percent of Americans think we haven't been tough enough on Russia. So, whatever the hesitancy to say when for Ukraine, victory for Ukraine, I will say it, and I know a number of my colleagues will say it. I feel very firmly about victory for Ukraine and maintaining its sovereign integrity as a nation. Their democratic form of governance, is it all very important to so many Americans, because so much Americans see themselves reflected in the Ukrainians. They are a first world country. They have come a long way over the last 30 years. So, success to me, is still a free and sovereign Ukraine.

So, I do hope that we will continue to press very hard to make sure. As you say, things are speeding up, delivery of lethal aid, but we absolutely must ensure that we are doing everything we can for the country of Ukraine and the citizens that are there.

So, I am going to turn, because we have focused lot offer Ukraine and Russia. General Milley, I just, I would like to jump to Central Command, if we can. I am concerned about the budgetary cuts and some of the flatlines that we are seeing across our CENTCOM operations budget.

Many of the extremist organizations that are backed by the Iranian regime are striking across the region and there are four terrorist organizations that are now operating in Afghanistan and yet we don't have a United States footprint there to make sure that they aren't pushing threats against our Homeland.

So, have your Gulf State military counterparts, particularly, Egypt, Saudi Arabia, and the Abraham Accords-member countries, react to our reduced military budget, have you had any input from them?

General MILLEY. Not about the budget per se, but there is concern because we have, the Department of Defense, we are doing a global posture review, as you know, and we are making adjustments to the footprint and then the Ukraine situation is a new development since we began that review quite some time ago. CENTCOM is part of that review, as well.

So, there is concern in the CENTCOM area of operations about what the result will be in terms of the footprint in CENTCOM and we are continuing to work with our allies and partners to make sure that it is appropriate to the level of threat. We clearly recognize the terrorist threat both, the residual threat in Afghanistan, but also throughout the region—

Senator ERNST. Uh-huh.

General MILLEY.—and we think that we do have “over the horizon” capabilities, which we can discuss in classified session, but we do think we are effective in being able to find, fix, and when necessary, strike any potential threat to the Homeland.

Senator ERNST. It has been reported that the Emirates won’t accept the President’s phone calls. Are you able to visit with your counterparts in the U.A.E.?

General MILLEY. I have not had any issue contacting counterparts in the Middle East.

Senator ERNST. Thank you for continuing the conversation with them. It is important that we maintain relationships through the Middle East, so I do appreciate that.

With the administration continuing the negotiation of the Iranian nuclear deal and then pair that with the reduced footprint that we have in the Middle East, is that driving some of the Gulf States’ neutrality when it comes to the Russian-Ukrainian conflict, your opinion?

General MILLEY. I actually don’t know. I would have to ask them point-blank. I haven’t asked those questions point-blank to them. I think they probably, I don’t know, I would be speculating, so I would have to get back to you on that.

Senator ERNST. Oh, okay. No, I appreciate that.

Then just very briefly, as well, we haven’t talked about this today, but it is something that is on my mind, and that is recruiting for our military. We have found that Americans between the age of 17 to 24, only 29 percent of them would even be eligible to enlist.

Just very briefly, thoughts on that?

General MILLEY. That is, you are about right, 29 percent are eligible to meet the standards: medical, educational, discipline, legal, all that. Even less than that have a propensity, it is less than 5 percent that have a propensity to serve. We know that part of that is because of COVID. We know that propensity to serve goes up once you make contact.

So, contact, personal contact with individuals out there in the recruiting regions, that is the key to propensity to serve. So, it is a tough recruiting environment right now, and as you know, I think the Army is a little bit behind. The Navy, Marines, and Air Force are all meeting their marks. We are only 4 months into the year and that will get adjusted as high schools graduate in the summer. I think at the end of the year, the Army is projected to come in a point or two below the 100 percent.

The other services are going to be at 100 percent.

Senator ERNST. Thank you.

Thank you, Gentlemen.

Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Ernst.

Senator Warren, please?

Senator WARREN. Thank you, Mr. Chairman.

So, in the new budget, the Pentagon is asking for a lot of money: \$773 billion. But some lawmakers say this is too low and last week they proposed adding as much as ninety to \$100 billion more. The claim is that the extra money is needed because of inflation.

Now, there is no question that inflation is raising costs across the country, but we have also seen big companies taking advantage of inflation to jack up prices and to pad their profit margins. That is a particular problem in industries with lots of consolidation.

The defense industry, which had 51 major companies competing for defense contracts 30 years ago, today, has five. That is concentration.

Price gouging by defense contractors has been a big problem for a long time. Inspector General reports have found that defense contractors charge DOD \$71 for a pen that should have cost less than a nickel and \$80 for a drainpipe segment that should have cost \$1.41, and CEOs are already investing to their investors that profits will be even higher this year. That kind of profiteering wastes taxpayer dollars and it hurts military readiness.

Secretary Austin, let me ask you, under our budget, obviously, you have to account, we have to account for cases where suppliers are increasing prices to cover higher costs elsewhere in the supply chain. We understand that. But these companies are doing very well for themselves.

Should taxpayers be expected to subsidize higher profits for contractors that are using inflation as a cover to raise their prices above and beyond what is justified by an increase in expenses?

Secretary AUSTIN. The short answer, Senator, is no, and you have any commitment and the commitment of my entire team that we are going to do everything within our power to make sure that we are managing contracts and monitoring behavior so that we enable the people of the United States of America to get best value for its investments.

Senator WARREN. Good. I very much appreciate that, Secretary Austin.

You know, one of the things that defense contractors love to do when they are flush with extra cash, courtesy of the taxpayers, is to goose their stock prices. The Pentagon's top contractors spent \$15.5 billion on net buybacks last year, sending their stock prices zooming. That is the most of any year on record ever.

But it is not just members of Congress who are using inflation as an excuse to ask for more money from the Pentagon. I was actually troubled to hear some Pentagon officials doing the same earlier this week.

So, Secretary Austin, let me ask you directly: Are you comfortable with the figure in the President's proposed budget?

Secretary AUSTIN. I am comfortable, and here is why, Senator. I you may have heard me say earlier that we went through great pains to develop a National Defense Strategy and we knew that our budget would have to match that strategy. We went through great pains to make sure that was the case.

This is a robust budget and I think it allows us to get the capabilities that we need to support our operational concepts.

Senator WARREN. Okay. You are good on this number, without adding another ninety or \$100 billion to it?

Secretary AUSTIN. We certainly want to have the buying power to get the things that we need, but, yes, this is, this budget gives us what we need to get the operational capabilities.

Senator WARREN. I think that \$773 billion for the Pentagon is already way too high, but the notion that we need to increase the total by another \$100 billion or \$400 billion every year just invites defense contractors to pick taxpayers' pockets.

The American people are willing to pay to defend this country, but they are not going to sit still for being gouged by hugely profitable defense companies. I appreciate your help on this, Secretary Austin.

I am almost out of time. But, Mr. McCord, I want to remind you that you owe this Committee a backlog of several years of reports on the European Deterrence Initiative.

Do I have your word we are going to get that done soon?

Secretary MCCORD. Yes, Senator. We will get those reports.

Senator WARREN. All right. Thank you very much.

Chairman REED. Thank you, Senator Warren.

Senator Sullivan, please?

Senator SULLIVAN. Thank you, Mr. Chairman.

Gentlemen, thank you for your hard work. I know you have been burning the midnight oil. This Committee certainly appreciates it.

I want to agree with Senator Fischer on the NDS and getting that out. I actually read the classified version.

I think there is not much in it that is classified, actually. I think you could get that out publicly pretty soon, you know, maybe remove a certain element to it, but I think that would be important.

I was struck by pretty much everybody here, the Chairman, all of you gentlemen talking about how dire the global security challenges are, great power conflict increasing, more likely.

General Milley, you said the greatest to global peace and security in your lifetime right now.

So, clearly, national security threats have increased since the last time you were here a year ago, isn't that correct, Mr. Secretary? General Milley?

Secretary AUSTIN. Well, certainly, you know, we have been focused on our pacing challenge of China.

Senator SULLIVAN. Yes.

Secretary AUSTIN. Russia is an acute threat and, right—

Senator SULLIVAN. But I mean, I don't want to be rude, but since you testified last year, your testimony today, both of yours with last year's, the security threat has been significantly heightened and that is what you have both just said, correct?

Secretary AUSTIN. Tensions are certainly heightened, that's right.

Senator SULLIVAN. General Milley?

Well, you already said it, so—

General MILLEY. That is correct.

Senator SULLIVAN. So, here is the thing on that. I am actually stunned that the President put forward another budget that actually calls for real defense cuts. A 4 percent increase with 8 percent inflation is a 4 percent real inflation adjusted budget.

I think it is irresponsible. I think it is dangerous. When you look at shrinking the Navy, shrinking the Air Force, there is no doubt in my mind that that gives our enemies comfort and I think that this budget doesn't align with your statements about the severity of the national security challenges we face right now.

What is likely to happen, and it is sad, is that once again, we are going to have to push the President to increase the budget in a bipartisan way, the way we did it last year. It is sad.

The Commander-in-Chief can't reject some of his far left members and say, we need a robust budget. We put forward a budget that cuts defense spending, so I am going to have problems with that.

General Milley, I want to compliment you on your speech. I think it was in 2016, you gave a really prophetic, in my view, speech on Putin and the threat he brings forward, and you were all criticized for that speech, I remember, but I think if you re-read the speech, you were right on with what was happening.

But you are seeing, here, I think there is a source of bipartisan frustration to what is happening. I know you have been working hard on Ukraine, but I think when the intel committees were briefing us prior to the invasion, they got it right and so did all of you, what was going to happen.

Then there was this notion that, and we were all briefed on it, that they were going to lose, the Ukrainians, within 7 to 10 days. That was the uniform briefing: they are going to get crushed.

Okay. They got that wrong. A lot of people got that wrong.

I think the shift that we need to do now is to Senator Blumenthal, Senator Cotton, Senator Ernst, to strategically think about victory. Again, General Milley, I know you are working this hard, but when you have to talk about key objectives, number one, don't engage Russia with a conflict, keep NATO cohesion, support the Ukrainian people as the key objectives, doesn't it make sense to have as our number one objective, imposing a strategic defeat on Putin that we have the opportunity to do right now in align with what you said.

I think that is a source of frustration for a lot of senators. We are not hearing that language.

General MILLEY. I mean, I think, well, I have heard that language many times, actually.

Senator SULLIVAN. Well, I mean, you just listed the three objectives.

General MILLEY. I did.

Senator SULLIVAN. Those were the, to be honest, they were all defensive-sounding.

General MILLEY. Yes.

Senator SULLIVAN. Here is what we won't do. Here is what we won't do.

General MILLEY. Right.

Senator SULLIVAN. Here is what we will do.

But what about, we are at a big moment. This is bigger than Ukraine. What about—

General MILLEY. If I may?

Senator SULLIVAN. Yes, sir, go ahead.

General MILLEY. At the national level, the President has said to us, at large, the national security team, to impose severe costs and do not let Putin win to ensure that Ukraine—

Senator SULLIVAN. I would respectfully recommend you put that as your number one objective. You didn't even mention that in your three objectives.

General MILLEY. Right. But those severe costs are being done by other elements, not the U.S. uniform military. That is why, the United States uniform military has a different task here, which is to ensure, deter our NATO allies to prevent war expanding and escalating, to ensure that Ukraine gets the means that are necessary in order to defend itself so it can remain free and sovereign, and then also to continue to maintain the cohesion of NATO. Those are the uniform military tasks. We are not talking about a broad, but just the uniform military tasks.

Senator SULLIVAN. Let me—I have one question, Mr. Chairman, and it will be quick, just one final one.

There are press reports that the JCPOA consideration, one of the big redline debates right now is for us to agree, us, the United States, the to delist the RGC as an organization that sponsors terrorism. The Iranians want it.

You gentlemen, unfortunately, have led troops, some of our finest, over 2,000 wounded and killed by the Quds Force Islamic Revolutionary Guard Corps (IRGC) with the weapons they supplied to Iraqi militias. I am sure hundreds under your command were killed or wounded. The IRGC has recently been responsible for missile attacks in coordination with the Houthis against U.A.E. civilians, our longstanding ally in the region, U.A.E.

Is there any universe in which the two of you could say you support the delisting of this terrorist organization with blood of American soldiers on its hands, recently, and delist them as state sponsor of terrorism because Iran wants it?

We should tell Iran to go pound sand. There is no way in hell that they shouldn't be delisted. What do you two in your personal opinion, given how much experience you have with Iran in the Middle East, believe on that question?

Secretary AUSTIN. Senator, respectfully, I won't comment on negotiations that are ongoing and speculate on what my advice to the President is going to be. So, I will—

Senator SULLIVAN. In your personal opinion, we have asked you before that you can give us that, even though it might conflict with the administration's view. That is what you committed to do with this Committee, so I would ask you, again, both of you, your personal opinion.

Secretary AUSTIN. My answer remains unchanged, Senator. Thank you.

Senator SULLIVAN. General Milley, you have been asked in your personal opinion.

General MILLEY. Yes, Senator, just for clarity, political appointees are different than me. I have to sign a document that requires me to give you—

Senator SULLIVAN. You are right, and I am sorry, Mr. Secretary, I didn't mean you. I meant General Milley.

General MILLEY. So, in my personal opinion, I believe the IRGC Quds Force to be a terrorist organization and I do not support them being delisted from the foreign terrorist organization.

Senator SULLIVAN. Thank you for your honesty.

Chairman REED. Thank you, Senator Sullivan. Thank you very much.

Senator King, please?

Senator KING. Thank you.

A series of fairly detailed questions. Mr. McCord, you haven't had much fun this morning, so I want to try to get you into this discussion.

The Ukrainian aid that we have supplied thus far and we are planning to supply and will undoubtedly supply more in the future, where does that fit into the defense budget? We don't have OCO anymore. Is this coming out of the current defense budget? Are they extra budgetary appropriations?

Secretary MCCORD. Senator, the aid that the Secretary has been talked about this morning, the Javelins, the Stingers, the body armor, all those things have come out of the funding that was provided in the supplemental attach to the omnibus funding bill that was enacted—

Senator KING. So, it is not, and there will be a replenishment as well. We are going to have to replenish stocks that we are supplying and also replenishment to some of our NATO allies.

Will that come out of the future defense budget? I am not—this is isn't an argumentative question, I am legitimately curious.

Secretary MCCORD. No, you are correct, Senator.

The funding to replenish, part of that supplemental \$3 and a half billion of that supplemental was funds to replenish the drawdown materials provided to Ukraine. The first tranche of that was notified to the Committee, I believe, last Friday. A billion and a half of those funds will start flowing, but it is not part of the normal defense budget build to exercise drawdown authority at this level.

So, if we are going to continue, that might be something we need to look at going forward.

Senator KING. Two other questions. I think you testified you wrestled with inflation as you were preparing the budget. I think you said that the general CPI rate of inflation doesn't necessarily apply to the things that you buy; is that correct? So, it is not accurate to say if we have 7 percent inflation, the military, and the military budget doesn't have 7 percent increase, then it is a cut.

Please explain the inflation as it applies to the military budget.

Secretary MCCORD. That is correct. About 60 to 65 percent of our budget is buying goods and services from our industrial base and about 25, 30 percent goes to military pay, and then we have a couple other if factors like fuel.

We have different inflation rates that are applied to each of them, but by and large, a GDP deflator is the most accurate description of what we buy. That went up 4 percent last year, not 7 percent. That is the point that I was making.

Senator KING. A quick other question for you.

How are we doing on the audit? That has been something that has been going on as long as I have been on this Committee. Are we making progress to getting toward a clean audit?

Secretary MCCORD. Senator, we are making progress, but the progress is not where it needs to be. The Secretary has been clear with me on that. The progress we made last year was not where it needed to be and there was a couple of reasons for that, from the gaps in a transition year to COVID.

We have been making some progress that is a bit below the radar screen. It has not yet translated to the pass-fail grades that

are the heart of an audit. We do need to redouble our efforts and Secretary——

Senator KING. Well, I would appreciate it.

The prior administration made some progress on that and I hope that that momentum won't be lost. This is a responsibility that we have to the American people.

Secretary Austin, there are several wars going on right now. One is in Ukraine, but one of them is also within the United States where about, I think 100,000 people died of overdose deaths last year. That is an attack on our country.

My concern is, when we had SOUTHCOM in here, they don't have, they have 1 percent of the intelligence, surveillance, and reconnaissance (ISR) resources worldwide and they don't have adequate resources to interdict those shipments by sea that we know about through our limited ISR.

I would hope that you would pay some attention to that, to add to your attention to that, and also to think about setting this up in some way that there is somebody in charge.

My worry is you have got Drug Enforcement Agency (DEA), you have got the Coast Guard, you have partners, you have the CIA, and you have the Defense Department and nobody is in charge, and the result is two people a day in my state are dying. I understand we have to work on the demand side, but it is very frustrating when I have testimony year after year that we are only interdicting 25 percent of the shipments that we know about. That is inexcusable.

Mr. Secretary, I hope you will recommit to this war.

Secretary AUSTIN. Two things, Senator. We will certainly make sure that SOUTHCOM Commander has what she needs to be effective in these efforts and, you know, I have discussed this with her before, but clearly, you know, the limiting factor is ISR. We will work with her to make sure that, where possible, we get her more capability.

Senator KING. Well, let's put it in the budget and buy more. I mean, ISR in a function of how many devices you have and it seems to me that is an engineering problem and we should be able to solve that.

I am out of time, but Mr. Secretary, I want to commend you on the significant both in the R&D budget. I think that is an enormously important area and, frankly, it is an area where we have fallen behind. Hypersonics and directed energy are two areas that are strategic game changers that, frankly, I think our country is behind, and so the additional resources into R&D is absolutely critical. Wars often turn on the utilization of new technology. The English at the Battle of Agincourt with one-third of the French Army, won that battle because the radical utilization of the long bow. That changed warfare in 1450 and it is technology that is going to win the next war.

Again, I want to commend you for the commitment to R&D, and standfast on that. I don't think there is a more expenditure in the budget.

Senator KING. [Presiding.] Senator Cramer?

Senator CRAMER. Thank you, Senator.

Thank you both for being here and for your service.

Mr. Secretary, last month, your deputy said that the Department, as directed by President Biden, aims to reach net-zero greenhouse gas emissions by 2050. Then, she said, she mentioned the danger posed by China, illegal Russian aggression in Europe, persistent threats from Iran, North Korea, and other state actors. You both, and others that work with and under you, consistently and appropriately referenced the importance of modernization, lethality, readiness, obviously.

My question is, do you think China, Russia, Iran, and North Korea are going to be slowed in their military development by climate-change concerns?

Secretary AUSTIN. I don't believe so and I don't believe we will either, Senator.

Senator CRAMER. Do you know if they have plans to reach net-zero, any of them?

Secretary AUSTIN. Senator, I, again, I have asked you for \$773 billion to support the capabilities that we think we need and I certainly appreciate what you have done for us in the past, but I think there is also things that we can and should be doing to address the climate issue, as well.

It affects our installations. It causes problems that cause mass migration and other things in the areas that we operate in and our forces are committed to fighting wildfires and helping in the aftermath of severe storms on an increasing basis.

So, I don't think this is a thing that we can discount and I think the Defense Department has to do its part.

Senator CRAMER. I appreciate that.

Frankly, I hope that we can give you a lot more than you have asked for to actually do those things, Mr. Secretary. But as you are talking with me, I am imagining the calculation that would measure the negative impact of say, our failure to deter the Russian invasion of Ukraine; in other words, I appreciate that you have this concern, but I also hope we can keep the main thing the main thing, because just like more energy development in the United States and providing that energy to our allies actually brings down greenhouse gas emissions, I think deterring the same polluters that have benefited from a lower standard than ours would also do the same.

We want to make sure that you have the resources to do exactly what you need to do to get—to accomplish all of those good goals.

General Milley, maybe I can just ask you. I noticed you don't mention it much; in fact, you didn't at all. The Secretary mentioned climate change five times in his written opening comments. It is referenced in the National Defense Strategy, sort of highlighted. We will see if it is in the national military strategy when you provide that.

But do you think climate change is a military objective that the Department should be focused on tackling?

General MILLEY. It is a Departmental objective.

For the military, though, for the uniform military, it is a condition under which we will operate and it is something that we will have to take into consideration in the conduct of our operations, for sure, because you know, if you look at Lake Chad as just one example, if you look at a picture in 1950 and look at Lake Chad and

look at it today, well, the reason that there is a lot of instability in that particular region is because there is no water and there are a lot of resource struggles going on.

So, climate change has an impact on military operations for sure, and it is going to be a predictor for where likely instability will occur in the future. So, it is a condition under which we operate, as opposed to something that we can fix.

Senator CRAMER. Mr. Secretary, I want to talk a little bit about the fear of escalation. That is, we hear that a lot. It seems that many times the fear of escalating the situation in Russia depends on us and a lot less on Volodymyr Putin, and I just think we have made too many, my personal view is we have made too many decisions based on how we think Volodymyr Putin would respond to this situation, things like limiting the kind of help we would provide Ukraine, how quickly we would provide that help, postponing and then canceling a Minuteman test that was scheduled, a Minuteman-III test and not facilitating the transfer of MiGs, just a few of the examples.

Do you have any evidence that Volodymyr Putin is ever worried that his massacre of women and children civilians would escalatory?

Secretary AUSTIN. You know, I don't know what is in the mind of Volodymyr Putin and a lot of other people don't either, Senator.

You use the word "fear" and Putin in the same sentence and I just want to point out that my job, one of my key responsibilities is to manage escalation and make sure that we don't find ourselves in a nuclear contest in that is avoidable.

Again, there is nothing about Mr. Putin that we fear, and you see the kinds of things that we have done in rapidly deploying combat power to Europe and the eastern flank. What we have done, and continue to do, is provide assistance to Ukraine.

You know, not a military issue, but the sanctions that we have imposed on Mr. Putin are going to have a significant impact on his economy for years to come.

Senator CRAMER. Thank you, Mr. Chairman.

Chairman REED. [Presiding.] Thank you, Senator Cramer.

Senator ROSEN, please?

Senator ROSEN. Oh, there it is. Thank you, Chairman Reed, Ranking Member Inhofe, and thank you all for your service and for being here. Again, we appreciate how accessible you are to this Committee and others.

General Milley, last month, I traveled to Poland and Germany as part of a bipartisan codel led by Senator Ernst, several other members of this Committee on the codel. We had the privilege of meeting the United States forces, receiving briefings from commanders on the situation in Ukraine, seeing firsthand, the security assistance and training NATO is providing the Ukrainians.

This trip: horrific. Horrific is too light of a word, I guess, to use, but the horrific images of the Russian war crimes we have seen since, it really underscores for me that we can and we must do more to support Ukraine, defeat Volodymyr Putin, and defeat what he is doing.

So, President Zelenskyy continues to ask for greater American support to close the skies, allow Ukraine to defend itself. I do un-

derstand the arguments as to why the MiG-29, specifically, might not make sense for Ukrainians' defensive battle, but is there another aircraft they could fly that could be impactful, something else that could provide close support?

I understand we are not in the classified setting. Are there other forms of lethal assistance you could talk about here that might help Ukrainians defend themselves against this brutality?

General MILLEY. The most effective is that, which we have been providing, which is air defense systems. So, the Russian Air Force has not even today established air superiority, let alone, air supremacy, which is one of the reasons why they have having great difficulty on the ground. So, the air superiority mission has not been achieved.

Why is that? It is because of the survival of the air defense systems, both, the—that we have been providing Stingers and the like from other NATO countries, plus the longer-range SAMs that have been provided and that they already had. So, that system has denied the airspace, effective use of the airspace to the Russian military.

Now, that is not to say Russian air is not getting through. They are on occasion, but for the most part, they are not being very effective, the Russian Air Force, and that is the reason, is because of the air defense.

So, the best method right now, and the Ukrainians, I have talked to my Ukrainian counterpart every couple of days, they are very, very thankful, extraordinarily thankful on the 60,000 anti-tank weapons, which is the second system that is really effective and the 25,000 anti-aircraft weapons systems that have been sent by the United States and our allies and partners.

So, those are the two weapon systems that have proven most effective and the one for the air, in particular, the best way to deny the Soviets—or the Soviets—the airspace is through the air defense systems and that is what they are using.

Senator ROSEN. Well, given the heavy losses that the Russian military has suffered in the Ukraine, we know they are repositioning. Like you said, we are doing a good job. We are getting them the lethal support that they need.

How do you assess their ability as they are repositioning and trying to resupply their forces—

General MILLEY. The Russian ability?

Senator ROSEN. The Russian ability in their attack on Eastern Ukraine as they begin to reposition themselves more down towards the Donbas.

General MILLEY. The Russians have been struggling with their logistical resupplying: fuel, ammunition, food, also med evac, et cetera, they have been having a very, very difficult time. Part of that is because the lines of communications that they have, the ground lines of communications are at risk to be dismantled and mounted Ukrainian Forces that are conducting ambushes along those lines of communications. So, they have really had a difficult time with logistics.

Senator ROSEN. Well, and so, on the other side of that, we know if they are repositioning, the Ukrainian military and ground forces there have to reposition as well. So, looking ahead, do you think

the Ukrainians have the right equipment and logistics in place to defend against this repositioning that Russia is, seems to be doing?

General MILLEY. They are asking for, and they could probably use additional armor and artillery, and we are looking around through allies and partners to get those types of weapon systems that require no training.

Of course, we have armor artillery, but it is not the kind that they have used before and it would require months of training to get them into a U.S. system. So, we are looking around, along with other countries and NATO, to help them out in terms of building them up for armor and artillery.

The fighting down in the Southeast, the terrain is different than it is in the north; it is much more open and lends itself to armor, mechanized offensive operations on both sides. So, those are the systems that they are looking for and that is what people are trying to help them out with.

Senator ROSEN. Thank you.

I want to submit my next questions for the record, but they are really important. They will be for Secretary Austin and Under Secretary McCord. It is about housing for our junior enlisted troops. They are not able to receive their base allowance for housing, they are transitioning, the cost of housing is expensive, they are not getting reimbursed in the way they should be. We also have issues for those on Creech that have to travel a far way to go to Las Vegas and go to work, and so I am going to submit those for the record.

I see my time is up and I will look forward to speaking with you about that.

Chairman REED. Thank you, Senator Rosen.

Senator Tuberville, please?

Senator TUBERVILLE. Thank you very much.

Thank you for being here today, Secretary.

General Milley, good to see you last week. I thought that was a great change of command down in CENTCOM.

Secretary Austin, as we all know in the near future, we are going to get the Inspector General (IG) report on Space Command hopefully moving to Huntsville. The Redstone Arsenal, we have got a lot of great comments from you and Acting Secretary of the Air Force, Secretary of the Air Force Frank Kendall and, of course, General James Dickinson. All positive comments.

The IG report will come out in the future.

Any thoughts about the future?

Secretary AUSTIN. Well, thanks, Senator.

As you know, I will never comment on an IG, on a subject that is under IG scrutiny. So, when that report comes out, we will make sure that we get, analyze it as quickly as possible and take on the recommendations.

Senator TUBERVILLE. Thank you.

General Milley, last year's NDAA 2022, we got a jump-start on the Aegis system in Guam. Hopefully, we can continue that in the next few years. It is going to take a while to get that done on a land base, which I think all of us agree we need. Then we have an Iron Dome there. You know, that is, to me, after visiting Guam a few months ago, that would be kind of like swatting flies.

What do you think in the near future, we could do with that Iron Dome?

General MILLEY. Well, the Iron Dome is a very effective system, but let me just take a step back for the ballistic missile defense in the Pacific region, and Senator Hirono had asked about that earlier.

It is a layered system that starts, literally, over in Japan and comes through the entire Pacific and includes radars and various missile systems that are arrayed throughout to include Guam, Hawaii, Alaska, et cetera. Specifically, to the Iron Dome, is it a great system and it is a very accurate system and it has a very good track record, and there is all kinds of utility for it in a wide variety of environments. So, I am a big fan of the Iron Dome.

Senator TUBERVILLE. Thank you.

Secretary Austin, extremely concerned about the situation at the southwest border. According to the latest data, the Border Patrol has encountered more than 150,000 illegal immigrants a month for at least the past 12 months and it is estimated that at least 500 illegal immigrants that evaded the border just recently.

I am especially concerned about the trafficking of drugs, fentanyl, and the new drug most people haven't heard of called another called "ISO," which is 20 times more lethal than fentanyl coming across the border. The New York Post reported yesterday that you approved DHS' [Department of Homeland Security's] request for additional DOD at the border; is that accurate?

Secretary AUSTIN. DHS did submit a request for our support and as we have done in the past, we—I approved the request. We, again, DHS is a lead federal agency in this endeavor. We provide enabling support to DHS when and where we can and where legally possible.

Senator TUBERVILLE. Yes. It is obvious that we need help, especially if we do away with Title 42, which it looks like it is coming.

Have you done any assessment of, or has the secretary given you any assessment of about how many we would need down there if we did do something in your purview?

Secretary AUSTIN. Secretary Mayorkas, obviously, Senator, will work up his requirements and his assessments and provide those to the President and, you know, he certainly has not provided that assessment to me.

Senator TUBERVILLE. Has he talked to you about it, you know, maybe in the future?

Secretary AUSTIN. Not about future requirements. He has only talked to me about current requirements.

Senator TUBERVILLE. Yes, okay.

I want to pick up where Senator Ernst was at the end of her questioning, and anybody can answer this, but you know, we are going to spend all this money on all this great equipment and we are all good with that, but it takes people to do that, and you all know that.

I would love to see a better recruiting effort of spending some money, because we are fighting big tech. We are fighting a lot of areas now. Being an all-volunteer army, I think we have got to put a larger foot forward in getting the best and the brightest young men and women in whatever part of our military, and I think it

is going to be one of the most important things we do. We can't fight a war or have a deterrent unless people really understand we have got a fighting force that really is sold out on this country and wants to lay their life on the line.

Just your thoughts, both of your all's thoughts on that real quick.

Secretary AUSTIN. I absolutely agree with you, sir. We need to continue to invest in the quality of our force. That is exactly what you have heard come from our Army leadership, the Secretary and the Chief, and it is what you will hear coming from all of our Secretaries. It is what—what we need, what has made us dominant and the best force in the world, and what we will need, going forward, to continue to be the best force in the world.

General MILLEY. I just want to assure you and everyone that is listening, that we have tremendous standards and we have tremendous people in uniform today.

As we go forward, we have to take into account the future operating environment, the change in the character of war.

So, our recruiting does need to be adjusted. We need to up our game. We are going to have to look at, in some cases, look at different recruiting bases in order to get people for cyber and space and some of the other high-tech things, because we are moving into, literally, a different era in warfare and we are going to have to adjust our recruiting to match that future.

Senator TUBERVILLE. Thank you. Thank you for your service.

Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Tuberville.

Senator Kelly, please?

Senator KELLY. Thank you, Mr. Chairman.

Thank you to all of you for being here today.

Secretary Austin, I want to discuss PFAS contamination near military facilities. This is a big challenge in Arizona. Both, the Phoenix and Tucson areas have growing PFAS plumes in the groundwater aquifers and as we face worsening drought conditions along the Colorado River, the groundwater, so groundwater will become a more important source of drinking water for our communities, including our military installations.

The Department of Defense has remedial investigations into PFAS contamination in aquifers near both, Luke Air Force Base and Davis Monthan Air Force Base. While, I understand that these investigations can take time and rely on scarce resources, affected communities that can't move forward on permanent solutions with DOD until these investigations have concluded.

With conditions on the Colorado River degrading rapidly, I mean, we are in a 1200-year drought, or the worst drought in 1200 years and this one we are in has been going on for 20 years; it is significant. I am worried that we may need to rely on these groundwater aquifer sources as sources of drinking water, instead of getting all of our drinking water off of the river.

So, Mr. Secretary, as the Department makes determinations about which remedial investigations to prioritize, how is it accounting for the needs of communities in regions that have a prolonged drought and because of that, has a higher likelihood of a future need of using the groundwater?

Secretary AUSTIN. Thank you, Senator.

I would just like to emphasize to you that the health and welfare of our troops, our families, and the people in the community are very, very important to me and I, and, certainly, we will continue to focus on getting these assessments done and work with the appropriate regulatory agencies to make sure that we are doing the right things and we will move out as quickly as possible.

In terms of, you know, where we go, how we go forward, I think what you have raised is an important issue. If you are dependent upon that ground source of water, then that needs to go into the equation there in terms of what we address first and that—we are going to comply with the regulations, you know, work with the regulatory commissions, but certainly take into account the things that you just raised.

Senator KELLY. Well, thank you.

The fiscal year 2022 NDAA requires that DOD produce a schedule. So, it would be really appreciated if you could consider the drought situation as that schedule is being developed.

Secretary Austin, I also have a question on TRICARE eligibility in our remaining time here. With a 4.6 percent increase in pay and increases in basic needs and DHS housing allowance that I pushed for, this budget goes a long way to addressing the needs of our servicemembers.

This builds on the work that the Department and Congress did last year in addressing suicide and sexual assault in the military. I commend your attention on these issues, however, I want to address one other disparity in the military when it comes to pay and benefits and that relate to healthcare.

I am concerned about the fact that military families don't have the same healthcare coverage that Americans enjoy, and what I am getting at is one specific thing. I introduced some bipartisan legislation on this to bring TRICARE plans in line with private insurance plans.

My bill, the Healthcare Fairness for Military Families Act would allow the children of servicemembers to stay on their parents' insurance until they are 26. That exists in civilian life. It does not exist currently under TRICARE.

So, Mr. Secretary, can I get your commitment that you will work with my office and this Committee on efforts to bring TRICARE in line with private insurance plans?

Secretary AUSTIN. Yes, Senator, you can.

Senator KELLY. Thank you.

I yield back the remainder of my time.

Chairman REED. Thank you, Senator Kelly.

Senator Hawley, please?

Senator HAWLEY. Thank you, Mr. Chairman.

Thank you, gentlemen, for being here.

General Milley, let me start with you, if I could.

Following Russia's first invasion of Ukraine back in 2014, Congress stood up the Ukraine Security Assistance Initiative, which I hope has been of some help the Ukrainians in the lead-up to this most recent invasion. I want to ask you about that, what we can draw from that, with regard to Taiwan and over in PACOM.

If Congress were to enact a similar funding mechanism for Taiwan, do you think that would help strengthen Taiwan's ability to defend itself against a potential invasion by China?

General MILLEY. I do, yes.

Senator HAWLEY. From a military perspective, is it fair to say that strengthening Taiwan's defenses would help bolster deterrence against China, number one, but also reduce the operational risk to American forces, who might be called upon to help Taiwan in the event of an invasion?

General MILLEY. Absolutely, yes.

Senator HAWLEY. This is, I agree with you and thank you for those comments, this is why I think it is important to take that action right now and not to wait and get behind the 8 ball. I introduced the Arm Taiwan Act, which would establish the Taiwan Security Assistance Initiative, modeled on what we did in Ukraine those years ago and I think, I hope the Committee will take it up. I think it is an important initiative.

Mr. Secretary, if I could switch to you, Secretary Austin. The Assistant Secretary for Defense Mara Karlin wrote, prior to her confirmation, I am going to quote her here so I get it right, that deterrence by denial should be prioritized when it comes to China and Taiwan, in particular, and she went on, deterrence by cost imposition can complement, but shouldn't supplant deterrence by denial when it comes to deterring China.

Assistant Secretary of Defense Eli Ratner had said something similar. He told the Committee, with China as the pacing challenge, the Taiwan is the pacing scenario and that is driven by a strategy of denial.

Okay. With that setup, here is my question to you. When it comes to the 2022 NDS and the NDS priorities, can you—and I am aware we are in an unclassified setting here—but could you, can you tell us that we will see in the unclassified summary of the NDS, a commitment to deterrence by denial, especially when it comes to China and Taiwan?

Secretary AUSTIN. Our defense strategy accounts for the things that you just highlighted, Senator, which is why both of my Assistant Secretaries have highlighted that.

But, yes, that is in the strategy and we will make sure that the, you know, our unclassified version of the strategy appropriately reflects what is in the strategy.

Senator HAWLEY. Good. So, just to make sure I understand, when you say it is in the strategy, you mean deterring—

Secretary AUSTIN. It is accounted for in the strategy.

Senator HAWLEY.—deterring by denial, deterrence by denial, when it comes to China and Taiwan is in the strategy. Have I got that right?

Secretary AUSTIN. That is right.

Then I can entertain your other questions in the classified setting.

Senator HAWLEY. Great. Fair enough.

But just to close the loop on this, you said we would see that reflected in the unclassified summary when that is made available?

Secretary AUSTIN. What I said was you will see the unclassified summary reflect what is in the classified summary.

Senator HAWLEY. Okay.

Secretary AUSTIN. We need to be mindful of what is transportable, what we can move to the unclassified section.

Senator HAWLEY. Okay. Good.

Just staying on the same here, Assistant Secretary Ratner has also testified that Taiwan is the pacing scenario. I think you have testified to that effect, Mr. Secretary, I think. I know that General Milley has.

Secretary AUSTIN. I said that China was the pacing challenge.

Senator HAWLEY. Okay. Great.

I think General Milley had said that the Taiwan scenario, the fait accompli scenario was the pacing scenario. If I am wrong about that, General, I don't want to put words in your mouth, you correct me.

I know that Dr. Ratner has, so let's stick on that.

General MILLEY. I said that before.

Senator HAWLEY. Go ahead, General.

General MILLEY. I have said that before, and that is the scenario, that is one of the scenarios that we use for force development and so on and so forth—

Senator HAWLEY. Thank you.

General MILLEY.—but it is clearly the most important one.

Senator HAWLEY. Thank you.

So, here is my question, then, to you, Mr. Secretary. Will we see that, the Taiwan scenario, the danger of a fait accompli, will we see that in the unclassified summary of the 2022 NDS?

Secretary AUSTIN. Again, I will just say that the unclassified summary will reflect what is in the National Defense Strategy. In terms of specific wording, I won't commit to a specific wording at this point.

Senator HAWLEY. Could you, could I get you to commit to this, would you echo what General Milley just said and that I assume your Assistant Secretaries reflect your views, but—

Secretary AUSTIN. That is exactly right; they do.

Senator HAWLEY. Okay. So, could you tell me in your own words, though, Mr. Secretary, I mean, is it—let me ask you this way. I don't want to put the words in your mouth, so let me ask you, is it your view that the Taiwan fait accompli scenario is the pacing scenario, just as China is the pacing threat; is that fair to say?

Secretary AUSTIN. It is a pacing scenario and I would say that our policy, our China policy has not changed.

Senator HAWLEY. My time has expired. I will have a few more follow-up questions and hopefully also in the classified setting.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Hawley.

Senator Peters, please?

Senator PETERS. Thank you, Mr. Chairman, and, gentlemen, thank you for being here today.

I understand that as part of the United States deterrence, the measures up to and after the invasion of Ukraine, there are now three United States armor brigades forward-deployed in Europe.

That is the most since the early 2000s, when the United States made a strategic decision to permanently move its heavy armored forces out of Europe and bring them back to the United States.

Recently, Army senior leaders have said that the strain on the Army's 11 active-duty armored brigades, ABCTs, is at a high point and noting that the rotational units basically need a 3:1 rotation, a ratio to avoid excessive operational tempo and that 11 active ABCTs falls short of a sustainable ratio.

I also note that while Congress has consistently provided funding for at least one brigade of tanks each funding cycle, only three United States Army brigades have been fielded, the most modern Abrams tanks, including one brigade set in Army preposition stock in Germany, that is now being forward-deployed to Poland.

So, my question for you, Secretary Austin, do you think that we need more armored forces now than we did last year, as this budget was being developed both, in terms of those armored brigades forward-deployed to Europe and those which we could rotate worldwide?

Secretary AUSTIN. Thank you, Senator.

I truly believe that we have what we need currently. As we figure out the future footprint in NATO, especially on the eastern flank, if we have additional requirements, then, certainly, we will come back and ask for additional resources.

I would remind you that we have over 100,000 troops in either stationed in Europe or deployed to Europe or operating in Europe's waters and so we have a robust capability there now. We were able to do what we did recently, as you heard me say, Senator, because of what you did earlier, to provide us with the resources and European Deterrence Initiative (EDI). You saw that armored brigade combat team deploy rapidly from Fort Stewart, fall in on pre-positioned equipment, and then rapidly move to Germany. Again, that was all possible because of EDI. We have been able to train heel-to-toe along the Eastern flank because of the resources that you provided us, as well.

So, as we do our analysis going forward, if we need additional resources, I will work with the Secretary of the Army and the Chief of Staff of the Army, the Chairman, and come back and ask for more resources if we need them.

Senator PETERS. Great, thank you.

General Milley, do you think the up tempo on the 11 ABCTs that we have will be sustainable over the long-term, given Russia's apparent expansionist goals in Europe?

General MILLEY. Senator, I think that with 11, you know, the 3:1 ratio, you got three over there. 3:1 will get you nine, so you need armored brigades, plus we have one rotating back and forth to the fence line. So, I think it is about right, but I will go back to General McConville, the chief staff of the Army, to make sure that my analysis is correct and I will get you a better answer.

If there is some sort of stress on the up tempo of the armored force, that hasn't been brought up to me yet, specific to this contingency.

Now, long-haul, that depends on how long the long-haul is and that is not known right now. We are taking a look at that and we are going to adjust as we go here.

Senator PETERS. Right.

General MILLEY. Thank you.

Senator PETERS. General Milley, the recently released National Defense Strategy describes China as, quote, our most consequential strategic competitor and the pacing challenge for the Department, end of quote. Certainly, the Department will have to bring the full might of our Joint Force to bear in order to compete with this challenge.

Now INDOPACOM is a maritime domain, so certainly, the role of the Navy and the Marine Corps is very clear, as well as the Air Force and Space Force will also play a vital role.

But I would like your thoughts as Chairman of the Joint Chiefs of Staff and a decorated Army officer, I would like to hear your view as to the role of the Army in the Indo-Pacific.

General MILLEY. The Army has a very important role in the Indo-Pacific, and, you know, just to go back to World War II, there was, I think, 15 or 20 divisions of the Army and Marines in the Indo-Pacific. Our largest land wars of the United States that we fought in the Indo-Pacific with Vietnam, Korea, and the World War II Pacific campaigns. So the ground forces have a very Gant role, but I would say that in any sort of future conflict, if there was one, hopefully, there will never be one with China, my estimate is that the maritime forces and the naval forces will be the predominate player but the military forces that are on the ground, Army special forces, Marine forces, and Army ground forces will be really significant, especially in areas like air defense, long-range fires, precision fires, and Special Operations.

In addition to that, the amphibious forces of the Marines will be key. So, there is a very important, very significant role for ground forces in the Pacific, but the predominance will likely be maritime or Air Forces.

Senator PETERS. [Presiding.] Great. Thank you, General Milley.

Senator Scott, you are recognized for your questions.

Senator SCOTT. Thank you, Senator Peters.

I thank each of you for being here. I thank you for your hard work. I know this is a very, this is a tough time to serve. I mean, this is probably, in my lifetime, this is probably one of the most difficult times to serve with all of our enemies.

I share the concerns of the ranking member and many of my colleagues in the Senate that President Biden's budget request does not reflect our current defense needs. After many years of under-spending, we recently began to grow the defense budget in line with the threats we face, particularly, Communist China.

So, just last year, we had to increase the President's Budget by more than \$25 billion and for months now, we have been urging the administration to increase our defense spending so we can meet our modernization needs, deter and, if needed, defeat our enemies and overcome the impact of the terrible inflation this administration has caused with reckless spending.

So, we are living in some of the most difficult times since the Cold War with Communist China, Russia, Iran, North Korea, reflecting their muscles, increasing their hostility to us and our allies, but you wouldn't know it, based on this budget request. So, to me, it is disappointing that the President didn't request a budget that would do a better job of putting us in a position that we can

deter our enemies and make sure we take care of our servicemembers and their needs.

I was disappointed the administration wants to decommission 24 ships and weaken our Navy's power and capabilities. I know the administration has said this is enough.

General Milley, I think you have previously stated that if you combine Communist China and Russia, that they spend more than the United States does now. Beijing just announced a 7.1 percent increase for 2022 and I think you just testified to the House that this budget assumes an inflation rate of 2.2 percent, but we all know it is 8 percent-plus right now.

All the manufacturers I talk to, you know, are saying it is actually more than that. So, while inflations could go up and go down, this, I don't think the budget is clearly enough and it doesn't seem to me that you think it is enough.

So, tell me, how does this happen? I mean, you seem pretty persuasive. So, how does this happen that we end up with a budget that doesn't stay up with inflation and doesn't do a lot more to deter our enemies, especially Communist China?

General MILLEY. Well, let me say a couple of things.

First, on the inflation piece, I would ask that Mr. McCord talk about the details and how they did the calculations, et cetera. But I fully support this budget.

Seven hundred and seventy-three billion dollars is a lot of money and it is our duty, those of us in uniform, to make every cent of those dollars count and to deliver for the nation, a force that is capable of defending it.

I think, as I said in my opening statement, we can do that on 773. Having said that, there is always elements of risk and there is always elements to mitigate, but we have to focus on the future. This budget does that. We have to focus on modernization. This budget does that.

We put more money in research and development intentionally in this budget than has ever been done in any defense budget and we have to focus on the pacing threat of China with the acute threat, as we call it, with Russia.

It is very significant. There are areas of risk. We recognize those areas of risk. But I do think that this budget will allow us to move forward and take the next steps towards protecting the United States.

Senator SCOTT. Could I ask each of you, what, how comfortable are you that this budget is going to do enough to deter Communist China and why do you think, what in the budget, and what are the things that we are doing that you think are going to be the key things that are going to deter Communist China from trying to expand, first, I guess, would be into Taiwan?

Do you want to start, Secretary Austin?

Secretary AUSTIN. Thanks, Senator.

I think when we look at the challenge of China, we consider China to be a now and forever problem, in terms of a challenge. We want to invest in those things that help keep us ready, capable, and dominant today, but also recognizing that the challenge of China will evolve over time, investing now in those capabilities that will be relevant down the road, as well. So, you have seen us

invest in technology in this budget. You have seen us invest in space capabilities, cyberspace, undersea capabilities. All those things are focused on not only the China set, but also provides us great capability, with respect to the acute threat that we are experiencing right now and that is Russia.

General MILLEY. Senator, I would just add, with respect to deterring China and Taiwan, I think Senator Hawley hit it right on the head. The best defense of Taiwan is done by the Taiwanese. We can certainly help them. This is being done in Ukraine, for example, and I think there are a lot of lessons that are coming out of the Ukraine that China is taking very, very seriously.

Crossing the Taiwan straits and conducting an amphibious and/or air assault on the island of Taiwan and the city of Taipei with the millions upon millions of people there, the mountainous terrain of Taiwan. Taiwan is a defensible island, we just need to help the Taiwanese defend it a little bit better and we can do that.

But that is the best deterrent, is to make sure that deterrent by denial, to make sure that the Chinese know that if they were to attack Taiwan, it is a very, very difficult objective to take.

Senator SCOTT. Thank you to each of you.

I know this is a very difficult time. I mean, in my lifetime, I don't think we have ever had a threat like we have now with what Putin is doing and what Xi says he is going to do, so thank you for what you are doing.

Senator DUCKWORTH. [Presiding.] Thank you, Senator Scott, and the chairman is still voting, so I get to recognize myself. Serving is truly a selfless act and I want to thank each of our witnesses for your service and commitment to our national security. That service comes with honor and strength, as well as pride and humility. These attributes make our military the most capable, most combat-credible force in the world. You already know this.

But to ensure that this continues long into the future, we must take care of the military's most important assets: our people. Each of you have spoken to this.

As leaders, we must remove barriers our military members face in supporting their families as well. This is an important readiness issue. Knowing that their family is safe and healthy relieves a burden on servicemembers so that they can better focus on the mission and, if necessary, fight for the safety of others.

That is why I hope the Department will work with me to finally solve a critical issue facing our men and women in uniform, along with their families, and that is food insecurity. Advocacy groups that serve military families report an increased demand for support during the pandemic.

Secretary Austin, I appreciate your leadership in issuing guidance to the DOD late last year to begin addressing military hunger challenges; however, despite your leadership, there appears to be a hesitation to fully engage on this pressing, readiness issue Department-wide.

We are still hearing heartbreaking stories of less-senior members of the military struggling to pay their bills, to put good, quality food on the table for their families. They are still met, you know, these stories are still met in some quarters with skepticism and denial that the problem even exists.

I think that is why it is vital that the DOD fulfills its statutory mandate under the fiscal year 2020 NDAA and provide Congress with a comprehensive report examining food and securities challenges experienced by servicemembers and military families.

Secretary Austin, will you commit to me that you will deliver the DOD study on food and security in the military by the end of this month, and if you can't do it by the end of this month, when can you deliver it?

Secretary AUSTIN. We will deliver it as quickly as we possibly can.

Senator, let me thank you for your leadership in that area. You know, I have really set out to tackle the issue of economic insecurity across the board. That is why you see the pay raise, the elevation of Basic Allowance for Housing (BAH), and some other things.

Certainly, I appreciate the support that you are giving us and I know you will continue to give us, but we will move out and get you the report as quickly as possible.

Senator DUCKWORTH. Thank you.

I have no question of the commitment of each of the witnesses here today to making sure that we address this issue. That has not been the problem.

The issue that I have is that there is still resistance across the Department, and Secretary Austin, in fact, when you first addressed this issue last November, you tasked the Under Secretary of Defense for Personnel and Readiness to deliver a strategy and implementation roadmap to strengthen food security within the force.

Would you commit to sharing that strategy and implementation roadmap with Congress once it is developed to help us better understand how DOD is addressed military hunger?

Secretary AUSTIN. I will, Senator. Thank you.

Senator DUCKWORTH. Thank you.

Last year, I led the bipartisan effort to authorize a new basic needs allowance under fiscal year 2022 NDAA and I am encouraged that the services are planning to provide this new assistance in their annual budgets; however, questions still remain on how the Department will roll out this new allowance.

For example, Secretary Austin, the final text includes a compromise that allows you to not count, so you have the discretion to not count BAH as income, when determining who is eligible to receive the basic needs allowance. Additionally, families are going to need to opt-in to this, so they must understand how to opt-in to the food allowance, which over the years, we have learned is often much easier said than done when it comes to program participation for anything you have to opt-in for.

Secretary Austin, what is the status of developing an implementing the basic needs allowance and can you share actions that the Department intends to take to ensure that all servicemembers are made aware of this new support and encouraged to apply, if eligible?

Secretary AUSTIN. Yes. As you may know, we are still working our way through this, but I will tell you, Senator, that I am pre-

disposed to making sure that we provide as many benefits to our troops and our family members as possible.

As we work our way through this, we are going to make sure that it is streamlined so that it is easy for people to understand what they need to do to qualify and we are going to, again, I am predisposed to making sure that they get as much as they possibly can.

Senator DUCKWORTH. Thank you.

Will you commit to using your discretion to not count BAH as income to the maximum extent possible?

Secretary AUSTIN. I will do everything I can that is legally possible and feasible to give our troops greater capability of greater resources.

Senator DUCKWORTH. Thank you, General.

With that, yield back.

Chairman REED. [Presiding.] Thank you, Senator Duckworth.

Senator Blackburn, please?

Senator BLACKBURN. Thank you, Mr. Chairman.

Secretary Austin, why don't we make our intelligence reports public?

Secretary AUSTIN. We share as much as we can from our intel reports, but as you know, we have to be careful about protecting—

Senator BLACKBURN. Yes, would you agree—

Secretary AUSTIN.—sources and methods—

Senator BLACKBURN. Right.

Secretary AUSTIN.—so that we don't lose capability.

Senator BLACKBURN. Would you agree that giving our adversaries access to our intel reports is a poor decision?

Secretary AUSTIN. Exactly. I think that is something that we need to absolutely work to avoid.

Senator BLACKBURN. Okay, and so, then, why did senior Biden official hold nearly half a dozen meetings with top Chinese officials to give them information on Russian troop movements?

Secretary AUSTIN. I don't know of, I don't have insights on any occurrences like that.

Senator BLACKBURN. Okay. So, it seems the Chinese called up their comrades in Russia and sent Moscow the intel that binder staffers provided them, and it appears that United States officials knew Beijing gave the intel to Moscow.

So, I would imagine you do not support giving Russia our intelligence?

Secretary AUSTIN. I am unfamiliar with the issue that you raise.

Senator BLACKBURN. Okay.

Secretary AUSTIN. But you are right, I do not support giving our adversaries—

Senator BLACKBURN. All right. General Milley, under what circumstances, if any, have you advised intelligence-sharing with Beijing?

General MILLEY. Zero. Never.

Senator BLACKBURN. Thank you.

Given what we know now about how that subsequently shared information, this intelligence went to Moscow, what would you advise for similar scenarios going forward?

General MILLEY. I don't think you should give intelligence to your adversary, period.

Senator BLACKBURN. Okay. Thank you.

What senior leader is ultimately responsible for this decision of intel-sharing; is it you? Is it Secretary Austin? Is it Jake Sullivan? Is it the President? Who is it?

General MILLEY. My opinion is, well, I will give you a couple of answers to that. One is the Director of National Intelligence is responsible for all the intelligence agencies in the——

Senator BLACKBURN. National Intelligence.

General MILLEY. DNI.

Senator BLACKBURN. Okay.

General MILLEY. So, that is the person who is technically responsible, but, obviously, the President is responsible for everything the Government does, the Executive Branch does.

Then each of us are responsible for within our areas of responsibility.

Senator BLACKBURN. Okay. So, under what authorities would we share our intelligence with Beijing?

General MILLEY. I would ask that you ask these questions of the DNI; however, my knowledge of the system is that the President and/or the Director of National Intelligence or perhaps the director of the CIA or someone like that does have authorities, but I don't know what those are, specifically——

Senator BLACKBURN. Okay.

General MILLEY.—and it is not something I can answer with accuracy.

Senator BLACKBURN. So, it is not a practice that you approve of, but we do know that it has happened, correct?

General MILLEY. I don't know that it has happened. I am not aware of what you are talking about, actually.

Senator BLACKBURN. Okay. We have talked a good bit about Afghanistan today, so did Biden's precipitous withdrawal from Afghanistan, which really fed perceptions of America in retreat, did that play a role in shaping Putin's decision to invade Ukraine?

General MILLEY. From the intelligence I have read, it is not clear. I think it certainly is possible, but I also know that Putin had aims on Ukraine long before the end of the war in Afghanistan, in fact——

Senator BLACKBURN. I think we all know that.

General MILLEY. Yes.

Senator BLACKBURN. So, he saw his opening, right?

General MILLEY. Well, the forces were building up.

They began to build up their forces in September and October, so I think in order to do that, they would have had to have the plans and approval long before September, October.

Senator BLACKBURN. Okay. They have a habit of moving forward at the end of the Olympics.

General MILLEY. Yes.

Senator BLACKBURN. They did it 2008. They did it in 2014. We were watching and the White House chose not to move forward.

I want to ask you, you have both failed, and this comes to each of you, to share with us the budget line items for diversity and inclusion initiatives and much less, any way that you would tie those

initiatives to warfighting, but public reporting has given us some insight into what is being spent and how some of that money has been spent.

Secretary Austin, earlier this year, there was a report that said the Department of Defense is studying the issue of allowing gender, non-binary people to serve in the military; is that true?

Secretary AUSTIN. I am supportive of allowing any person that is eligible and can meet the qualifications to serve their country.

Senator BLACKBURN. Who is involved in this study? Are uniformed military personnel involved?

Secretary AUSTIN. I can't speak to, at this point, who was involved in any of the studies that we have ongoing, just off the top of my head. But I will certainly take the question for the record.

Senator BLACKBURN. What will the living arrangements be made for non-binary servicemembers? Are you all going to come back to us and ask for an appropriation for housing?

Secretary AUSTIN. Senator, any study that we do, it will make, certainly be transparent and make it available to you.

Senator BLACKBURN. What about gender-fluid individuals, how will you handle a servicemember who identifies as male on some days and female on other days, or polygender individuals?

Secretary AUSTIN. I don't care to speculate on, you know, what we are going to ask you for or what we are going to—how we are going to qualify people.

Again, some of this is in litigation in various states and, you know, I think it is best to take your question for the record.

Senator BLACKBURN. Okay. I have some questions, Mr. Chairman, that I will submit for the record.

Chairman REED. Thank you, Senator.

Senator BLACKBURN. But Secretary Austin, I do have some questions on hypersonics.

Chairman REED. We will be going, immediately, Senator Blackburn into a classified session and those questions, I think, would be answered there.

Gentlemen, let me thank you for your testimony. We will adjourn the open hearing and reconstitute the Committee in SV-217 at 12:30.

At this point, I will adjourn the open session and join you at 2:30 at SV-217, SVC-217. Thank you.

[Whereupon, at 12:18 p.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR MAZIE K. HIRONO

INDOPACOM POSTURE

1. Senator HIRONO. Secretary Austin, General Milley, it is good to hear that the budget includes \$6.1 billion in funding for INDOPACOM's priorities. While technological advances are important, we also need to ensure there is adequate funding to support a resilient and distributed force posture in the Indo-Pacific and improved training ranges. Admiral Aquilino identified these requirements in his recent 1242 Report to Congress. How does this budget prioritize funding for distributed force posture needs?

Secretary AUSTIN. A resilient and distributed posture and realistic high-end training in the Indo-Pacific region are essential to the Department as we address our number one pacing challenge, China. To that end and as highlighted in the Pacific Deterrence Initiative (PDI) budget display, DOD's fiscal year 2023 President's Budg-

et request includes \$1.2 billion for infrastructure improvements to enhance responsiveness and resiliency of U.S. forces in the Indo-Pacific region. This funding advances critical initiatives in support of a distributed force posture in the Indo-Pacific region, including major military construction (MILCON) on Guam to realign Marines to the island, and major MILCON on Tinian, Commonwealth of the Northern Mariana Islands to support airfield facility development. In addition, these funds also support planning and design of additional facilities that will enable further distribution of DOD's force posture in locations that DOD deems politically and technically feasible. PDI also includes \$2.3 billion for exercises, training, experimentation, and innovation, including funding for the Pacific Multi-Domain Training and Experimentation Capability (PMTEC), one of the top priorities identified in United States Indo-Pacific Command's (USINDOPACOM's) 1242 report. PMTEC will enhance and network multiple training ranges across the Indo-Pacific region in order to provide realistic, peer environment training for United States forces.

General MILLEY. The Presidential Budget 2023 request invests in key efforts toward modernizing and strengthening DOD's presence in the INDOPACOM region. Specifically, the DOD invests in improving logistics, maintenance, and pre-positioning; carrying out exercises, training, and experimentation; improving infrastructure; and building defense capabilities of allies and partners. Additionally, Presidential Budget 2023 funds United States Indo-Pacific Command's (USINDOPACOM) priorities for Guam missile defense, the Pacific Multi-Domain Training and Experimentation Capability (PMTEC) network of training ranges for United States and ally/partner forces, and the Mission Partner Environment (MPE) framework for multinational information sharing.

2. Senator HIRONO. Secretary Austin, how are you working with the State Department to ensure that the United States has entered into the international agreements necessary to achieve the required force posture in the Pacific?

Secretary AUSTIN. We are working closely with the State Department to ensure we have the necessary international agreements in place to support our posture in the Indo-Pacific region. Specifically, we are working together to review relevant policy and political-military considerations, to assess the willingness of partners to conclude needed agreements, and to conduct negotiations. Efforts are ongoing to expand and modernize our access, information and intelligence sharing, and logistics agreements to support DOD activities in the Indo-Pacific region. Differences in our partners' strategic views and limitations in our partners' political willingness to enter into agreements remain key challenges. We are in continuous coordination with the State Department to overcome those challenges and progress the agreements required to support DOD posture in the Indo-Pacific region.

SHIPYARD MODERNIZATION

3. Senator HIRONO. Secretary Austin, while I've been supportive of the Navy's Shipyard Infrastructure Optimization Plan (SIOP), I'm concerned about the timeline, cost overruns, and the capability, even with these upgrades, of maintaining a future larger fleet. If we let timelines on construction of drydocks slip, that will delay critical upgrades to infrastructure that supports the workforce. How does this year's budget invest in SIOP?

Secretary AUSTIN. We are making a once-in-a-generation investment in our shipyards through the Shipyard Infrastructure Optimization Program (SIOP). The budget requests \$1.7 billion in fiscal year 2023 and \$8.3 billion across the FYDP to ensure that we maintain a world class ship maintenance capability. This is an historic amount that will enable the Navy to continue to invest in three primary lines of effort: construct and recapitalize the Nation's dry docks; recapitalize and reconfigure infrastructure toward optimization; and modernize capital equipment.

4. Senator HIRONO. Secretary Austin, does this year's budget request for drydock construction projects reflect lessons learned from the significant cost overruns for the drydock at Portsmouth?

Secretary AUSTIN. We are always looking for ways to improve our processes and to ensure that we use taxpayer dollars responsibly and judiciously. With respect to drydock construction, the Navy is aggressively implementing lessons learned from recently awarded projects in the areas of acquisition, design, cost estimation, and organizational and process changes. The Navy looked at data related to ongoing projects and those in design and acquisition to better improve cost and schedule fidelity for drydock construction projects, which is reflected in the fiscal year 2023 budget.

CLIMATE CHANGE

5. Senator HIRONO. Secretary Austin, General Milley, I am glad to see that the Department's proposed budget includes \$3.1 billion to address the effects of climate change. Sea level rise, drought, and severe weather events are a few examples of negative effects climate change has on DOD installations and operations. It is critical that the effects of climate change be accounted for in future threat assessments, strategic documents, and training. How are you ensuring that climate change considerations are incorporated at all levels of decision making within the Joint Force?

Secretary AUSTIN. Every day, our forces contend with the grave and growing consequences of climate change, from hurricanes and wildfires that inflict costly harm on U.S. installations and constrain our ability to train and operate, to dangerous heat, drought, and floods that can trigger crises and instability around the world. You see DOD's focus on the effects of climate change reflected in our strategy and in our budget. For the first time, climate change considerations are integrated throughout the National Defense Strategy (NDS), which I submitted to Congress in March 2022. This strategy will drive mission prioritization and resourcing and ensure that climate considerations are incorporated at all levels of decisionmaking within the Joint Force and across the Department. The investments we propose to make in the fiscal year 2023 budget will enhance the resilience of our installations, make operational platforms more energy efficient, and bolster our science and technology programs. These efforts will all help make the vision articulated in the NDS and other strategic documents a reality. I'd also note that as part of a recent reorganization, the Office of the Under Secretary of Defense for Policy established a new office that will focus specifically on matters associated with Arctic security policy and global climate security and resilience issues. This new office will help ensure these critical issues are incorporated in the Department's strategic approach to navigating the rapidly evolving security environment.

General MILLEY. The Joint Staff is actively including the security implications of climate change in our risk analyses, strategy development, and planning guidance. Through the Joint Staff Climate Change Action Group, we are also ensuring climate change considerations are included in our decisionmaking processes. In line with the Department of Defense Climate Adaptation Plan and recently published National Defense Strategy, we are analyzing the effects climate change has on the Joint Force through modeling, simulation, and wargaming. These analyses are then integrated in strategies and plans, and used to assess, understand, operate, and invest in climate-smart approaches for resiliency.

6. Senator HIRONO. Secretary Austin, Secretary McCord, how will the \$617 million be used to maintain the readiness of the Joint Force to operate in a future shaped by climate change?

Secretary AUSTIN and Secretary MCCORD. The Department's \$617 million of new investments will strengthen the efficiency and resilience of installations (\$263 million); enhance the development of demand reduction and energy storage technologies (\$186 million); leverage DOD buying power to increase efficiency of operational platforms, pursue the electrification of non-tactical vehicles, and develop the workforce needed to improve installation energy efficiency and mission resilience (\$153 million); and ensure that Department wargaming and analyses incorporate climate-related contingencies and variables (\$15 million).

DEFENSE ENERGY/FUEL POSTURE

7. Senator HIRONO. General Milley, I believe that renewable energy is not simply an environmental calculation, but it is becoming a tactical necessity for DOD. I have included provisions in past NDAA's to prioritize energy security and resilience at military installations. What advantage would decreased reliance on fossil fuels provide the Joint Force in the Indo-Pacific?

General MILLEY. Effective, reliable, and often onsite alternate energy sources can enhance resilience to energy disruptions, reduce energy logistics requirements for deployed operating forces, and increase the agility of forces across the globe. In alignment with improvements to combat effectiveness and capability, the Department will continue to integrate renewable energy into our installation planning and capability development processes, and invest in innovations that enhance our ability to operate in contested environments.

8. Senator HIRONO. Secretary Austin and Secretary McCord, what types of green technologies is the Department prioritizing for future investments?

Secretary AUSTIN and Secretary MCCORD. The Department is pursuing a range of investments in energy-related technologies that improve unit readiness, deploy-

ment agility, and installation resilience while also reducing our impact on the environment. In many cases, what is good for the mission is also good for the environment—and vice versa. Reducing our energy usage and diversifying our energy sources can enhance operational effectiveness while also mitigating the drivers of climate change. For our installations, we are pursuing energy sources for on-base power generation, including advanced nuclear microreactors and renewable energy, and microgrids to give us more robust options in the event of grid supply disruptions. We are helping to accelerate grid transition to clean electricity to power our bases with more resilient and sustainable power. We are increasing our use of non-tactical zero-emission vehicles, with charging infrastructure, microgrids to provide transportation resilience in the event of energy disruptions. For our tactical forces, we are certifying up to four additional sustainable aviation fuel pathways to ensure we are ready to use any drop-in compatible, low carbon aviation fuels available on the market. We also are improving the efficiency of current combat vehicles, ships, and aircraft, and investing in electrification, new propulsion technologies, and innovative designs to reduce our energy demand and increase our capability in contested operating environments.

QUESTIONS SUBMITTED BY SENATOR ANGUS KING

UKRAINE LESSONS LEARNED

9. Senator KING. Secretary Austin, General Milley, what are some of the preliminary lessons learned from the conflict in Ukraine on the future of warfare? Please be specific with the new perceived effectiveness of different weapon systems and changes to military doctrine regarding tactics and strategy.

Secretary AUSTIN. The ongoing conflict in Ukraine is already highlighting several potential lessons learned that could impact the future of warfare. First, our efforts, including those to reinforce NATO's Eastern Flank, have made NATO's conventional deterrent stronger now vis-à-vis Russia than at any time in recent decades. We must now capitalize on the opportunity by collaborating with our Allies to make smart investments, to include improved interoperability, precision strike, ISR capabilities, and electronic warfare systems. Second, our use of intelligence and information operations throughout the crisis has demonstrated the value of seizing early advantage in the information space. Third, our integrated response—alongside our Allies and partners—demonstrated the potency of non-military instruments of power and the ability to impose crippling costs on Russia, thereby strengthening the credibility of integrated deterrence. Russia will struggle to rebuild its military capability due to our sanctions and export controls targeting their defense sector. Finally, the conflict demonstrates the utility of collaborating with Allies and partners to adopt capabilities and approaches to improve their ability to deny the military objectives of aggressors and to improve resistance.

General MILEY. Preliminary lessons learned from the conflict in Ukraine include: the importance of working closely with our allies and partners to deter aggression, the need for rapid intelligence and information sharing, the value of timely and relevant security assistance, and the need to counter nuclear coercion via strategic deterrence. We operated bilaterally with several nations in Europe to directly support Ukraine, while also directly enhancing NATO's defense of its member nations. Our Intelligence Community was able to rapidly share critical information to alert our allies and partners to the threat and provide military information to assist Ukraine's defense of their homeland. We have, together with our partners, been successful supporting Ukraine logistically in a contested environment, by rapidly providing critical materials enabling the Ukrainians to get those weapons to the front lines for immediate use. Our pre-conflict Security Force Assistance training, through the Joint Multinational Training Group-Ukraine and the International Military Education and Training program, strengthened Ukraine's ability to withstand Russian assaults. We experienced an adversary attempting to use nuclear coercion, reaffirming the importance of both understanding the nuclear threat and our necessary responses. Additionally, it is imperative to achieve air superiority in order to conduct successful offensive combined arms maneuver. Conversely, it is key to deny air superiority if you are conducting a defensive operation. Last, having a decentralized mission command and control is critical to success in modern conflict. The Joint Staff is also conducting an in-stride review of lessons learned from the Russia-Ukraine conflict. Upon completion, the Joint Staff will begin a formal process to incorporate relevant lessons learned into future military doctrine, strategy, and tactics.

10. Senator KING. General Milley, based on observations in Ukraine and Afghanistan, what has the military learned regarding assessing an enemy's 'will to fight'? How can this be applied to future situations of heightened tension and conflict?

General MILLEY. The 'will to fight' is a significant center of gravity. The Russian strategic messaging greatly enhanced the Ukrainian will to fight with the pronouncements by Putin and other war leaders that the invasion was an existential war to eliminate the Kyiv regime, military, and its supporters. Conversely, the Russians indicated the war was only existential to the Russian elite's grip on power, not their people. Russian forces are far less motivated to conduct high-risk offensive operations while Ukrainian forces view this war as legitimate and supported by the Ukrainian citizenry.

Senior leadership is crucial, especially in times of heightened tension and conflict. President Zelensky's personal courage, combined with effective use of all forms of strategic communication and clear messaging contrasts clearly with President Ghani's fleeing of Kabul that contributed to the collapse of Afghan resolve. We need deeper analysis of all sides' motivations, morale, will to fight, leadership, and popular support in future situations.

INFLATION

11. Senator KING. Secretary McCord, what metrics is the DOD using to measure inflationary costs to the DOD budget, and how does the President's budget off-set these costs?

Secretary MCCORD. The DOD budget is developed using a wide array of inflationary measures, which are used to administer specific programs and assess inflationary impacts. In addition to the general purchases inflation rate applied to estimate inflation costs to most goods and services the Department purchases, which by law (2 U.S.C. 907) is based on the Gross Domestic Product (GDP) chain-type price index, the Department uses specialized indices for certain items, such as the purchase of fuel and the various aspects of compensation to service members (e.g., housing market rental surveys for BAH, U.S. Department of Agriculture Food Cost Index for BAS, various medical inflation rates to project our health costs, etc.). As required by law, the annual pay raises for military basic pay and civilian salaries are based on Employment Cost Index (ECI), which is not strictly speaking a measure of inflation, but rather a reflection of changes in private sector wage growth so that our military and civilian pay rates remain competitive.

Based on the available updates in these various inflationary measures between the submission of the fiscal year 2022 budget and the fiscal year 2023 President's budget, the Department, with the support of the President and the Office of Management and Budget, added approximately \$20 billion per year to the Department's topline over the fiscal year 2023 to fiscal year 2027 period. Of that amount, approximately \$14 billion per year reflects updated pricing for the purchase of goods and services, and the other \$6 billion per year addresses higher pay and compensation costs.

AUDIT

12. Senator KING. Secretary McCord, when can the Committee expect a 'clean' Pentagon Audit?

Secretary MCCORD. DOD leadership remains committed to making steady and consistent progress toward achieving an unmodified, or "clean," audit opinion on our financial statements, but it will be a multi-year effort. The DOD uses a combination of tools to consolidate audit findings, establish milestones for corrective actions, monitor progress, and promote visibility and accountability. Each reporting entity under standalone audit with a disclaimer of opinion maintains an audit roadmap that details corrective action plan completion dates by fiscal year and financial statement line item or audit focus area. To hold leadership accountable, deviations from approved roadmaps require Deputy Secretary of Defense and Under Secretary of Defense (Comptroller)/Chief Financial Officer approval.

During our fiscal year 2021 financial statement audits, components succeeded in downgrading five material weaknesses. We are expecting our fiscal year 2022 financial statement audits to demonstrate similar progress. However, there were 28 Department-wide material weaknesses from our consolidated audit last year. We will need to see significant progress from the DOD Components toward downgrading material weaknesses for their standalone audits before we can expect to achieve an opinion on our consolidated financial statements. This is a multi-year effort, but we expect to see consistent progress along the way and I will work with leadership across the Department to find opportunities to accelerate that progress.

13. Senator KING. Secretary McCord, what cost-saving measures can the DOD immediately put in place that would improve efficiency? If legislative changes are required, what are these?

Secretary McCORD. First and foremost, I would urge Congress to be mindful of the negative effects Continuing Resolutions (CR) have on our operations and ability to realize efficiencies. CR stopgap measures are wasteful to the taxpayer, reduce the Department's purchasing power, and reverse the gains our military has made in readiness and modernization. In order for us to plan for and execute the National Defense Strategy, DOD must have the ability to better align our funding toward prioritized accounts and programs. Under a CR, we are unable to begin new programs or projects, production rates for weapons, equipment and munitions cannot be increased, and a CR disrupts major exercises and training events. Time is money and year after year we continue to give away both in CRs.

In terms of cost-saving measures, we believe that accelerating our digital efforts and automating wherever possible is of paramount importance to improving efficiency. In February, the Department stood up the Office of the Chief Digital and Artificial Intelligence Officer which we expect to increase the speed of our development and use of artificial intelligence, data analytics, and machine learning which will translate into faster and better decisionmaking and sustain military advantages.

We also expect our financial statement audits to also continue to pay dividends in optimizing our operating efficiency. The recommendations from our independent auditors have proven to be valuable in identifying opportunities for streamlining our business processes and strengthening controls over our information systems. Corrective action plans implemented thus far have resulted in cost savings and operating efficiencies that have more than offset our audit fees.

Additionally, the Department of Defense has one mandatory spending proposal of note in this budget, which is to expand the accrual-based funding of healthcare for Medicare-eligible retirees (generally those age 65 or older) to include all military retirees. This expansion helps the Department on several fronts, including: protecting us from the risk of significant execution year reprogramming actions due to changes in health care costs, providing funds for the retiree population's mandatory health care costs during possible continuing resolutions and shutdowns, and last, from an audit perspective, implementing best practices by recognizing and funding liabilities when they occur—and addressing the roughly \$260 billion unfunded liability for military retiree healthcare by transferring the liability from DOD to the general Treasury, while converting to accrual funding going forward. The Department has submitted a fiscal year 2023 legislative proposal with a fiscal year 2024 start date in support of this request.

Last, I request Congress to work with the Department to eliminate or reduce obsolete reporting requirements that take valuable manpower and funding resources away from our National Defense Strategy priorities. I strongly believe that we can ensure strong congressional oversight while simultaneously reducing the administrative burden on the Department.

RESEARCH AND DEVELOPMENT

14. Senator KING. Secretary Austin, General Milley, what is the expected timeframe for the United States to match and surpass China and Russia's capabilities in hypersonic missile technology and directed energy weaponization?

Secretary AUSTIN. First, I would say that the Department requires the right mix of capabilities to match our warfighting concepts and our strategy. In some cases, that will involve hypersonic and directed energy capabilities. That is why you saw us include \$7.2 billion to the fiscal year 2023 budget request for long-range fires, such as hypersonic and highly survivable sub-sonic weapons. You also saw us bring together a group of industry leaders early in this Administration to focus our efforts on hypersonic technology. We can and should move more rapidly on this front.

Developing hypersonic technology directly contributes to the three pillars of the Department's 2022 NDS: Integrated Deterrence; Campaigning; and Building Enduring Advantages. The Department is making significant investments to facilitate rapid development and testing of hypersonic and related technologies, to enable affordable production at scale, and to accelerate the delivery of these capabilities, which are critical to strategic stability. In concert with select allies, DOD is pursuing multiple hypersonic-based capability solutions as additions to an existing suite of diverse warfighting capabilities. The development of hypersonic technology will deliver additional cutting-edge capabilities and strategic options to our Armed Forces, supplementing our existing unparalleled capabilities.

We are on pace to deliver intermediate range hypersonic strike capability to the Army in fiscal year 2023, and the Navy in fiscal year 2025 for surface ship launch and fiscal year 2028 for subsurface launch. We are developing medium range hypersonic strike capability for the Air Force that will be available in fiscal year 2023 and the Navy is developing medium range capability that will be available in fiscal year 2026. The fiscal year 2023 budget significantly accelerates the fielding of this initial set of prototype weapons system capabilities.

United States development of Directed Energy Weapons (DEW) also supports our Integrated Deterrence approach and our warfighters' requirement to carryout Integrated Air and Missile Defense, offensive operations, and the need to operate in contested environments. The development of U.S. DEW technology is moving forward rapidly and now enabling multiple ongoing operational demonstrations. This includes laser and high-power microwave systems being operated across the world by the Services. Four Directed Energy Maneuver Short Range Air Defense prototypes will be delivered to an Air Defense Artillery unit by the end of fiscal year 2022. The fiscal year 2023 budget continues development, enables some key operational demonstrations especially in the area of missile defense, and allows the acceleration of DEW weaponization of some capabilities. Efforts in fiscal year 2023 and fiscal year 2024 include delivery of Indirect Fire Protection Capability High Energy Laser, High Powered Microwave, and High-Powered Microwave counter missile system prototypes.

General MILLEY. Hypersonic weapons remain a top modernization priority as we seek to build a modernized joint force that will deter peer adversaries. The fiscal year 2023 budget request invests a total of \$4.7 billion—a 30 percent increase from President's Budget 2022—to develop offensive hypersonic systems fielded on air, land, and sea platforms. We recently had a successful flight test of the DARPA Hypersonic Air-breathing Weapon Concept (HAWC) program, and we remain on track to field offensive hypersonic capabilities by the early to mid-2020's. Specific details regarding the projection of future United States hypersonic capabilities relative to Russia and China are classified. Classified response is provided.

HYPERSONIC INVESTMENTS

15. Senator KING. The DOD budget request and your posture statements highlight the significant funding for the Missile Defense Agency investments in kinetic 'bullet on bullet' defenses and offensive hypersonic investments.

Secretary Austin, General Milley, what are the investments by the Missile Defense Agency and each of the services for defending against hypersonics, including both kinetic and non-kinetic?

Secretary AUSTIN. The Missile Defense Agency is investing \$465 million in fiscal year 2023 and \$1.8 billion over the FYDP to defend against the hypersonic threat. This includes development of a glide-phase interceptor and demonstration of two hypersonic and ballistic tracking space sensors in coordination with U.S. Space Force. The Department can provide additional information at a higher classification level and would be happy to provide a briefing at your convenience. The directed energy investments for countering hypersonic missiles are rapidly increasing starting in the fiscal year 2023 budget.

MDA is the Executive Agent within DOD for Hypersonics Defense. There are no significant separate Service investments to develop systems specifically driven by hypersonic defense requirements, although there are several terminal defense systems that will provide advanced air and missile defense capabilities that will include some limited capability against hypersonic threats.

General MILLEY. The Department has and continues to invest funds toward developing Hypersonic Defenses across multiple programs and efforts within the Missile Defense Agency, Services and Defense Agencies. The Department [USSF/SDA] has allocated funding to develop spaced based sensors to detect and track hypersonic missile threats, as well as [USAF] improvements to terrestrial based radars. Additionally, the President's Budget request for fiscal year 2023 [MDA] continues to leverage and upgrade existing systems for future demonstrations designed to incorporate hypersonic glide vehicle defenses into the Missile Defense System architecture. Finally, the Department's ongoing efforts include [Department of Navy] research and development programs to improve hit-to-kill capabilities of current defensive systems against emerging hypersonic threats as well as developing new [DARPA] advanced technologies.

16. Senator KING. Secretary Austin, General Milley, what are the investments by the Missile Defense Agency and each of the Services in directed energy for fiscal year 2023 and across the Future Years Defense Plan?

Secretary AUSTIN. The directed energy budgets for the Missile Defense Agency (MDA), the Services, and the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) are shown in the chart below. The OUSD(R&E) budget funds key high energy laser technology necessary for missile defense. The total for fiscal year 2023 is \$1.079 billion and the total over the Future Year Defense Program is \$3.411 billion.

	Fiscal Year 2023	Fiscal Year 2023–27
Air Force	218	1,013
Army	547	1,044
Navy	129	394
MDA	15	79
OUSD (R&E)	170	881
Total	1,079	3,411

General MILLEY. The directed energy budgets for MDA and the Services are shown in the chart below. The OUSD (R&E) RT budget is also shown because it funds key high energy laser technology necessary for missile defense. The total for fiscal year 2023 is \$1,079 million and the total over the FYDP is \$3,411 million.

	Fiscal Year 2023	Fiscal Year 2023–27
Air Force	218	1,013
Army	547	1,044
Navy	129	394
MDA	15	79
OUSD (R&E)	170	881
Total	1,079	3,411

17. Senator KING. Secretary Austin, General Milley, what is the proportion of kinetic ‘bullet on bullet’ defense systems versus non-kinetic (electronic warfare, directed energy) for fiscal year 2023 and across the Future Years Defense Plan?

Secretary AUSTIN. The Department spends 4 to 5 times as much on kinetic missile defense as it does on non-kinetic missile defense. The Missile Defense Agency (MDA) will spend \$9.6 billion in fiscal year 2023 and \$52.8 billion over the FYDP for kinetic missile defense. MDA is investing \$45 million in fiscal year 2023 and \$245 million in the FYDP on research and development of non-kinetic defenses. The Services, MDA, and OUSD (R&E) will spend \$1.079 billion in fiscal year 2023 and \$ 3.411 billion over the FYDP on Directed Energy. Of this a substantial portion is for missile defense. The DOD is spending approximately \$1.2 billion on electronic warfare for missile defense in fiscal year 2023. The amount over the FYDP is approximately \$6 billion. The Department can provide additional information on the Services non-kinetic investments at a higher classification level and would be happy to provide a briefing at your convenience.

General MILLEY. The Department of Defense spends 4 to 5 times as much on kinetic missile defense as it does on non-kinetic missile defense. The Missile Defense Agency will spend \$9.6 billion in fiscal year 2023 and \$52.8 billion over the FYDP for kinetic missile defense. MDA is investing \$45 million in fiscal year 2023 and \$245 million in the FYDP on research and development of non-kinetic defenses. The Services, MDA, and OUSD (R&E) will spend \$1,079 million in fiscal year 2023 and \$ 3,411 million over the FYDP on Directed Energy. Of this a substantial portion is for missile defense. The DOD is spending ~\$1.2 billion on electronic warfare for missile defense in fiscal year 2023. The amount over the FYDP is ~\$6 billion.

UNCLOS

18. Senator KING. General Milley, do you support the ratification of the United Nations Convention on the Law of the Sea (UNCLOS)?

General MILLEY. Like my predecessors, I support ratification to the Law of the Sea Convention. The Convention reflects customary international law on which the United States has long relied for its freedoms of navigation and overflight around the world. These rights are vital to our national security, and joining the Convention is the best means of placing them on a secure footing and maximizing the ability of our armed forces to move through and over the world’s oceans.

DRUG INTERDICTION

19. Senator KING. Secretary Austin, what coordination is currently underway by the DOD with the ONDCP to stem the flow of illegal drugs into the United States?

Secretary AUSTIN. The Department is part of a broader interagency effort, along with international partners, pursuant to certain limited DOD authorities, to stem the flow of illegal drugs into the United States. DOD is a National Drug Control Program agency in accordance with certain specific DOD statutory authorities and participates in the development of the various strategies and other guidance documents issued by the Director of the Office of National Drug Control Policy (ONDCP). DOD is also a member of the Interdiction Committee, whose members meet to discuss and resolve issues regarding the coordination, oversight, and integration of U.S. Government drug-interdiction efforts and to advise the Director, ONDCP, on issues regarding drug-interdiction strategy and policies.

20. Senator KING. Secretary Austin, who is the lead person 'in charge' of policy and operations for DOD?

Secretary AUSTIN. Ultimately, I am in charge of policy and operations for all of DOD. When we talk about the exercise of specific counter-drug policy and operations in the Department, the Deputy Assistant Secretary of Defense (DASD) for Counter-narcotics and Stabilization Policy provides policy direction and program management for DOD's counterdrug and counter transnational organized crime efforts. The DASD is under the authority, direction, and control of the Under Secretary of Defense for Policy and the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict. Separately, the Combatant Commanders are responsible for counterdrug operations in their respective areas of responsibility, and the Under Secretary of Defense for Personnel and Readiness is responsible for DOD policy regarding drug testing, education, and treatment of DOD personnel.

21. Senator KING. Secretary Austin, what qualitative measures of effectiveness are used to determine the Department's contribution to counterdrug operations—success or otherwise.

Secretary AUSTIN. The Department is part of a broader interagency effort, along with international partners, to disrupt, degrade, and deter the flow of illicit drugs, precursor chemicals, and associated funds. Given the supporting role we play our measures of effectiveness are necessarily a part of our partners' respective measures of effectiveness. That is, our collective success is our main qualitative measure of effectiveness. With respect to specific efforts, we provide detection and monitoring and intelligence analysis support to counterdrug efforts. Our partners are responsible for interdictions, seizures, arrests, sanctions, and designations.

22. Senator KING. General Milley, what operations and exercises are planned this year in the Western Hemisphere to build partner capacity to help with the war on drugs?

General MILLEY. The Joint Force has several planned exercises that focus on Counter Drug (CD) and Counter Transnational Criminal Organization (CTOC) operations in the USSOUTHCOM area of responsibility (AOR). USSOUTHCOM joint exercises TRADEWINDS and CENTAM GUARDIAN are multi-domain Field Training & Command Post Exercises that build capacity of participating nations and enhance skills related to CTOC operations. TRADEWINDS includes interagency participation from the United States Coast Guard, United States Drug Enforcement Agency, and the Federal Bureau of Investigations. Additional joint exercises in the USSOUTHCOM AOR build skills that are transferable to CTOC operations such as interoperability, domain awareness, and intelligence/information sharing.

Joint Interagency Task Force—South (JIATFS) conducts ongoing air and maritime detection and monitoring operations to enable law enforcement interdiction and apprehension of illicit trafficking within the JIATFS Joint Operations Area. Additionally, in fiscal year 2023 the Joint Force plans to support steady State partner nation detection, monitoring, interdiction and apprehension operations with France and Netherlands in the Central and Eastern Caribbean Sea and focused operations with Colombia, Ecuador, and Panama.

CHINA COMMISSION

23. Senator KING. I believe we must establish an unbiased and non-partisan commission to examine a grand strategy for our approach to China, similar in intent to President Eisenhower's Solarium Project. We need to think of a holistic approach to create a stable international order in which China (or Russia) cannot dictate regional developments.

Secretary Austin, General Milley, in order to avoid the United States trying to “spend our way out of conflict,” how can we specifically counter China’s major activities in your area of responsibility?

Secretary AUSTIN. You have heard me say many times that our number one pacing challenge remains China. We reiterated this point in our new National Defense Strategy. The Department is focused on getting the right mix of capabilities aligned to our warfighting concepts and our strategy and ultimately in response to the many national security challenges we face. I feel confident that our fiscal year 2023 budget request fully resources the NDS, including our primary focus on responding to challenges posed by the People’s Republic of China (PRC). We are focused not only on maintaining our strategic edge, but on how we remain dominant on the battlefield—today, and in any future conflict. That is why we are focused on strengthening our approaches to integrated deterrence, campaigning, building enduring advantages, and working closely with our allies and partners to deter adversaries and, if deterrence fails, to prevail in conflict. That includes focusing our efforts on securing access, basing, and overflight in key parts of the Indo-Pacific region, and why we are pursuing a more distributed and forward posture there. We also have great capability and capacity in some of our closest Allies and partners in the region that we must continue to draw on now and in the future.

General MILLEY. The Joint Force will continue to pursue an Indo-Pacific region that is free and open, connected, prosperous, secure, and resilient. To ensure this we are advancing integrated deterrence through active campaigning by:

- deepening cooperation and enhancing interoperability with allies and partners;
- maintaining peace and stability across the Taiwan Strait;
- innovating to operate in rapidly evolving threat environments, including space, cyberspace, and critical-and emerging-technology areas;
- strengthening extended deterrence;
- pursuing the complete denuclearization of the Korean Peninsula;
- delivering on AUKUS
- expanding United States Coast Guard presence and cooperation against other transnational threats;
- working with Congress to fund the Pacific Deterrence Initiative and the Maritime Security Initiative.

24. Senator KING. Secretary Austin, General Milley, what would be the greatest benefit this commission could deliver?

Secretary AUSTIN. The Department does not currently have a position on the creation of a commission to examine a grand strategy for our approach to China.

General MILLEY. Develop a collective competitive framework that synchronizes DOD’s actions with the interagency in a system that addresses the PRC objectives essential to the achieve our Nation’s strategic objectives.

25. Senator KING. Secretary Austin, General Milley, what would put us in the best position to avoid the United States and China from escalating conflict and careening into a war with China?

Secretary AUSTIN. My primary focus with respect to the People’s Republic of China (PRC) is to deter conflict and avoid war. It remains critical that we have good lines of communication with China’s leaders at all levels to ensure that we do not unnecessarily escalate tensions or end up in a conflict. To that end, we are focused on implementation of the National Defense Strategy and its primary methods, especially integrated deterrence, and campaigning. By developing and combining our strengths to maximum effect while gaining advantages against the full range of China’s coercive actions, we will ensure that we are in a position to deter the PRC from escalating potential crises into conflicts. We are also working to establish crisis communications mechanisms with the PRC, to prevent inadvertent escalation.

General MILLEY. We must continue to reinforce to President Xi and other PRC leaders that the risks and costs of military action outweigh potential benefits, while also enhancing our crisis communications architecture with Beijing to prevent incidents from unintentionally escalating into conflict.

26. Senator KING. Secretary Austin, General Milley, what are the ‘toughest problems’ OUTSIDE of military imbalances?

Secretary AUSTIN. Our global competitors have greater access to commercial state-of-the art technologies than ever before and can leverage these technologies to threaten United States national security. For example, the People’s Republic of China’s (PRC’s) Military-Civil Fusion (MCF) Development Strategy is a nationwide en-

deavor that seeks to meld the PRC's economic and social development strategies with its security strategies, in support of the PRC's national rejuvenation goals. This is why it is so important that the United States continue to work to on-shore critical capabilities like microelectronics and why we must protect our own critical supply chains. In addition, the PRC is seeking to establish a more robust overseas logistics and basing infrastructure to allow the People's Liberation Army (PLA) to project and sustain military power at greater distances. The Department is also focused on security access, basing, and overflight in the Indo-Pacific region to maintain our strategic edge and to counter Chinese aggression.

General MILLEY. The Chinese economic ties with our country and every one of our allies and partners increases the PRC's leverage, decreases allies and partners will to resist PRC pressure, and increases vulnerability of domestic populations should national leaders take tougher stances against the PRC.

ARCTIC

27. Senator KING. I supported Sen Sullivan's Arctic Security Initiative amendment last year, and helped get it into law with the Chairman.

Secretary Austin, General Milley, what specific resource shortfalls do our armed forces currently possess that would limit its ability to conduct exercises/operations in the High North? Please be specific to include operations and sustainment funding for exercises, equipment shortfalls such as weather gear for soldiers or unique platforms.

Secretary AUSTIN. I am confident that our Joint Force is resourced to complete our exercises and operations around the world, including in the High North. The United States is an Arctic nation, and the Department strongly supports efforts to ensure the protection of our interests in the Arctic region. As you know, we recently created a new Deputy Assistant Secretary of Defense for Arctic and Global Resilience, and last year we announced the establishment of the Ted Stevens Center for Arctic Security Studies in Alaska. We will remain focused on the Arctic, and I will never hesitate to request more resources if we determine that we need them.

The Department will also continue to work with Allies and partners, and as part of a whole-of-government approach, to closely monitor our competitors' activities in the Arctic and strengthen the rules-based order in the region. United States activities and posture in the Arctic must be calibrated to enable the Department to preserve its overall focus on the Indo-Pacific region, but the Department is making key investments in enhancing our domain awareness capabilities, including investments in intelligence, surveillance, and reconnaissance capabilities; early warning; weather satellites; and communications, to achieve our homeland defense priorities. By improving our capabilities, deepening our partnership with Canada in the context of the North American Aerospace Defense Command (NORAD), and working with Allies and partners to increase shared air and maritime domain awareness, we are sending key strategic deterrent messages to our competitors.

General MILLEY. Thank you for the support of this important initiative. The Joint Staff directs the global readiness levels that our forces must maintain. It is an issue for the entire Joint Force. As a Joint Force, we are not fully equipped to operate at the desired level in the High North. The Joint Force continues to expand and address the operational challenges that the High North presents through expansion of exposure through Joint, Interagency, and Multinational exercises.

KC-46 BASING

28. Senator KING. Maine is the proud home of the Air National Guard's 101st Refueling Wing, the "MAINEiacs." Maine geographic location and air corridors offer a strategic hub for supporting trans-Atlantic deployments as well as Arctic operations.

Senator KING. Secretary Austin, would you support modernizing the unit with the new KC-46 aircraft?

Secretary AUSTIN. As they do with all basing modernization decisions, the Department of the Air Force will use the strategic basing process to determine locations best suited for future rounds of KC-46 aircraft basing and will consider all factors relevant to the decision.

29. Senator KING. General Milley, do you believe having a modernized and capable fleet of KC-46s at the strategic location of Bangor, ME is beneficial to the facilitating operations in the Arctic and trans-Atlantic flights to EUCOM?

General MILLEY. The aerial refueling and technological capabilities that the KC-46 provides to the Joint Force are critical. This is especially relevant as was highlighted in the recent NDS with China as the pacing challenge. The ANG 101st re-

fueling wing in Maine plays a critical role in our Nation's ability to globally project the Joint Force.

QUESTIONS SUBMITTED BY SENATOR JOE MANCHIN

USMC FORCE DESIGN 2030

30. Senator MANCHIN. Secretary Austin, as you know the Marine Corps has made many painful, but necessary, divestments from legacy platforms such as tanks and investments in newer technologies and capabilities that will better enable the Marine Corps to counter our pacing threat, China. I think the Marine Corps' investment and divestment so far made in Force Design 2030 are important to highlight because we are at a tipping point. All eyes are on the Marine Corps to complete this necessary realignment of their force, and if we falter now we risk creating compounding problems for the other Services who are following the Marines' lead. Myself and a number of the Members on this Committee have already committed to making tough decisions even if it means we lose equity in equipment that is built in our home states. Can you comment on Force Design 2030? Specifically, how quickly do each of the Services need to meet their modernization goals to counter the future threats we're going to be facing?

Secretary AUSTIN. The Commandant of the Marine Corps has briefed me on his Force Design 2030 plan, which I support. As you note, it is important that we look at what capabilities no longer meet the need, and where we must invest for the future. Each of the Services, including the Marine Corps, is undertaking modernization efforts today to ensure that the Joint Force has the right mix of capabilities to meet current and future challenges.

The Marine Corps is focused on reallocating its budget request to its highest priority requirements: long-range precision fires, resilient sensor and communication networks, and mobility platforms. These investments will result in new anti-ship missile capabilities, advanced ISR assets, and additional mobility platforms in fiscal year 2023 and over the next several years. The fiscal year 2023 budget request continues to build out capacity so that the Marine Corps can better contribute as a naval expeditionary force in support of the Joint Force.

UKRAINE AND FUTURE WARFARE TRENDS

31. Senator MANCHIN. General Milley, Putin's war in Ukraine is offering us many interesting, if tragic, insights into how a future war with a near-peer competitor might play out. Of note, according to open source intelligence, Russia has lost over two-thousand tanks. The overwhelming majority of these roughly 10 million dollar Russian tanks were destroyed by 120 thousand dollar anti-tank missiles such as the Javelin. Understanding the open nature of this communication and based upon your analysis and observations of Putin's war in Ukraine, what types of technologies do you believe will be decisive in our next war?

General MILLEY. To prevail against a near-peer adversary in our next war, the Joint Force must employ a variety of new technologies across multiple domains. To that end, the Department has identified 14 critical technology areas vital to national security. The Joint Force will continue to evolve our Joint Warfighting Concept and deliver these technologies as warfighting capability as the ever-changing threat from our adversaries demand.

The Department's 14 critical technology areas are:

1. Seed Areas of Emerging Opportunity
 - Biotechnology
 - Quantum Science
 - Future Generation Wireless Technology (FutureG)
 - Advanced Materials
2. Effective Adoption Areas—where there is existing vibrant commercial sector activity
 - Trusted AI and Autonomy
 - Integrated Network Systems-of-Systems
 - Microelectronics
 - Space Technology
 - Renewable Energy Generation and Storage
 - Advanced Computing and Software
 - Human-Machine Interfaces
3. Defense-Specific Areas
 - Directed Energy
 - Hypersonics

- Integrated Sensing and Cyber

32. Senator MANCHIN. General Milley, how is this reflected in the Department of Defense's budget request?

General MILLEY. We are witnessing a fundamental change in the character of war driven by advancements in disruptive technologies like hypersonics, artificial intelligence (AI), robotics, and cyber. The Fiscal Year 2023 President's Budget request makes the largest-ever investment in RDT&E, at \$130B, to modernize the Joint Force to fight the battles of the future and keep up with the revolution in technology already underway. The budget also includes the largest ever S&T request at \$16.5B, and includes investment in 14 critical enabling technologies that could be decisive in the next war, like biotechnology, quantum science, and trusted AI.

AMPHIBIOUS SHIP FLEET

33. Senator MANCHIN. Secretary Austin, the vast majority of the challenges you highlighted in your opening statement are directly supported by our navy, which as you know are powerful tools of force projection. While aircraft carriers are the premier demonstration of that force projection, I would argue that our L-class amphibious ships offer much greater flexibility. From quick response deployments like the USS *Kearsarge* is on to Europe for the crisis in Ukraine to Humanitarian Aid and Disaster Response missions after natural disasters around the globe, our Sailors and Marines on amphibious ships arguably do more to maintain United States global dominance than any other tool in our kit. Unfortunately, maintenance and new procurements within the Navy's amphibious fleet leave our influence abroad greatly reduced. Are you familiar with these issues and how do we ensure that we're not losing capability by over-focusing on aircraft carriers and submarines?

Secretary AUSTIN. We are focused on getting the right mix of capabilities matched to our warfighting concepts and our strategy to respond to security challenges today, and into the future. Amphibious ships will remain a cornerstone of our global presence, deterrence, and crisis response. Our fiscal year 2023 budget request seeks to produce a balanced fleet that remains capable of a high level of readiness for power projection, sea control, maritime security, and sealift. That required near-term divestment of some Littoral Combat Ships that experienced high operating and sustainment costs. The near-term divestment will enable us to field advanced capabilities that will better support future combat requirements.

34. Senator MANCHIN. Secretary Austin, I've been told our minimum number of amphibious L-class ships should be in the 36 to 40 range, but in your opinion, what is the absolute minimum number of L-class amphibious ships required to meet our strategic needs?

Secretary AUSTIN. We are focused on getting the right mix of capabilities matched to our warfighting concepts and our strategy to respond to security challenges today, and into the future. Amphibious ships will remain a cornerstone of our global presence, deterrence, and crisis response. Our fiscal year 2023 budget request seeks to produce a balanced fleet that remains capable of a high level of readiness for power projection, sea control, maritime security, and sealift. I am confident it does so.

COST SAVINGS BY COMMERCIAL COMPARISON

35. Senator MANCHIN. Secretary McCord, while I know it's not a perfect comparison, I was surprised to learn that in making acquisition decisions the Department of Defense either doesn't have access to or is not choosing to compare the commercial price of equipment to the cost the Department, and our taxpayers, are paying. One example I was made aware of was the lack of transparency from aircraft manufacturers that sell to both airlines and the Department. Essentially, we have to assume that airlines are paying a substantially reduced price for a similar aircraft that DOD is buying at substantial markup. Would you be supportive of Congress requiring any defense contractor that also supplies the commercial market making their commercial prices available to DOD?

Secretary MCCORD. The Department is supportive of legislative changes to increase transparency and require industry to provide the data needed to determine price reasonableness of commercial products and services, including commercial sales data. The existence of shortcomings in current acquisition regulations can create barriers to completing adequate price reasonableness determination. Contracting officers continue to experience challenges obtaining necessary commercial data to determine price reasonableness. The Department has submitted a legislative proposal to address these challenges.

CYBER MISSION FORCE

36. Senator MANCHIN. Secretary Austin, Tuesday was a big cyber day for this Committee. In the morning we heard from Cyber Command's General Nakasone, and in the afternoon, my friend Senator Rounds and I held a hearing with the Commanders of each Service's cyber force. Our technical capabilities seem to be mostly on par with our adversaries across the joint force, but the individual services are far below where they should be on recruiting and retaining top talent within our Cyber Mission Force. We've already provided enhanced budget authority to Cyber Command, and increased incentive pay to \$5,000 a month, but we just heard that there is a Department of Defense Instruction limiting that pay within the Services. I hope that you're unaware of this Instruction, but it appears to me that Congress has clearly provided an authority that is desperately needed to keep our highly qualified cyber operators and the Office of the Secretary of Defense has gone out of its way to put that authority on hold. Can you comment?

Secretary AUSTIN. Our cyber warriors add enormous value to our Department and our warfighting mission. That is why you saw us include \$11.2 billion for cyberspace in our fiscal year 2023 budget request with resources to further develop our Cyber Mission Force. We are also grateful to Congress for the authorities you have given us to be able to offer a wide range of monetary incentives to recruit and retain cyber talent. With these existing authorities, DOD can selectively target incentives where they are needed most. In particular, the Department can offer enlistment bonuses of up to \$50,000 for a 2-year enlistment and retention bonuses of up to \$30,000 per year for each additional year of military service an enlisted member commits to serving. Officers are eligible for a 3-year accession bonus of up to \$60,000 and retention bonuses of up to \$50,000 per year. If these bonuses and incentives are not sufficient, the Department can also offer a critical skills retention bonus of up to \$200,000 over a career for an active-duty military member. These incentives are effective monetary tools for recruiting and retaining the military cyber workforce.

Additionally, the Department is authorized to offer up to \$5,000 per month (or \$60,000 annually) to military members to serve in hard-to-fill or arduous assignments, or positions of significant responsibility. Over the past 14 years, however, the Department has not needed to pay the maximum amount and, by policy, has limited payment to \$3,500 per month (or \$42,000 annually). If necessary, the Department can make exceptions and can also increase its policy limit to the maximum authorized. It is reassuring to know that the Department has both the flexibility and authority to do so.

37. Senator MANCHIN. Secretary Austin, I look forward to working with you on this issue and a number of others affecting our cyber force, but I cannot overstate the importance of qualified cyber professionals to future conflicts. Cyber affects everything that we do today and even more so in the future. Can you commit to me that you will make it a priority to empower our cyber Commanders to retain their talent?

Secretary AUSTIN. You absolutely have my commitment to support our cyber commanders and help them retain talent. Our cyber warriors add enormous value to our Department and our warfighting mission. That is why you saw us include \$11.2 billion for cyberspace in our fiscal year 2023 budget request with resources to further develop our Cyber Mission Force. The Department is focused on developing a sustainable force generation model for the Cyberspace Operations Forces, because we know that without a world-class workforce, the Department will not be able to compete effectively in cyberspace.

 QUESTIONS SUBMITTED BY SENATOR ROSEN

HOUSING FOR JUNIOR ENLISTED TROOPS

38. Senator ROSEN. Secretary Austin, Secretary McCord, Junior enlisted servicemembers, including Airmen stationed at Nevada's Nellis Air Force Base, are averaging only 12 months in on-base housing and being forced to move off base due to shortages. This is compounded by the fact that these troops are forced to cover their rental deposits and moving costs before they are eligible to begin receiving their Basic Allowance for Housing. That is why I worked to include a provision in last year's NDAA directing DOD to brief Congress by March 1st of this year on the Department's plan to provide a partial dislocation allowance to these troops. We have still not received this briefing, and I recently heard from Nellis that none of their Airmen who were forced to move out of the dorms have received a dislocation allowance. Why is DOD not providing our junior enlisted troops, including Airmen

at Nellis and across the country, with the dislocation allowance they are authorized to receive? How do you plan on addressing the housing shortage?

Secretary AUSTIN and Secretary MCCORD. The health and well-being of our Service members and their families is my top priority. That is why I recently approved a Partial Dislocation Allowance (DLA) for our Service members. Effective April 27, 2022, a partial dislocation allowance is paid to a member of the Uniformed Services ordered to occupy or vacate housing provided by the United States. This update authorizes all members, including junior enlisted members without dependents, to be eligible for a Partial DLA when ordered to vacate government quarters, including barracks and dormitory-style housing. We are committed to providing high quality housing to our men and women in uniform, and to support them when government housing is not available.

COMMUTING ASSISTANCE FOR SERVICEMEMBERS

39. Senator ROSEN. Secretary McCord, airmen stationed at Creech Air Force Base and servicemembers stationed at many other installations have to commute many miles to base from where they live. Creech has very limited housing nearby, so the vast majority of Airmen live in Las Vegas, which is about 45 miles away. It's an even longer commute for those who have to drop off their kids at the child development center or utilize other services at Nellis Air Force Base on the opposite end of town. Does DOD have the existing authorities to provide these airmen with a gas stipend or something similar to make their commute less expensive? Or is this something the services would need help from Congress to address?

Secretary MCCORD. In general, outside of congressionally approved programs like the Mass Transit Benefit Program [5 U.S.C. § 7905], commuting costs are considered a personal expense of the servicemember.

The Department also notes that a gas stipend, as suggested in your question, would be considered taxable income for members under the Internal Revenue Code. At this time, the Department has no authority to provide reimbursement for single-occupant motor vehicles used for daily commuting from service members' domicile to their assigned duty stations.

The Department does, however, have a program in place that Services can use to incentivize hard-to-fill assignments (37 U.S.C. § 352), and a program to account for the cost of living in high-cost areas (37 U.S.C. § 403b). Currently, Creech Air Force Base does not qualify for either of these programs.

MAINTAINING OUR DEFENSE TECHNOLOGICAL EDGE

40. Senator ROSEN. Secretary Austin, Global competition, declining R&D, contracting challenges, and the STEM workforce gap are a few impediments eroding our technological edge with adversaries. How do you assess the United States' ability to develop, adopt, and deploy emerging technologies for national security? How do you assess China's ability to do the same?

Secretary AUSTIN. The United States continues to focus urgently on developing, adopting, and deploying emerging technologies in support of our national security. It is critically important that the U.S. military not only maintain our strategic and technological edge but that we remain dominant on the battlefield in all domains. Science, technology, engineering, and mathematics (STEM) and innovation are cornerstones of the American economy that support those efforts. The innovation ecosystem that has developed within the United States, which includes academia, small and non-traditional businesses, not-for-profit entities, and large business, continues to provide the Department with technology options that enable new and innovative warfighting capability.

The Department, however, remains concerned with China's goal to out-innovate the United States. China's annual research and development (R&D) spending grew 169 times from around 14.3 billion yuan (\$2.21 billion) at the beginning of the 1990's to 2.44 trillion yuan (\$382 billion) in 2020, and China's total R&D expenditures overtook Japan's in 2013, becoming second in the world after the United States. Growing Chinese research capabilities, combined with a focus on military-civil fusion and later-stage developmental research, is accelerating China's ability to conduct translational research and indicates that China has developed a strong ability to develop, adopt, and employ emerging technologies.

It is crucial that the Department maintain situational awareness of Chinese, and all international, R&D advances to avoid technological surprise. This is in part accomplished through fostering collaborations between U.S. and foreign scientists, which are key for both advancing U.S. research and innovation and for understanding advancements occurring overseas. In addition, a focus on international col-

laboration can help to draw more scientists to the United States where we can add to our capabilities.

At the same time, the DOD International Science and Technology Engagement Strategy establishes a framework for the Department's international S&T engagement for both collaboration and awareness of international research. The Department has taken a number of steps and has existing programs that allow us to be highly innovative. Programs such as the Small Business Innovation Research and Small Technology Transfer Program (SBIR/STTR) program enables the Department to take advantage of the small business community or extensive use of DIU to enhance connectivity and incorporation of non-traditional performers into the Department's innovation ecosystem. The Department also continues to invest in science and technology, from basic research through advanced technology and development that lays the foundation for national security and commercial applications in the future.

Finally, it is important that the Administration work with Congress to address the urgent need to invest in made-in-America semiconductors as well as research and development that will protect our economic and national security. Weapon systems employed on the battlefields of today and emerging technologies of tomorrow depend on our access to a steady, secure supply of microelectronics. Our strategic competitors are making substantial investments in this area—China, the United States military's pacing challenge, has already spent \$150 billion updating its semiconductor industry. The investments made through legislation like the CHIPS Act are critical to our national security and will directly support America's technological and military edge.

41. Senator ROSEN. Secretary Austin, the PROMOTES Act—bipartisan legislation I introduced with Senators Rounds, Blackburn, and Peters to authorize a DOD program to prepare students in JROTC for STEM fields—became law as part of the fiscal year 2021 NDAA. What are other ways Congress can improve the Department of Defense's ability to recruit, train, and retain a more technologically literate workforce?

Secretary AUSTIN. Thank you for your continued leadership in supporting the young recruits coming into the military, particularly by championing science, technology, engineering, and mathematics (STEM). Congress has provided significant support to DOD's hiring needs, to include providing streamlined direct hiring authorities and enhanced pay authorities for positions requiring expertise in STEM, as well as cyber and other critical positions. The Department continues to seek innovative means to use existing hiring, compensation, and employee development authorities and programs to better recruit, train, and retain the diverse and highly skilled technological workforce required to meet mission demands now and in the future.

42. Senator ROSEN. Secretary Austin, I'd like get your thoughts on the "valley of death," which is the point in the DOD innovation cycle when cutting-edge technologies die before they can win a contract to produce software or equipment at scale. What are specific steps the Department of Defense can take to improve the transition of successful technology prototypes to the point of production, and then rapidly field these technologies at scale so that we can leverage technology to better compete with our adversaries?

Secretary AUSTIN. The DOD is urgently focusing on ways to tackle what is described as the "valley of death," where we lose so many good technologies before they are fully brought to market and built at scale. To ensure the private sector pursues the technologies needed for national defense, the Department has increased its leadership engagement and collaboration with innovative companies in the defense industrial base. We have increased our engagement with the small business community to understand their challenges and my team has been charged with developing strategies to remove obstacles systemically. We are committed to making it easier for small businesses to work with the Department and to overcoming barriers and creating pathways to transition technology at scale. The President's budget for fiscal year 2023 makes a substantial investment in the Rapid Defense Experimentation Reserve (RDER). The goal of RDER is to produce capabilities to support the Joint Warfighting Concept. RDER will accomplish this goal by engaging in iterative experimentation with integrated prototypes, including 32 in the fiscal year 2023 sprint. We also recently established Competitive Advantage Pathfinders (CAPs) to identify and overcome pain points across the defense acquisition system, including transitioning emerging technology and enabling scalable reforms to improve the delivery of producible and sustainable capability.

As these initiatives are executed, we are committed to continuing to review our internal processes with an ultimate goal of accelerating the timelines in which emerging technologies are fielded so we maintain our technological edge and remain dominant on the battlefield.

43. Senator ROSEN. Secretary Austin, one of the gaps in the defense technology development process is the lack of private capital interest in defense-centric startup companies. How can the Department of Defense better incentivize private capital investments in small to medium size defense companies and does it need any new authorities to do so?

Secretary AUSTIN. The Department is currently exploring new ways to catalyze private investment in national security related activities, and we will come to Congress if we believe we need additional authorities to support our work. Coordinated With: OGC.

QUESTIONS SUBMITTED BY SENATOR MIKE ROUNDS

LANDMINE ALTERNATIVES

44. Senator ROUNDS. General Milley, thank you for your response on landmine alternatives at the DOD Posture Hearing. Unfortunately, due to time, I was unable to ask my complete question.

General Milley, can you describe the capability gap that has emerged, due to both policy and the degradation of our stocks, and the resulting threat to our ground forces' ability to use explosive obstacles for protection, to increase the effects of our systems, and to influence enemy freedom of maneuver on the battlefield?

General MILLEY. The loss of APL outside the Korean Peninsula increases the challenge to the United States military to effectively respond, but does not preclude an effective response. The United States maintains a range of capabilities to respond to challenges across the globe and adaptability is a hallmark of the U.S. military. We most certainly maintain the capability to influence enemy freedom of maneuver on the battlefield.

The Army is developing the XM204 Top Attack and XM343 Standoff Activated Volcano Obstacle Bottom Attack munitions as the new generation anti-vehicle system with initial operating capability in fiscal year 2023.

45. Senator ROUNDS. General Milley, can you explain how these landmine alternatives would increase the effectiveness of Javelins and other direct (and indirect) fire weapons systems, both for United States forces and had we been able to provide these capabilities to the Ukrainians?

General MILLEY. Planned landmine alternatives will serve the same doctrinal function as the current landmine inventory, which includes use in counter-mobility operations to increase enemy force vulnerability.

Canalize enemy forces into pre-established kill zones maximizes enemy vulnerability to direct and indirect fire systems.

46. Senator ROUNDS. General Milley, can you describe the precautions the United States takes with this type of capability, from rules of engagement to release authority, to self-destruct and self-deactivate capabilities and provide your best professional military advice on the gravity of this gap, the risk to our ground forces, and the risk to our mission?

General MILLEY. The DOD complies with the international legal obligations governing use of landmines under the Amended Mines Protocol II annexed to the Convention on Certain Conventional Weapons.

The Department will only employ, develop, produce, or otherwise acquire landmines that possess self-destruction mechanisms and self-deactivation features.

The loss of APL outside the Korean Peninsula increases the challenge to the United States military to effectively respond, but does not preclude an effective response. The United States maintains a range of capabilities to respond to challenges across the globe and adaptability is a hallmark of the U.S. military. We most certainly maintain the capability to influence enemy freedom of maneuver on the battlefield.

47. Senator ROUNDS. General Milley can you describe the studies that have been conducted by DOD, or on behalf of DOD, and what the findings have been with respect to force structure requirements and the projected reductions of friendly casual-

ties, while executing assigned missions or contingency plans? Please submit a classified response if you cannot address this question with an unclassified response.

General MILLEY. The current DOD Landmine Policy was informed by the 2016 Department of Defense Report on the Utility of and Alternatives to Antipersonnel Landmine and Cluster Munitions and the 2018 Antipersonnel Landmine / Cluster Munitions Study.

Given the classified nature of both studies, I will submit a classified response.

48. Senator ROUNDS. General Milley, I have been told that the Army has been developing landmine alternatives for over 12 years, yet the objective capability is not scheduled to be fielded until at least fiscal year 2030 or fiscal year 2031. To me, this results in unacceptable risk to the mission and the force.

Can you provide a plan on what the department would have to do to aggressively accelerate the development of a landmine alternative before fiscal year 2030?

General MILLEY. The Services are committed to developing landmine alternatives in support of Combatant Commanders and the Joint Force.

The Army is developing the XM204 Top Attack and XM343 Standoff Activated Volcano Obstacle Bottom Attack munitions as the new generation anti-vehicle system with initial operating capability in fiscal year 2023.

Both the XM204 and XM343 are effective when utilized on their own to delay enemy maneuver.

These systems will close any capability gap.

49. Senator ROUNDS. Can you also provide a plan on how the Department could maintain sufficient numbers of the current capability, which has self-deactivate/self-destruct features?

General MILLEY. The Services are committed to developing landmine alternatives in support of Combatant Commanders and the Joint Force.

The Army is developing the XM204 Top Attack and XM343 Standoff Activated Volcano Obstacle Bottom Attack munitions as the new generation anti-vehicle system with initial operating capability in fiscal year 2023.

Both the XM204 and XM343 are effective when utilized on their own to delay enemy maneuver.

These systems will close any capability gap.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

USMC FORCE REQUIREMENTS

50. Senator SULLIVAN. General Milley, in your written testimony for this hearing, you state, “[t]his budget will enable the decisions, modernization, and transformation the Joint Force needs to set the conditions for the Force of 2030. This budget allows the Joint Force to remain on a stable glide path toward that future.” Yet, in the last several weeks, the Navy has indicated that it plans to end LPD production and further delay the Light Amphibious Warship until fiscal year 2025. Top Marine officials have stated “the Marine Corps has a requirement for absolutely no less than 31 amphibious warfare ships,” and that the proposed fiscal year 2023 funding plan would shrink the amphibious force to just 25 ships in the next five years. Do you believe this budget puts the United States Marine Corps on that “steady glide path” you speak of?

General MILLEY. The fiscal year 2023 budget enables the Navy and Marine Corps team to support all near and mid-term Amphibious Ready Group/Marine Expeditionary Unit Global Force Management Operations. The Navy has recently completed its amphibious fleet requirement study and is going through the review process. We believe the results of the study will provide a strategic approach that enables the department to support and sustain a continued Marine Corps presence afloat that is fully capable of performing its mission essential tasks.

51. Senator SULLIVAN. General Milley, in your written statement, you write that the PRC, “intend[s] to be a military peer of the United States by 2035, and they intend to develop the military capabilities to seize Taiwan by 2027.” Based on the President’s fiscal year 2023 Budget, the Marine Corps will be well below the amphibious ship requirements it identified to execute Expeditionary Advanced Base Operations and Stand-In Forces in 2027. Do you believe the acquisition schedule for L-class amphibious ships and the Light Amphibious Warship positions the Joint Force for success in the event the PRC is indeed militarily capable of invading Taiwan in 2027?

General MILLEY. The Navy has recently completed its amphibious fleet requirement study and is going through the review process. We believe the results of the study will provide a strategic approach that enables the department to support and sustain a continued Marine Corps presence afloat that is fully capable of performing its mission essential tasks.

ARCTIC STRATEGY FUNDING

52. Senator SULLIVAN. Secretary Austin, during your confirmation hearing before this committee last year, I asked if you would commit to ensuring that the service Arctic strategies are fully resourced and you responded, “You have my commitment to do that.” Yet several weeks ago in a hearing before this committee, I asked NORTHCOM Commander General VanHerck if he had seen adequate funding for the service Arctic strategies, to which he responded, “[w]e have not seen the funding that I would like to see with regard to the Arctic.” In your opinion, has funding to execute service Arctic strategies been adequate or inadequate since you made that commitment in 2021?

Secretary AUSTIN. I am confident that our Joint Force is resourced to complete our exercises and operations around the world, including in the Arctic region. The United States is an Arctic nation, and the Department strongly supports efforts to ensure the protection of our interests in the Arctic region. As you know, we recently created a new Deputy Assistant Secretary of Defense for Arctic and Global Resilience, and last year we announced the establishment of the Ted Stevens Center for Arctic Security Studies in Alaska. We will remain focused on the Arctic, and I will never hesitate to request more resources if we determine that we need them.

The Department will also continue to work with allies and partners, and as part of a whole-of-government approach, to closely monitor our competitors’ activities in the Arctic and strengthen the rules-based order in the region. U.S. activities and posture in the Arctic must be calibrated to enable the Department to preserve its overall focus on the Indo-Pacific region, but the Department is making key investments in enhancing our domain awareness capabilities, including investments in intelligence, surveillance, and reconnaissance capabilities; early warning; weather satellites; and communications, to achieve our homeland defense priorities. By improving our capabilities, deepening our partnership with Canada in the context of the North American Aerospace Defense Command (NORAD), and working with allies and partners to increase shared air and maritime domain awareness, we are sending key strategic deterrent messages to our competitors.

FISCAL YEAR 2023 BUDGET

53. Senator SULLIVAN. General Milley, this past Tuesday before the House Armed Services Committee you stated, “[t]his budget assumes an inflation rate of 2.2 percent, which is obviously incorrect, because it’s almost 8 percent. It might go up, it might go down, but most forecasts indicate it’s going to go up and it could level out at 9 or 10 percent.” Given this reality, and the significant loss of purchasing power from this recent continuing resolution, do you believe the fiscal year 2023 budget is adequate to modernize and grow capability to deter and if necessary defeat authoritarian adversaries?

General MILLEY. I recommend this question be directed to the Secretary of Defense to provide specifics with regards to budget and growth capability.

Protecting our buying power is important. The Department considered the impact of inflation when building the budget and affiliated pricing assumptions—all in an effort to ensure we have an executable budget with the resources needed to implement the NDS. We will do the same in future budget cycles to ensure we remain aligned with strategy and National Security priorities.

MENTAL HEALTH

54. Senator SULLIVAN. Secretary Austin and General Milley, as you are aware, the issue of suicide has been steadily on the rise nation-wide in the last decade, and has had an outsized impact on Alaska. For U.S. Army Alaska personnel, the problem has been particularly acute. Just this past year, 17 soldiers, a number three times the historical average, took their own lives. I commend your recent establishment of the Suicide Prevention and Response Independent Review Committee, in which your Department will review a number of installations, including several in Alaska, to determine a comprehensive way forward in addressing this issue. Do you believe this budget does enough to address the military’s mental health provider shortfall?

Secretary AUSTIN. The loss of one life by suicide is too many. As you have heard me say many times, mental health is health. Period.

We are clearly not where we need to be on suicide prevention, which is why we are taking an integrated prevention approach. As you note and as Congress directed, we have launched the Suicide Prevention and Response Independent Review Committee, and our fiscal year 2023 budget request includes \$193 million for suicide prevention efforts. We are also asking for another \$33 million for the Defense Suicide Prevention office and \$1.4 billion in broader mental health efforts. We are focused on primary care behavior health, tele-behavioral health, substance abuse, and measures related to traumatic brain injury, post-traumatic stress, and other mental health conditions. There is also more work to do to optimize the use of our behavioral health providers to ensure we have the right providers in the right locations. Over the next 6 months, the Defense Health Agency (DHA) will work with the Military Departments and other DOD partners to finalize a staffing model for behavioral health. This staffing model will allow the DOD to place the right provider at the right location to meet the behavioral health needs for specific military medical treatment facilities (MTFs), by determining optimized personnel allocation, by provider type, and by supported mission. This will help inform resource allocation and personnel authorizations to maximize the behavioral health workforce to meet current demand. It may require moving personnel requirements and resourcing allocation between DHA Markets and MTFs. This model may also require new authorities to recruit and retain all identified personnel requirements.

The staffing model alone will not resolve existing capacity shortfalls, but it will allow the Department to have the ability to determine what deficiencies exist and inform how to resolve constraints. The Department will then be able to leverage technical solutions such as virtual behavioral health, optimization of existing provider inventory or increasing behavioral healthcare delivery through recruitment actions or leveraging existing TRICARE network capability.

General MILLEY. Across the Department, our commitment to suicide prevention is unwavering. The fiscal year 2023 budget invests \$1.4 billion in clinical mental health programs and initiatives to include those which evaluate, treat, and followup with patients with a variety of mental health issues. These programs leverage evidence-based best practices and treatment, practical problem resolution, case management and crisis management to support positive health outcomes. Ongoing mental health efforts within the Department include: Primary Care Behavioral Health, Tele-Behavioral Health, National Intrepid Center of Excellence and Intrepid Spirit Centers, Substance Abuse Program, as well as research on mental health aimed to accelerate the innovation and delivery of preventive interventions and treatments for TBI, PTSD, and other mental health conditions. Flexibility is key to ensuring these initiatives, support Service members by reducing barriers to receiving support, and target our populations of highest risk.

LESSONS FROM UKRAINE, APPLIED TO TAIWAN

55. Senator SULLIVAN. Secretary Austin and General Milley, the global security picture looks drastically different now than it did in February. NATO is more united than ever. The EU is more united than ever. Both have taken action in concert with the United States to respond to unprovoked Russian aggression against Ukraine through sanctions and the shipment of weapons and equipment to Ukraine. The Russian economy is staggering and the ruble has plummeted in value. In light of this, do you believe Xi Jinping is reevaluating his assumptions on Taiwan?

Secretary AUSTIN. As you point out, the consequences for President Putin of his illegal, unjust war have been precisely what he did not want: a more unified NATO. I have never seen NATO more united.

While I believe there are many lessons that will be learned from the conflict, I would caution drawing a direct comparison between the war in Ukraine and a potential conflict involving Taiwan. What I would say, however, is that a lesson that The People's Republic of China (PRC) has likely learned from this war is that the United States is committed to helping our Allies and partners defend themselves. The PRC likely also has learned that the United States can marshal a coalition of like-minded nations to respond to aggression wherever it appears. President Xi is also likely taking note of the economic costs of attacking a neighbor, and of the many challenges the Russian military is experiencing in sustaining their forces in conflict.

General MILLEY. Yes, Beijing is likely seeking to gain insight from Russia's military failures in Ukraine to improve its own capabilities, however, there is no evidence that Russia's failed invasion has changed Beijing's willingness to use force against Taiwan. While unification with Taiwan remains one of Beijing's top priorities, PRC experts are evaluating Russia's shortcomings in Ukraine and are assessing potential implications for Beijing in a future military conflict.

56. Senator SULLIVAN. Secretary Austin and General Milley, do you think the Russian invasion of Ukraine has changed Taiwan's perspective on its need to prepare for a PRC invasion?

Secretary AUSTIN. Over the past 2 years, we have seen increased PLA coercion of Taiwan. We remain committed to supporting Taiwan's efforts to enhance its self-defense, in accordance with the Taiwan Relations Act. Even as Taiwan prioritizes critical defense reforms—including to Reserves and Mobilization—our Taiwan partners recognize that they will face significant challenges, in sustaining operations and maintaining communications if they were in a crisis. We will continue to work with our Taiwan partners to improve their capabilities and ability to defend themselves in a crisis or conflict.

General MILLEY. Taiwan's perception of the risk of a PRC invasion has increased since Russia invaded Ukraine, and President Tsai has publicly reiterated her commitment to improving Taiwan's asymmetric defense capabilities. Taiwan officials recognize Ukraine's battlefield successes and emphasized increasing Taipei's production of its own indigenous capabilities, including land-attack and anti-ship cruise missiles, as well as its Kestrel man-portable light anti-tank weapon.

57. Senator SULLIVAN. Secretary Austin and General Milley, what lessons should we take away from failed deterrence in Europe to ensure deterrence doesn't fail in the Indo-Pacific?

Secretary AUSTIN. Let me first say that deterrence has not failed in Europe. From the outset, President Biden made clear that our core military deterrence objective was to deter an attack on the United States or NATO. We have thus far been successful in sustaining and strengthening deterrence in support of these priorities and have greatly bolstered NATO's territory and its resolve. Our military efforts before the invasion also bolstered Ukraine's ability to resist a Russian invasion.

I believe the conflict in Ukraine identified at least four lessons learned that demonstrate the value of integrated deterrence. First, a combination of Russian military shortcomings and our efforts to reinforce NATO's Eastern Flank likely makes NATO's conventional deterrent stronger now vis-à-vis Russia than at any time in recent decades. Second, our use of intelligence and information operations throughout the crisis has demonstrated the value of seizing early advantage in the information space. Third, our response—alongside our Allies and partners—demonstrated the potency of non-military instruments of power and the ability to impose crippling costs on Russia. Finally, the conflict demonstrates the utility of collaborating with Allies and partners to adopt asymmetric capabilities and approaches to improve their ability to deny the military objectives of aggressors and to improve resistance. The Department is carefully considering how these early lessons may apply to other priority challenges.

General MILLEY. First, I'd like to clarify that deterrence has not failed in Europe in support of United States policy objectives as established by the President. Russia has not, and shows no indication of attacking a NATO country. While Ukraine is not a member of NATO, the United States, through security assistance programs and unprecedented intelligence sharing, has assisted Ukraine in building a combat credible force that denied Russia a quick victory in its aim to dislodge the sitting Ukrainian Government.

While I caution against drawing similarities between the Russo-Ukraine War and other scenarios, including Taiwan, we have already drawn some fundamental conclusions, none of which are groundbreaking.

1. The strength of our military comes from the training and high levels of readiness we maintain while conducting exercises to stress interoperability with our Allies and Partners. The Russian military is a mix of professional and conscript Soldiers with a limited non-commissioned officer corps which has proven critical. With respect to Taiwan and the Indo-Pacific, we are leveraging military engagement to demonstrate our resolve to states in the region and build the collective will amongst likeminded nations to push back against those states who seek to disrupt the status quo.
2. The United States and likeminded countries around the world have moved an unprecedented amount of military equipment to Ukraine over the last several weeks. This has been a herculean effort. In Ukraine we have benefited from its geography and its borders with NATO countries to facilitate the distribution of security assistance. This would not be the case in Taiwan where breaking through a sea blockade to deliver assistance or providing it via air drop would likely be necessary. Therefore, we must have critical capabilities and military training before conflict begins. To that end, the Taiwan Relations Act provides the authority for the DOD provides arms and services of a defensive nature commensurate to the PLA threat. Through our observations of the war in

Ukraine and increasing PRC gray zone activities, we're looking into ways to expedite the transfer of critical capabilities to Taiwan that will improve and modernize Taiwan's military—particularly asymmetric capabilities that will enable Taiwan to delay, degrade, and deny a PRC invasion.

3. Last, we saw in the case of Ukraine, the decision to rapidly declassify our intelligence was essential in quickly building support among our allies and partners. A similar approach would be useful in building international support to help defend Taiwan early against Chinese military aggression.

Successfully implementing integrated deterrence in the Indo-Pacific requires us to do these things and more in day-to-day competition with China and far left of any conflict.

58. Senator SULLIVAN. Secretary Austin and General Milley, from Xi Jinping's predatory economic initiatives, repeated neighbor-nation coercion, and brutal repression of individual freedoms; to now Vladimir Putin's heinous invasion of Ukraine, there is little doubt that we are now in a new era of authoritarian aggression. This aggression spans the entire spectrum of conflict, from open military warfare to gray zone activities below the threshold of armed conflict. The central tenet of the newly published National Defense Strategy aimed to counter this spectrum of conflict is "integrated deterrence", which you define as, "working seamlessly across military domains and the spectrum of conflict, using all instruments of U.S. national power and our extraordinary network of alliances and partnerships." Do you believe integrated deterrence failed its first test in Ukraine?

Secretary AUSTIN. No, I do not believe integrated deterrence failed in Ukraine. From the outset, President Biden made clear that our core military deterrence objective was to deter an attack on the United States or NATO. We have thus far been successful in sustaining and strengthening deterrence in support of these priorities and have greatly bolstered NATO's territory and its resolve. Our military efforts before the invasion also bolstered Ukraine's ability to resist a Russian invasion.

General MILLEY. Integrated deterrence is and will continue to impose costs on Russia. Militarily, Ukraine is defending their sovereignty with a combat credible force. Allies and partners are united in providing Security Force Assistance while imposing harsh economic sanctions on Russia. This is integrated deterrence in action.

59. Senator SULLIVAN. Secretary Austin and General Milley, how do we ensure our integrated deterrence efforts are successful in the Indo-Pacific?

Secretary AUSTIN. Integrated deterrence first and foremost is about having the most dominant, combat-credible force in all domains. It is also about drawing on the strengths of our Allies and partners, who are force multipliers in our efforts to deter aggression and prevail in conflict and using all instruments of national power to deter a competitor or adversary across the spectrum of competition and conflict. Implementing integrated deterrence—including in the Indo-Pacific region—requires being cognizant of competitor deterrence calculus and being disciplined and focused on advancing our defense priorities. In the Indo-Pacific region, for example, the Department will bolster deterrence by leveraging existing and emergent force capabilities, posture, and presence. Collaboration with Allies and partners will cement joint capability with the aid of multilateral exercises, co-development of technologies, greater information sharing, and combined planning on shared deterrence challenges. We will also build enduring advantages by undertaking foundational improvements and enhancements in our technological edge and combat credibility.

General MILLEY. We continue to enhance our force posture, infrastructure, presence, and readiness levels in the Indo-Pacific region. We must ensure that we have sufficient military and economic power when combined with our allies and partners. Last, we must shape our desired outcomes concerning the PRC without escalating to armed conflict between our two nations.

QUESTIONS SUBMITTED BY SENATOR MARSHA BLACKBURN

HYPERSONIC TECHNOLOGY

60. Senator BLACKBURN. Secretary Austin, do you agree with General Hyten that the U.S. is lagging in hypersonic development due to not testing systems until being highly confident in their capabilities? How does the Fiscal Year 2023 President's Budget Request offset this?

Secretary AUSTIN. First, I would say that what the Department requires is the right mix of capabilities to match our warfighting concepts and our strategy. In

some cases, that will involve hypersonic and directed energy capabilities. That is why you saw us include \$7.2 billion to the fiscal year 2023 budget request for long-range fires, including hypersonic and highly survivable sub-sonic weapons. You also saw us bring together a group of industry leaders early in this Administration to focus our efforts on hypersonic technology. We can and should move more rapidly on this front. The hypersonics program is energized to conduct flight tests early and often to accelerate the pace of development by emphasizing that testing is not a function of program failure, but instead is an opportunity to learn early and succeed sooner. We believe that this approach will increase confidence and lead to more rapid fielding of systems.

The fiscal year 2023 budget request and FYDP continue to significantly invest in our ground and flight test infrastructure to enable an increased pace of developmental and operational testing for hypersonic systems. With the Fiscal Year 2023 President's Budget, by fiscal year 2027 the Department will have invested \$1.4 billion in hypersonic test improvements to enhance capability and increase throughput.

61. Senator BLACKBURN. Secretary Austin, what is the value of a hypersonic test—both practically to the U.S., and from a deterrence perspective to our adversaries?

Secretary AUSTIN. The Department tests systems under development to reduce risk. The progression of testing from modeling and simulation to ground testing to full-system flight testing gives us the confidence necessary to safely field an operationally effective weapon system.

From a deterrence perspective, a flight test provides evidence of the Nation's commitment to aggressively develop and transition this significant warfighting capability. As we increase the pace of testing, this commitment will become even clearer.

62. Senator BLACKBURN. Secretary Austin, where does the U.S. rank on the global stage regarding hypersonic testing frequency?

Secretary AUSTIN. We have gone from conducting flight tests once every couple of years to 17 scheduled flight tests this fiscal year. Our pace of testing is based on the number of systems we have in development and the stage of development for those systems. The Department is focused on acquiring the right mix of capabilities to match our warfighting concepts and our strategy. In some cases, that will involve hypersonic and directed energy capabilities. That is why you saw us include \$7.2 billion to the fiscal year 2023 budget request for long-range fires, including hypersonic and highly survivable sub-sonic weapons. You also saw us bring together a group of industry leaders early in this Administration to focus our efforts on hypersonic technology. We can and should move more rapidly on this front.

NUCLEAR

63. Senator BLACKBURN. Secretary Austin, why was the SLICM-N cancelled?

Secretary AUSTIN. The Administration considered a variety of regional deterrence contingencies as part of the 2022 Nuclear Posture Review, which affirmed the need to deter limited nuclear use by adversaries. We already field capabilities intended to address these scenarios, including the recently introduced W76-2 low-yield submarine-launched ballistic missile, the B61-12 gravity bomb delivered by dual-capable aircraft, and the existing air-launched cruise missile that will eventually be replaced by the modernized Long-Range Standoff Weapon. Given the deterrence contributions of these capabilities, the nuclear weapons-capable sea-launched cruise missile (SLCM-N) program was canceled, considering its marginal utility, its estimated cost in light of other nuclear modernization and defense priorities, and the fact that it could not be delivered before the 2030's.

64. Senator BLACKBURN. Secretary Austin, how does the PBR facilitate a complete nuclear modernization program that deters our adversaries?

Secretary AUSTIN. The nuclear triad remains the bedrock of our national security. That is why the President's Fiscal Year 2023 Budget invests \$34.4 billion in Nuclear Enterprise Modernization. This request reflects full funding for recapitalization of all three legs of the nuclear triad, as well as modernization of U.S. nuclear command, control, and communications (NC3) systems. Above all, the President's Budget supports a modern, safe, secure, and effective nuclear deterrent, and strong and credible extended deterrence.

DIVERSITY, EQUITY, AND INCLUSION (DEI)

65. Senator BLACKBURN. Secretary Austin, what are the objectives of the Department of Defense's study concerning "nonbinary" people serving in the military? Who is involved in this study?

Secretary AUSTIN. The Institute of Defense Analysis is currently conducting a study to collect information on a range of issues, regarding our existing personnel policies and systems.

66. Senator BLACKBURN. Secretary Austin, do you believe the Department can allow nonbinary people to serve in the military without Congressional authorization?

Secretary AUSTIN. DOD is authorized to establish qualifications for military service.

67. Senator BLACKBURN. Secretary Austin, how much has the President requested for each Service's fiscal year 2023 DEI initiatives?

China

Secretary AUSTIN. Our greatest strategic advantage over our competitors and adversaries is the strength of our people. That is why the Department is working every day to recruit and retain the best talent—because America's military should look like the country we serve. A key to retaining talent is to ensure that every service member has pathways of opportunity. As part of our DEI efforts, this year the Department launched a series of focused reviews on key points in the military career cycle—accessions, mid-career, and pathways to senior leadership—to provide actionable insights for the Department on how to recruit and retain a diverse force.

With respect to funding, the Department's diversity and inclusion initiatives are funded through various programs administered by the Military Departments and other DOD Components. The Department's fiscal year 2023 budget request includes a total of \$87 million for diversity and inclusion activities, including \$8 million for the Office for Diversity, Equity, and Inclusion, \$53 million for the Defense Human Resources Activity, \$4 million for the Department of the Army, \$7 million for the Department of the Navy, and \$15 million for the Department of the Air Force. We will continue to invest in our people, who are the most critical element of our success.

68. Senator BLACKBURN. General Milley, does the Biden administration budget address the current assessment of the advancements made by the People's Liberation Army (PLA)?

General MILLEY. I am confident that the President's Budget request adequately provides for the defense of our Nation. Specifically, the fiscal year 2023 Budget includes \$276 billion in our investment accounts for procurement and R&D to modernize the Joint Force in order to deter, and if necessary, prevail in conflict. While we continue to modernize the Joint Force to pace the future challenge from China, this budget also sustains the capability, capacity, and readiness to respond to aggression from any adversary today.

69. Senator BLACKBURN. Secretary Austin, considering the department has identified China as the pacing threat, what shortfalls do you identify in the PBR's ability to meet this threat?

Secretary AUSTIN. The President's Budget request for fiscal year 2023 is robust and fully aligned with the new National Defense Strategy, which identifies the urgent need to sustain and strengthen deterrence across domains, theaters, and the spectrum of conflict, with the People's Republic of China (PRC) as the Department's pacing challenge. Our strategy, resources, and capabilities are aligned to our priorities which we will advance through the lines of effort described in the National Defense Strategy: integrated deterrence, campaigning, and building enduring advantages. To this end, the budget request includes \$6.1 billion in the Pacific Deterrence Initiative (PDI), and we are making other investments outside PDI that are broadly applicable to the PRC. For example, other investments in operations, maintenance, research and development, and procurement that are not included in PDI will also help advance our priorities in the Indo-Pacific region and beyond.

INFLATION

70. Senator BLACKBURN. Secretary Austin, how does the administration's failure to account for record high inflation impact our Reserve and Guard Forces?

Secretary AUSTIN. This is a significant defense budget and one that buys us tremendous capability. As you know, the President's budget was finalized last year and

the chalk was snapped, so to speak, on some economic assumptions, which is how budgets are built. We will continue to watch inflation closely, to ensure we have the buying power to deliver the military capabilities we believe we need to support our warfighting concepts, and to take care of the total Force. If I feel I need more resources, I will not hesitate to request them.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

DEFENSE STRATEGY AND PRIORITIZATION

71. Senator HAWLEY. Secretary Austin, Assistant Secretary of Defense for Indo-Pacific Security Affairs Ely Ratner testified before the House Armed Services Committee on March 9, 2022, “With China as the pacing challenge, Taiwan is the pacing scenario, driven by a strategy of denial.”¹ Can you confirm that “Taiwan is the pacing scenario” for the Department of Defense, as Dr. Ratner testified?

Secretary AUSTIN. The People’s Republic of China (PRC) is our most consequential strategic competitor and the pacing challenge for the Department. A PRC invasion of Taiwan is a key pacing scenario for the Department of Defense.

72. Senator HAWLEY. Secretary Austin, you’ve written for the record that “a combat-credible, forward deterrent posture is instrumental to the U.S. military’s ability to deter, and if necessary, deny a fait accompli scenario.” Is this still your view?

Secretary AUSTIN. Yes. To deter aggression, especially where potential adversaries are positioned for rapid seizure of territory, the Department must ensure we have credible capabilities and warfighting concepts necessary to deny aggressors the ability to achieve their objectives. Ultimately, integrated deterrence is enabled by combat-credible forces postured to fight and win, and backstopped by a safe, secure, and effective nuclear deterrent.

73. Senator HAWLEY. Secretary Austin, does the 2022 National Defense Strategy retain the Global Operating Model from the 2018 NDS and, if not, does the Department remain committed to maintaining its ability to delay, degrade, and deny a Chinese fait accompli against Taiwan from the outset of such a conflict?

Secretary AUSTIN. The Department is focused on ensuring we have credible capabilities and the right concepts to enable us to prevail against aggression, including in rapid fait accompli scenarios. The 2022 National Defense Strategy prioritizes the PRC as our most consequential strategic competitor and the pacing challenge for the Department.

SIMULTANEITY

74. Senator HAWLEY. Secretary Austin and General Milley, is it fair to say that many of the capabilities we’d use in a fight against China—or withhold to deter Chinese opportunistic aggression—are capabilities that would no longer be available to deter or defeat Russian aggression and that, as a result, it will be essential for our NATO allies to take on a larger share of the burden of deterring Russia?

Secretary AUSTIN. The 2022 National Defense Strategy prioritizes the PRC as our most consequential strategic competitor and the pacing challenge for the Department and notes that Russia is an acute threat. In both cases, our Allies and partners remain a force multiplier for the United States along the spectrum of competition and conflict. The United States will always be ready to address aggression from multiple quarters through the full spectrum of its capabilities and in concert with our Allies and partners.

General MILLEY. Our commitments as outlined in the Taiwan Relations Act, Three Communiqués, and Six Assurances remain unchanged. Our support for Taiwan remains strong, principled, bipartisan, and in line with our one-China policy and longstanding commitments. We are ready to confront all adversaries with a graduated, dynamic employment of the Joint Force to achieve our National Security objectives. Our alliances and partnerships are key to maintaining the rules-based international order, and in both Europe and the Indo-Pacific they are the linchpin of our strategy of integrated deterrence. We have both sustained our strong posture and are taking truly unprecedented steps to strengthen our alliances and partnerships.

The United States will continue to ensure our NATO allies have the forces necessary to deter, or if necessary, defeat Russian aggression. Putin’s actions in

¹ <https://docs.house.gov/meetings/AS/AS00/20220309/114487/HHRG-117-AS00-Wstate-RatnerE-20220309.pdf>

Ukraine have solidified NATO's purpose and invigorated Allies into taking renewed interests in their military investment and capabilities. While the United States will maintain its commitments in Europe, we will prioritize the development of systems critical to the security of the INDOPACOM theater. These advances will increase military advantages in both theaters.

DEFENSE BUDGET

75. Senator HAWLEY. Secretary Austin, the Department has said that “campaigning” is a core element of the 2022 National Defense Strategy. Why then is there \$437 million for theater campaigning on INDOPACOM's unfunded requirements list?

Secretary AUSTIN. Our National Defense Strategy lays out what I have said many times since I joined the Department as Secretary of Defense, which is that China is our number one pacing challenge. United States Indo-Pacific Command (USINDOPACOM) is an integral part of how we address the challenges posed by the People's Republic of China, and I am proud of the work our team at USINDOPACOM continues to do to deter aggression and protect our interests in the region. Well-disciplined campaigning is critical to advancing our priorities in the Indo-Pacific region. In support of this effort, the President's Budget request for fiscal year 2023 would fund \$276 million of USINDOPACOM's Section 1242 request of \$712.7 million for campaigning. This is the maximum amount of funding that DOD determined it could execute feasibly with available forces and without degrading the readiness of the Joint Force. Joint Force readiness is foundational to integrated deterrence, and the budget request includes almost \$135 billion to enhance the readiness of the Military Services, with ready forces available for allocation to USINDOPACOM if required. The budget request also includes \$540 million (designated as PDI) for exercises, experimentation, and innovation, which will also contribute to campaigning within USINDOPACOM.

76. Senator HAWLEY. Secretary Austin, the budget request shrinks our naval battle force from 298 ships today to 280 in fiscal year 2027, when many agree that the risk of Chinese invasion of Taiwan will be especially high. How does DOD plan to make up for this loss of capacity, so we have the naval forces we need to ensure deterrence holds through this critical period?

Secretary AUSTIN. We have today and will continue to have in the future the most dominant navy in the world. We are focused on acquiring the right mix of capabilities that are matched to our warfighting concepts and our strategy. The Department's fiscal year 2023 shipbuilding and maritime systems program budget request of \$40.8 billion supports a broad range of forces, including aircraft carriers, submarines, surface combatants, and support ships. This budget makes significant investments in our Navy—including funding the *Columbia*-class nuclear submarine, two DDGs, amphibious ships, and a new frigate. The Navy is retiring some ships that are near the end of their service life—or, in the case of Littoral Combat Ships, the Navy is retiring some hulls to invest shipbuilding dollars in more lethal capabilities.

The fiscal year 2023 budget delivers many new capabilities within the FYDP (fiscal year 2023 to 2027), including DDG 1000 with Conventional Prompt Strike, DDG Flt III with the Air and Missile Defense Radar, XLUUV autonomous underwater vehicle, Maritime Strike Tomahawk, MQ-4 maritime surveillance drone, and MQ-25 aerial refueling drone.

77. Senator HAWLEY. Secretary Austin, has the Department decided to prioritize posture investments in the Indo-Pacific over analogous investments in other theaters?

Secretary AUSTIN. The Global Posture Review (GPR) established the Indo-Pacific region as the priority region for DOD posture investments. The 2022 National Defense Strategy further reinforced this prioritization. In implementing this guidance, DOD will continue balancing emergent near-term requirements—such as reinforcing NATO in response to Russia's unprovoked invasion of Ukraine—with its focus on the People's Republic of China as the pacing challenge.

78. Senator HAWLEY. Secretary Austin, if the Department has decided to prioritize posture investments in the Indo-Pacific over analogous investments in other theaters, then why does INDOPACOM's unfunded requirements list include \$47.6 million for unfunded military construction projects and another \$260 million for a Joint Program Office to facilitate timely delivery of INDOPACOM posture improvements?

Secretary AUSTIN. Prioritizing posture investments in the Indo-Pacific region is a key element of DOD's strategic approach of focusing on the People's Republic of China as the pacing challenge. DOD is laser focused on advancing these initiatives, which require detailed logistical and resource planning, assessment of political-military considerations, and in many cases, formal negotiation with host nations to secure access, basing, and overflight permissions before construction can commence. As an example, the highest value military construction projects on USINDOPACOM's Unfunded Priorities List were proposals for Papua New Guinea, a country where the United States Government is still working to secure the required bilateral agreements.

The President's Budget request for fiscal year 2023 makes substantial investments in the Indo Pacific. For example, the fiscal year 2023 budget funds \$276 million of USINDOPACOM's Section 1242 request of \$712.7 million for campaigning. This is the maximum amount of funding that DOD determined it could execute feasibly with available forces and without degrading the readiness of the Joint Force. Joint Force readiness is foundational to integrated deterrence, and the fiscal year 2023 budget request includes almost \$135 billion to enhance the readiness of the Military Services, with ready forces available for allocation to USINDOPACOM if required. The budget request also includes \$540 million (designated as PDI) for exercises, experimentation, and innovation, which will also contribute to campaigning within USINDOPACOM.

MUNITIONS

79. Senator HAWLEY. Secretary Austin, how many years will it take us to reach requirements for preferred munitions in our priority theaters at current levels of production?

Secretary AUSTIN. This is an area that I am closely monitoring, particularly as we draw down stocks in support of Ukraine's self-defense. We will continue to keep the Congress informed if we believe we require any authorities or resources to strengthen our munitions stocks.

As a general matter, the Department performs a portfolio-based review of munitions annually based on the Munitions Requirements Process to inform the budget process. The current proposed munitions levels for fiscal year 2023 align with Department budget priorities. Your support in funding the President's Budget request will ensure we have the level of munitions we need to support our objectives.

80. Senator HAWLEY. Secretary Austin, are there any preferred munitions that could be produced at a higher rate than what is reflected in the budget request, and if so, which are they?

Secretary AUSTIN. The Department is constantly working with our industry partners to determine what surge capacity is needed to help sustain readiness. The defense industrial base has the ability to support demand level changes and urgent wartime requirements through current maximum production rates and ongoing coordination with the Department's industrial policy and acquisition experts. As industry continues working to resolve the obsolescence and supply chain issues that challenge manufacturing sectors around the globe, now more than ever, we need to send a consistent demand signal on U.S. munitions requirements and those of our allies and partners. Authorities and programs such as the Department's Critical Munitions Acquisition Fund will aid the Department in ensuring the health of the defense industrial base and the immediate availability of critical munitions.

81. Senator HAWLEY. Secretary Austin, General Milley, and Secretary McCord, has the Department done an analysis to identify capabilities that would be in high demand in both Asia and Europe in the event of simultaneous conflicts, and if so, can you provide a list of those capabilities to this committee?

Secretary AUSTIN and Secretary MCCORD. Yes, we have conducted analysis that highlights key capabilities from both a near-term and long-term perspective that would be in high demand in each warfight. We can provide more information at a higher classification level. We are continually updating and refining our analysis as we experiment with innovative concepts and capabilities.

General MILLEY. Our National Defense Strategy is centered on deterring our adversaries from entering this type of hypothetical scenario. Current NDS drives toward a single engagement and deter in others. This Integrated Deterrence will develop and combine our strengths by working seamlessly across warfighting domains, theaters, the spectrum of conflict, the other instruments of U.S. national power, and our unmatched network of Alliances and partnerships. To backstop Integrated Deterrence, we must continue to develop capabilities in accordance with our Joint

Warfighting Concept to deter, and to win the next war, if required. The Fiscal Year 2023 Long Range Fires invests \$7.2 billion in Conventional Prompt Strike, Hypersonic Air-launched Cruise Missiles, Long Range Hypersonic Weapons, Joint Air and Surface Standoff Missiles, Long Range Anti-ship Missile, and Guided Multiple Launch Rocket System.

NUCLEAR DETERRENCE

82. Senator HAWLEY. Secretary Austin, why did the Administration cut the nuclear-armed sea-launched cruise missile over the objections of General Milley, the STRATCOM Commander, and the EUCOM Commander?

Secretary AUSTIN. The Administration considered a variety of regional deterrence contingencies as part of the 2022 Nuclear Posture Review, which affirmed the need to deter limited nuclear use by adversaries. We already field capabilities intended to address these scenarios, including the recently introduced W76-2 low-yield submarine-launched ballistic missile, the B61-12 gravity bomb delivered by dual-capable aircraft, and the existing air-launched cruise missile that will eventually be replaced by the modernized Long-Range Standoff Weapon. Given the deterrence contributions of these capabilities, the nuclear weapons-capable sea-launched cruise missile (SLCM-N) program was canceled, considering its marginal utility, its estimated cost in light of other nuclear modernization and defense priorities, and the fact that it could not be delivered until the 2030's.

^{*1} <https://docs.house.gov/meetings/AS/AS00/20220309/114487/HHRG-117-AS00-Wstate-RatnerE-20220309.pdf>

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

TUESDAY, MAY 3, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

AIR FORCE POSTURE

The Committee met, pursuant to notice, at 9:30 a.m. in room SD-G50, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Gillibrand, Blumenthal, Hirono, Kaine, King, Warren, Peters, Manchin, Duckworth, Rosen, Kelly, Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Cramer, Scott, Blackburn, and Hawley.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. Good morning. The Committee meets this morning to receive testimony on the plans and programs of the Department of the Air Force in review of the fiscal year 2023 President's Defense Budget Request.

I would like to welcome our witnesses: Mr. Frank Kendall, Secretary of the Air Force; General Charles Brown, Chief of Staff of the Air Force; and General John Raymond, Chief of Space Operations. We are grateful to the men and women of the Air Force and Space Force for their service, and to their families for their continued support.

President Biden's defense budget request for fiscal year 2023 includes approximately \$234 billion in funding for the Air Force, an increase of \$13.5 billion from the fiscal year 2022 enacted budget. In preparing this budget request, the Air Force faced difficult decisions in balancing the need to modernize and keep technological advantage over near-peer competitors against the need to support ongoing operations around the world. The budget before us aims to maintain that balance by increasing funding to address readiness concerns while also funding technologies for the future fight and modernizing our strategic deterrent capability.

The budget request for the Air Force would include additional investments in capabilities such as Next Generation Air Dominance, the B-21, Long-Range Stand-Off Weapons, hypersonics, and Air and Ground Moving Target Indication. These changes are part of

continuing to implement General Brown's strategic vision of "Accelerate Change or Lose." During today's hearing I hope we will hear more on the programs that have received increased emphasis under the Chief's vision.

The budget request also proposes to retire or realign various elements of the Air Force, with a net reduction of roughly 370 aircraft in fiscal year 2023. This would include reducing or altering the force structure for A-10s, F-16s, F-15s, F-22s, C-130s, KC-135s, KC-10s, JSTARS aircraft, AWACS aircraft, and MQ-9 Reaper remotely piloted aircraft. Any proposal of this sort deserves our careful consideration. I hope the witnesses will provide the Committee with reasoning for the proposed retirements and realignments within this budget request and assures that any decisions are well thought out before disruptions to the force structure begin.

We will have to evaluate these proposals against the backdrop of the conflict in Ukraine. First, this conflict causes many of us concern about retiring weapons systems that could actually be required in the very near term. Second, we need to be sure that we maintain or increase our stocks of munitions, spare parts, and other elements of the sustainment portfolio to ensure we are sufficiently prepared to deter any aggressors. Third, we need to evaluate our domestic industrial base to avoid making short-sighted decisions that could harm our Nation's ability to provide for our defense. I am interested to know your thoughts on these matters, as well as your plans to improve shortfalls within the pilot and maintenance personnel communities.

Turning to the Space Force, Congress established the Space Force with the purpose of consolidating numerous space activities in the Department of Defense (DOD). General Raymond, I would like to know how you are growing the service in terms of personnel. I am also interested in an update on how you are normalizing operations within the larger Department of Defense, including progress on the merging of the Space Development Agency into the Space Force by October 1, 2022.

With regard to space warfighting capabilities, section 1602 of the Fiscal Year 2022 National Defense Authorization Act required the Secretary of Defense to designate the Chief of Space Operations as the force design architect for future satellite constellations of the armed services. It is critical for the Space Force to design its warfighting objectives in the same way the Chief of Naval Operations designs our Navy fleets and the Chief of the Air Force designs our air posture. I will want to know your progress toward that objective.

Finally, now that the Space Force is up and running, it is important to present a trained force with substantive capabilities to the combatant commands. One of the capabilities for the combatant commands now under discussion is tactical space intelligence, surveillance, and reconnaissance, ISR. This is a new operating domain for the Defense Department, and I would ask the witnesses to discuss what resources they believe are needed to ensure its success.

Secretary Kendall, General Brown, and General Raymond, thank you again for appearing before our committee and I look forward to your testimony.

With that let me recognize the Ranking Member, Senator Inhofe.

STATEMENT OF SENATOR JAMES INHOFE

Senator INHOFE. Thank you, Mr. Chairman. I join you in welcoming our three witnesses today.

I will get right to it. I have reviewed the new 2022 National Defense Strategy, and I have examined the budget. I have attended multiple threat briefings—Secretary Kendall, I was sorry to miss one of yours but I made all the rest of them—and they did not paint a very optimistic picture of what we are faced with.

So, I do not understand how this Air Force budget even begins to resource the strategy. First, inflation is the new sequestration. It is destroying your buying power, and the salaries of your servicemembers. That is definitely true in 2022, and probably true in 2023.

Second, there is simply not enough in this budget to reverse the trends we hear about in classified sessions. That is particularly true over the next 5 to 7 years. This budget divests 1,500 aircraft and buys 500. You know, the math does not work out.

Let us take one example. The budget retires almost 31—well, there are 31 total of the AWACS of which 31 are in Oklahoma and I think some are forward deployed, maybe 5 or 6, and that is one example of where we are right now, and when the replacement will not come online until 2027. I have always been in favor of divesting aircraft when it makes sense and we can mitigate the risk. But we are not mitigating the risk unless we move much, much faster than we are moving today.

I appreciate your decision to pursue a sole-source of the E-7 Wedgetail. I look forward to working with you to use existing authorities to get this critical capability as soon as possible.

Another, this budget buys only 33 F-35As, the lowest since sequestration. These Block 4 aircraft will be the cornerstone of our fleet, new allies and partners are joining the program, and our commanders and pilots tell us they love the aircraft and they love to fly it.

We are still buying multiple air munitions at very low rates. We are buying tankers at very low rates, despite concerns about contested logistics. I could go on and on, but you get the idea.

Just to be clear, I am not blaming you. The three witnesses today, they are not to be blamed on this. I do not want that to be misunderstood. This is what is happening when you get an arbitrary topline, when the budget just does not match the strategy. It is not strategy-based budgeting.

There are bright spots in the Air Force budget. Nuclear modernization is proceeding well. The B-21 and Next-Generation Air Dominance are significant success stories. But most of the bright spots share one thing in common. That is they are 10 years away.

I am proud of what the Space Force has been able to achieve with real budget growth since its standup. We find they are moving a fleet to meet the threat in space.

Now here is something that was significant because we could go today. We had a hearing here in this chamber and we had David Berteau. I am going to use this quote as often as I can to remind people, we can sit around and talk about what I just did in an opening statement, but when it gets down to it, though, we really should be talking about what China is doing.

His quote, David Berteau, a week ago today, said, "It takes today 3 years to do what China can do in 3 days in terms of deciding, resourcing, and getting started on something that needs to be done, particularly bringing new technology into play." That is a significant thing here. You know, how far behind we are, we are getting further behind, and I think we discussed why this is happening, and this is the thing that we need to be addressing.

Thank you, Mr. Chairman.

Chairman REED. Thank you very much, Senator Inhofe.

Now let me recognize Secretary Kendall. Secretary Kendall, please.

**STATEMENT OF THE HONORABLE FRANK KENDALL III,
SECRETARY OF THE AIR FORCE**

Mr. KENDALL. Thank you, Chairman Reed, Ranking Member Inhofe, and Members of the Committee. I am honored to have General Brown and General Raymond join me in representing the nearly 700,000 airmen and guardians that defend our Nation. We are all thankful for your consistent support over the years.

Speaking in 1940, General Douglas MacArthur said the following: "The history of failure in war can almost be summed up in two words: too late. Too late in comprehending the deadly purpose of a potential enemy, too late in realizing the mortal danger, too late in preparedness, too late in uniting all possible forces for resistance, and too late in standing with one's friends."

I believe MacArthur made this comment after France fell to Nazi Germany and their aggression but before the attack on Pearl Harbor drew the United States into a war in Asia, a time that, in some ways, may be analogous to our own.

What my colleagues and I are trying to do, and what we need your help with, is to ensure that America's Air and Space Forces are never too late in meeting our pacing challenge, which is China. We are also concerned about the now obvious and acute threat of Russian aggression.

Many of you have heard the China threat briefing that we presented. It lays out China's efforts to develop and field forces that can defeat our ability to project power in the Western Pacific. China is also significantly increasing its nuclear weapon inventory and working to field long-range strike capabilities that can put our Homeland at risk.

Today we will say more about how the Department of the Air Force is responding to that threat through our fiscal year 2023 budget and through future budgets. Our budgetary submission provides a balance between the capabilities we need today and investment in transformation required to address emerging threats. With the requested budget, the Air and Space Forces will be able to support our combatant commanders in the continuing campaigns that demonstrate our resolve and support and encourage our allies and partners around the world. Simultaneously, our fiscal year 2023 budget represents a significant early step in the transformation of the Air and Space Forces to the capabilities needed to provide enduring advantage.

An important feature of our budget request is a substantial increase in research and development funding. This investment is a

down payment on production and sustainment investments and hard choices that are yet to come.

We are comfortable with the balance struck in this budget submission. We also want to ensure the committee understands that hard choices do lie ahead at any budget level. In this request we are asking for divestiture of equipment that is beyond its service life, too expensive to sustain, and not effective against the pacing challenge. These divestitures are necessary to provide the resources required to transform the Department of the Air Force to support integrated deterrence. We appreciate the committee's support for the divestitures requested last year, and we ask for your support for these we are requesting this year and those in the future.

Change is hard but losing is unacceptable, and we cannot afford to be too late.

The work we have ongoing in the Department of the Air Force to define the necessary transformation is focused on seven operational imperatives, each of which is associated with some aspect of our ability to project power. As of today there should be no doubt that great power acts of aggression do occur, and equally no doubt of how devastating they can be to the victims of that aggression and for the global community.

First, if the Space Force is to fulfill its mission of enabling and protecting the Joint Force we must pivot to transformational space architectures and systems. In fiscal year 2023, we are asking for funding to begin the transformation to resilient missile warning and tracking and to resilient communications networks.

Second, we must integrate and officially employ Air and Space Forces as part of a highly lethal Joint Force to advance battle management system, or ABMS. This budget continues funding for the early increments of ABMS and the ongoing work that will define the additional investments the Department needs to cost-effectively modernize our command control of communications and battle management networks.

Third, to defeat aggression we must have the ability to hold large numbers of air and surface targets at risk in a time-compressed scenario. This budget funds the E-7 Wedgetail as an interim AWACS replacement, while supporting work to define the transformation to a resilient combination of air and space intelligence, surveillance, reconnaissance, and targeting systems.

Fourth, our control of the air is being challenged and we must proceed to an affordable, next-generation air dominance family of systems. The budget increases funding for the NGAD [next-generation air dominance] family of systems to include a sixth-generation crewed platform, and an uncrewed, unmanned combat aircraft.

Fifth, you must have resilient forward basing for our tactical air forces. This budget continues funding for agile combat employment in both the Indo-Pacific and European regions, while we define the most cost-effective mix of hardening, active defense, deception, and dispersion.

Sixth, we must ensure the long-term viability and cost-effectiveness of our global strike capability. This budget begins the transition of the B-21 from development to production, and it continues the work to define a more extensive global strike family of systems that also includes uncrewed aircraft.

Finally, the Department of the Air Force must be fully ready to transition to a wartime posture against a peer competitor. In particular, we must strengthen our cybersecurity and our resilience against attack on the information systems and facilities that we depend upon to go to war.

Members of the Committee, I look forward to your support as we work to ensure that America's Air and Space Forces are never too late. One team, one fight.

We absolutely look forward to your questions.

Chairman REED. Thank you, Mr. Secretary.

Let me now recognize General Brown, please.

**STATEMENT OF GENERAL CHARLES BROWN, CHIEF OF STAFF
OF THE AIR FORCE**

General BROWN. Good morning, Chairman Reed, Ranking Member Inhofe, and Distinguished Members of this Committee. It is an honor to appear before you and represent the 689,000 total force airmen serving today. Thank you for your continued support to our airmen and their families.

I appreciate the opportunity to be here today with Secretary Kendall and General Raymond to testify on the fiscal year 2023 budget submission, a budget that continues to accelerate the Air Force's rate of change to address the security challenges articulated in the National Defense Strategy, a budget that continues to build on the successes of fiscal year 2022.

The United States Air Force is a leading example. Our airmen make air power look easy. It is anything but. A world-class Air Force requires world-class airmen that are organized, trained, and equipped to remain the world's most respected Air Force. But if we do not continue to transform this may no longer be the case. We must continue to communicate and collaborate with this committee and key stakeholders so we can accelerate change.

Last year's budget communicated the Air Force the Nation needs for 2030 and beyond. Our message has not changed for fiscal year 2023, and it will not change in future budget submissions. We must modernize to counter strategic competitors. The PRC [People's Republic of China] remains our pacing challenge and Russia remains our acute threat, so we must balance between the demands of today and the requirements of tomorrow. Failure to do so puts our ability to execute the National Defense Strategy at risk. It puts soldiers, sailors, marines, guardians, and airmen, along with allies and partners, at risk. It puts our ability to place air power anytime, anywhere at risk.

The only way our Air Force and the Nation will be successful balancing risk between today and tomorrow is if we collaborate. In fact, collaboration is the critical work in "Accelerate Change or Lose." We are beginning to see the success of our collaboration efforts towards transitioning to the future.

This year's budget brought substantial increases to research and development, focused on placing meaningful military capability into the hands of airmen. Investments in systems and concepts allow Air Force to penetrate and dominate in any scenario. This is as important as our investment efforts. We have been successful begin-

ning to divest systems that are increasingly irrelevant against today and tomorrow's threats.

We did not do this alone. Support of Congress is much appreciated.

Accelerating change is the impetus behind the Department of the Air Force's operational imperatives. This means moving with a sense of urgency and doing so in the right direction. This year's National Defense Strategy provides us the needed direction, and when you combine the operational imperatives in the National Defense Strategy you see this year's budget is an alignment with what our Nation demands of our Air Force.

The Air Force we are building is critical to integrate deterrence, campaigning, and building enduring advantages. Because nuclear deterrence is the backstop of any deterrence, this year's budget ensures our nuclear portfolios are fully funded. Current events are emblematic of how our Air Force is campaigning. We deployed Air Force assets within days, shared vital information, and increased interoperability with our allies and partners.

Finally, the Air Force is investing in enduring advantages that allow us to defend the Homeland, project air power globally, and operate as joint allied and partner force. More than anyone, I want tomorrow's airmen to be ready to respond when our Nation calls. This includes investing in programs that allow all of our airmen and their families to reach their full potential.

As the United States Air Force celebrates its 75th anniversary this year, we are committed to remaining the world-class Air Force America can be proud of. Current events demonstrate the world is growing more complex and uncertain. I am certain we will need air power anytime, anywhere, I am certain this year's budget is another step towards transformation of our Air Force, and I am certain there is still more work to be done. Therefore, we must continue to communicate and collaborate so we can accelerate change.

Thank you for the opportunity to be with you today, and I look forward to your questions.

Chairman REED. Thank you, General Brown.

General Raymond, please.

STATEMENT OF GENERAL JOHN RAYMOND, USSF, CHIEF OF SPACE OPERATIONS

General RAYMOND. Chairman Reed, Ranking Member Inhofe, and distinguished Members of the Committee, it is an honor to appear before you today with Secretary Kendall and General Brown, and I am privileged to be part of this leadership team. On behalf of the almost 14,000 guardians stationed around the world, let me begin by thanking you for your continued leadership and your strong support of our guardians and their families.

As we testify before you today, we find ourselves at a strategic inflection point where we are faced with an acute threat from Russia and a pacing challenge from China. The Russian invasion of Ukraine has showcased the importance of space to all instruments of power. Information derived from space, including commercial imagery, has been instrumental in dominating the information environment, communicating with forces, detecting missile threats, and sharing intelligence amongst allies and partners.

It is clear that the character of war has changed and space is foundational to that change. However, Russia's recent direct-ascent, anti-satellite missile test in November is just the latest evidence of efforts to deny our Nation the advantages that space provides.

Just as concerning, our pacing challenge, China, is integrating space into their military operations to detect, track, target, and strike the Joint Force, putting our soldiers, sailors, airmen, marines, and guardians on the ground, in the air, and on the sea at high risk. We cannot allow potential adversaries to gain an unchallenged ability to conduct space-enabled attacks. Our Joint Forces will remain at risk until we can complete the transformation to a resilient architecture and protect the Joint Force from space-enabled attacks. This is critical to supporting all aspects of the National Defense Strategy, integrated deterrence campaigning, and building an enduring advantage.

To remain the world's leader in space this President's budget request prioritizes space and invests \$24.5 billion to ensure our assured access to and freedom to maneuver in space. The largest share is in research, development, testing, and evaluation funding, almost \$16 billion, to modernize our forces, a portion of which will begin the pivot to a more resilient and mission-capable missile warning and missile tracking force design.

Notably, this includes funding for the Space Development Agency, which is included in the Space Force budget for the first time this year, and sir, it is on track to transition into the Space Force on 1 October of this year.

In contrast to legacy approaches, this architecture will be built to survive and degrade gracefully under attack, help manage escalation, and be rapidly reconstituted. This transformation will allow us to capitalize more fully on two of our national advantages: our commercial industry and our allies and partners.

To increase readiness we are funding operational test and training infrastructure. This ensures that we can get the right capability on orbit and in the hands of operators trained and operating in a contested domain. Robust test and training capabilities are also critical to fielding our next generation of modernized systems.

Other key investments include increased funding for weapon system sustainment, a more resilient global positioning system, and the next generation of satellite communications.

Finally, and most importantly, we invest in our guardians and their families. Over the past two years we have overhauled how we recruit, assess, train, develop, promote, employ, and take care of our guardians. Resilient space power is not just about satellites. It is also about guardians. This is one of the reasons we are seeking the integration of Active Duty and Reserve forces into a single, hybrid component. This space component is central to our human capital plan and will allow us to best align our full-time and part-time members. This is our number one legislative proposal, and we look forward to working very closely with this committee to implement this bold and transformational approach.

As Secretary Kendall has mentioned, change is hard and losing is unacceptable. The transformation we are beginning now is essential to protecting the Joint Force and to the security of space.

Thank you again for your leadership and support for our Space Force. It is an absolute honor to appear before you, and I look forward to your questions.

[The joint prepared statement of The Honorable Frank Kendall, General John W. Raymond and General Charles Q. Brown, Jr. follows:]

JOINT PREPARED STATEMENT BY THE HONORABLE FRANK KENDALL, GENERAL JOHN W. RAYMOND AND GENERAL CHARLES Q. BROWN, JR.

DEPARTMENT OF THE AIR FORCE INTRODUCTION

The Department of the Air Force, in line with the Department of Defense, recognizes the rapidly evolving, global environment and the complex challenges it presents. The Department of the Air Force provides unique competencies and capabilities to achieve our national security priorities to defend the Homeland, deter any strategic attacks, deter aggression and be prepared to prevail in conflict, and build a resilient joint force. We will advance these priorities through integrated deterrence, campaigning, and building enduring advantages. Among those priorities, the greatest challenge to the Department of the Air Force's ability to perform its missions is the People's Republic of China's (PRC) long-standing and extensive military modernization program. While the PRC remains the Department's pacing challenge, recent events in Eastern Europe highlight that Russia also remains an acute threat. Additionally, the Democratic People's Republic of Korea, Iran, and violent extremist organizations are persistent threats that will continue to exploit opportunities to further their interests. Beyond state and non-state actors, transboundary challenges, such as climate change, also demand attention as they transform the strategic context in which we operate.

The Department of the Air Force organizes, trains, and equips as part of a joint and combined team. While focused on the PRC—our pacing challenge—the Department provides forces that enable our country to meet the challenges associated with the full range of national security threats. “One Team, One Fight” is more than our mantra; it is a guiding principle. The Department of the Air Force encompasses two Services, united with shared infrastructure, complementary skills, resources, competencies, and goals. Our capabilities underwrite the design of the joint force, support every combatant command, enable every instrument of national power, strengthen our allies and partners, and enhance the security and prosperity of every American.

Meeting our obligations to the Nation and the joint force demands we accelerate the transformation from the force we have today to the one needed to meet our pacing challenge. The risks we must address are increasing over time, in both strategic and conventional defense. This evolving strategic landscape requires us to balance risk by investing in the more capable and lethal future force the Nation needs to more effectively counter current and emerging threats. This transition is just beginning; achieving it will require trade-offs between maintaining capabilities to address combatant commands' current needs while accelerating vital modernization efforts for success in high-end conflicts. These investments have been prioritized to focus on key contributors to military advantage. fiscal year 2023 marks the next step of a much larger journey. Continuing progress is essential but will become increasingly challenging over time. Change is hard. It is hard politically, culturally, technologically, and institutionally. Still, we must make the needed transition; we must make tough choices; we must accept prudent risk; and we must get it right, or we will lose.

One challenging step we are taking in the fiscal year 2023 budget is to make relatively modest short-term changes to the mix of capabilities and capacity of our air and space assets; this will drive limited divestments in fiscal year 2023. The aircraft we seek to retire are respected platforms that have served us well and whose capabilities were invaluable on yesterday's battlefields. However, they are not well-suited for today's contested environments or tomorrow's high-end conflicts. They do not give our competitors cause for concern, are aging and increasingly costly to maintain, and do not provide our joint force the capabilities to deter—and if called upon—to fight and win against pressing threats. Any budget is finite, and forced resourcing of outdated systems jeopardizes our ability to guarantee air and space superiority in the future. We must balance the risk associated with retiring older platforms in order to onboard new, necessary technologies and capabilities. This will allow us to ensure the United States maintains sufficient military advantage to se-

cure our vital national interests and support our allies and partners. In addition to eliminating the expense of maintaining outdated platforms, these divestments allow our most valuable resource—our people—to transition to capabilities that provide an enduring advantage. Providing our airmen and guardians with the tools they need to prevail is our most sacred obligation.

Last year, Congressional support enabled us to initiate this transition to better confront our pacing challenge. Congressional approval to begin retiring outdated fighter, tanker, cargo, and command and control aircraft, and to begin updating our space architecture, allows us to start investing in the necessary capabilities we require to win future conflicts. While the Department of the Air Force remains grateful for past and future Congressional support, we continue to face burdensome restrictions on structural changes year after year, impeding the development of a more modern, operationally relevant force that the Nation requires. We need continued Congressional collaboration and support to ensure deterrence and, if needed, victory.

This year, the Department of the Air Force, powered by approximately 700,000 airmen and guardians, celebrates 75 years of air and space dominance. This milestone was achieved through the dedication and sacrifice of generations of Total Force members who served our Department throughout its rich history. Their legacy is foundational to this incredible Department and continues to be honored by those who serve today. Our team of military and civilian Active, Guard, and Reservist airmen and guardians all contribute to our Nation's air and space security. These brave, inspiring Americans provide great hope for the future of our Department and our Nation by ensuring the high ground always belongs to the United States.

Airmen and guardians are our competitive advantage, and the Department of the Air Force is creating a future force with the human-capital capabilities and competencies required to win. We must continue to maximize opportunities for all members to serve to their fullest potential. We remain committed to building a culture of respect, where sexual assault and harassment are not tolerated in any form. We will do this by supporting victims and prosecuting offenders through the Uniform Code of Military Justice and reinforcing the Department of Defense's implementation roadmap to employ the recommendations of the Independent Review Commission on Sexual Assault and Sexual Harassment. Additionally, the Department will continue to confront racial, ethnic, and gender disparity, interpersonal violence, and suicide, all of which erode morale, hinder our airmen and guardians' ability to achieve their full potential, and degrade our ability to execute our missions. Furthermore, we will continue to highlight successful diversity and inclusion initiatives, ensuring all of our personnel understand and contribute fully to our collective strength. Dedicated, talented, and selfless Airmen and Guardians enable our success, and they must all be valued, supported, and empowered to reach their full potential so they can make the maximum possible contribution to the Department's readiness.

While fiscal year 2023 fully budgets for the strategic deterrent recapitalization as well as Homeland defense-oriented systems, the Department of the Air Force has evaluated the threat landscape and determined that additional modernization efforts are required to address seven conventional warfare operational imperatives. The former AF/A9 element of the Air Staff has been transferred to the Office of the Secretary of the Air Force and redesignated as the Department of the Air Force Studies and Analysis Office (DAFSA). DAFSA will provide analytical support to each of seven imperatives. These seven imperatives focus our efforts and lay the framework for this and subsequent budgetary requests. They also reflect the conventional warfare priorities of the Department of Defense and the Department of the Air Force. Our current capabilities in each of these areas will not be adequate to address emerging threats, and hard choices in future budgets will almost certainly be necessary.

First, the Department of the Air Force must define and resource a resilient, effective space order of battle that ensures our terrestrial forces have the support from space on which they depend. At the same time, we must deny any potential adversary the operational services they expect to receive from space, especially the ability to target key elements of the joint force. Space is a warfighting domain and contested environment today, and it will only become more so in the future. In the fiscal year 2023 budget, we begin the transition to more resilient communications and missile warning architectures. The Department of the Air Force is also currently working with the Intelligence Community and others to define joint solutions to our intelligence, operational surveillance, and reconnaissance needs.

Second, we must achieve an operationally-optimized Advanced Battle Management System (ABMS) as the Department's primary contribution to Joint All-Domain Command and Control (JADC2). The fiscal year 2023 budget continues funding for

early increments of ABMS. Ongoing work will define additional future investments that are needed to most cost-effectively modernize the Air and Space Forces Command, Control, and Communications Battle Management networks and to integrate those networks with the joint and combined force.

Third, achieving Moving Target Indication (MTI) and tracking of surface and air threats at scale in a challenging operational environment is a necessary step in any JADC2 or ABMS system. Existing systems, principally Airborne Warning and Control System (AWACS) and Joint Surveillance Target Attack Radar System (JSTARS), are aging and increasingly vulnerable to advanced threats, as are uncrewed systems designed for permissive environments. The fiscal year 2023 budget provides funding to acquire an interim AWACS replacement while ongoing analysis will define the optimal mix of air-based and space-based ground and aerial MTI systems and architectures. These systems must be able to find and track high-priority mobile targets in the air, on the sea surface, and on the ground in contested environments. The ability to hold larger numbers of targets at risk in a time-compressed scenario is essential to conventional deterrence and defeating aggression.

Fourth, both threat developments and affordability concerns dictate that the Air Force proceed to develop and field a Next Generation Air Dominance (NGAD) family-of-systems. This family-of-systems will include a sixth-generation crewed platform, as well as uncrewed combat aircraft and a cost-effective mix of sensors, weapons, and communications systems. Several years of technology maturation have led the Department of the Air Force to conclude that crewed-uncrewed teaming for air dominance and other tactical missions is within reach. The NGAD core crewed platform is funded for development in the fiscal year 2023 budget, and the work to define other elements of this family-of-systems has been initiated.

Fifth, we must define and resource cost-effective, resilient forward basing for our tactical aircraft. The last decades of conflict saw our airfields operating with comparably little interruption or threat, but the PRC has invested extensively in precise long-range ballistic and cruise missiles that threaten our forward air bases. Their investments into hypersonic weapons, which are much harder to defend against, further threaten our forward bases. This budget continues funding for Agile Combat Employment (ACE) in both the Indo-Pacific and European regions while work is ongoing to define the most cost-effective mix of hardening, active defense, deception, and dispersion activities. This includes necessary mobile logistics or prepositioned assets required to sustain operations. All our investments in tactical airpower depend on our success at achieving resilient forward basing.

Sixth, our global conventional strike capabilities will be built around the B-21 Raider and associated family-of-systems. The fiscal year 2023 budget fully funds the B-21 for continued development and the initiation of production. The Department of the Air Force is working to determine an affordable family-of-systems that will be associated with the B-21 and include uncrewed combat aircraft with comparable range. Like NGAD, the B-21 is envisioned to operate as part of a more extensive set of systems with significantly more operational performance than the B-21 alone.

Seventh, to provide effective integrated deterrence, the Department of the Air Force must be fully ready to expeditiously transition to a wartime posture. We must be ready to mobilize against a peer competitor who has spent decades researching and developing the means to attack the systems and infrastructure we depend on to go to war through cyber and non-cyber means. This budget includes resources to modernize and harden our existing information systems. Ongoing work will define additional steps that should be taken to deter and defeat cyber and other attacks on our information systems and logistical infrastructure.

In summary, the Air Force and Space Force fiscal year 2023 budgets balance the risks of maintaining current readiness to support combatant commands today with the need to develop and deliver the force needed for tomorrow. In the following sections, we discuss how the Space Force and Air Force will balance these risks from the perspectives associated with the goals of integrated deterrence, campaigning, and building enduring advantages. This budget and our ongoing efforts lay the groundwork for the tough choices we expect to face next fiscal year and beyond. The Department of the Air Force has undergone historic transitions through our rich, 75-year history, and we are in the infancy of another historic change now. This change will ensure we maintain our ability to deter and, when necessary, defeat those who seek to prevent our Nation and our allies and partners from being secure, prosperous, and free. Change is hard—losing is unacceptable. “One Team, One Fight.”

UNITED STATES SPACE FORCE

The United States Space Force and its capabilities underwrite all instruments of national power and enable the joint force to operate effectively. The joint force cannot succeed without space capabilities. Spacepower is a source of our Nation's strength both at home and abroad and provides socioeconomic benefit to all Americans, an expanding network of allies and partners, and the global community. Access to and use of space are vital national interests, and space capabilities provide critical data, products, and services that drive innovation in the United States and around the world. Our pacing challenge, the PRC, understands the importance of space and is acquiring the space systems and counter-space systems to hold our interests at risk and defeat us in conflict.

Uninterrupted use of space and protection from adversary counter-space operations are foundational to the design and function of the joint force. Historically, precise missile warning and the ability to attribute the source of the threat helped deter missile strikes on the homeland; high-resolution satellite imagery allowed the joint force to revolutionize the speed and sophistication of target development; precision navigation, enabled by the Global Positioning System (GPS), revolutionized weapons accuracy and the efficiency of munitions; and satellite communications (SATCOM) enabled over-the-horizon power projection, which is essential to deterring aggression. It is not hyperbole to say the joint force cannot prevail without space. The United States also cannot allow potential adversaries to gain an unchallenged ability to conduct space-enabled attacks on our joint forces and terrestrial interests.

The United States is the world's premier space power, and our military capabilities enable the joint force to succeed, but this position is being challenged as never before. The PRC and Russia understand the unique advantages that spacepower provides and have demonstrated the willingness and ability to attack space capabilities and endanger peaceful use of the domain. The November 2021 Russian anti-satellite missile test, whose debris continues to threaten all nations' space assets, is just the latest of many irresponsible counter-space weapon demonstrations by both the PRC and Russia. Both competitors are researching, developing, and fielding the space and counter-space systems needed to defeat the joint force. In addition to developing the ability to attack in space, the PRC has integrated space capabilities into its military operations in order to target maritime, air, and land forces and project power through space. The PRC's 2021 test of an orbital hypersonic glide vehicle constitutes a new challenge to strategic deterrence and stability. Further, in its invasion of Ukraine, Russia maintains the ability to deploy and employ a wide range of ground-based electronic warfare capabilities to counter GPS, tactical communications, SATCOM, and radars.

The Space Force must take urgent action to meet growing threats to vital national interests and to strengthen deterrence. This budget represents the beginning of an unprecedented transformation from a few exquisite space systems to more capable, resilient, and defensible architectures comprised of a diverse and distributed mix of capabilities.

SPACE FORCE'S ROLE IN INTEGRATED DETERRENCE

Integrated deterrence starts with space. The Space Force provides the joint force and our allies and partners critical services that are essential to integrated deterrence and effective defense. Unique services such as missile warning, positioning, navigation and timing, communications, and space-enabled intelligence, make the United States a valued security partner. Deterrence has long depended on assured missile warning and the ability to communicate with strategic forces in all circumstances. The Space Force delivers unmatched capability in these missions today and is developing the next generation of capabilities to meet mission requirements in the future.

Next Generation Overhead Persistent Infrared provides critical tactical and strategic ballistic missile warning and acts as a bridge from legacy detection and warning to the more robust missile tracking needed to counter modern, maneuverable threats. The transition towards resilient, proliferated architectures will extend to other mission areas, including battlespace awareness and space-based intelligence. In addition to our ability to provide warning and tracking of modern threats, the Evolved Strategic Satellite Communication system will ensure the ability to command and control strategic forces despite attack.

Space provides an asymmetric advantage in military operations. The joint and combined force cannot succeed in conflict against a space-capable adversary without the ability to gain and maintain space superiority. Potential adversaries are actively developing and fielding systems intended to deny the use of space in conflict. By

denying the potential for a sudden decisive attack in space, the Space Force bolsters integrated deterrence across all domains. Beginning in fiscal year 2023, the Space Force's transformation to resilient architectures is purpose-built to deny an adversary's ability to acquire an advantage through an attack on a few fragile, high-value space assets. This new design approach enhances capability and resiliency through distributed systems proliferated across multiple orbits. Taken together, these features measurably increase deterrence of the full spectrum of advanced threats.

The first mission area to undergo this transformation is the Missile Warning/Missile Tracking architecture. The fiscal year 2023 investment in this transformation implements a force design developed by the Space Warfighting Analysis Center (SWAC). Supported by a multi-agency collaboration, the Space Force is building upon the Overhead Persistent Infrared Enterprise Architecture Strategy to deliver architecture capabilities that can be protected, survive attack, degrade gracefully under attack, and be rapidly reconstituted. In conjunction with our network of allies and partners, the transformation to resilient architectures communicates to the world that our joint combat credible forces, in space and terrestrially, will continue to sustain operational advantages through all domains and phases of conflict.

Space Domain Awareness (SDA) is essential to attributing bad behavior in space as well as tracking objects in orbit, launch attempts worldwide, and active payload deliveries, and, if necessary, controlling space assets during a conflict. Fiscal year 2023 investments, such as the Deep Space Advanced Radar Capability, will deliver continuous, all-weather radar capabilities for deep-space object tracking. Additionally, Deep Space Advanced Radar Capability will enhance the Space Force's ability to track foreign launches, from liftoff to final destination, and improve the ability to observe the behavior of existing and emerging threats. In addition to supporting the transfer of the space traffic management mission to the Department of Commerce, the Space Force increasingly uses SDA data, provided by allies and commercial companies, to improve awareness of the domain and distribute vital data to the joint force, interagency, allies and partners. By providing continuous assessments of potential adversary behaviors in space, the Space Force contributes to the range of measures available under the integrated deterrence concept.

Space can become a conflict zone at any stage of the possible transition from peace to unconstrained conventional or even nuclear warfare. Integrated deterrence spans this spectrum. The Space Force is in the process of transforming to a suite of capabilities that can deter across that spectrum, help to assure the security and support of our allies and partners, and, if necessary, transition to wartime operations. The fiscal year 2023 budget begins that transformation.

SPACE FORCE'S ROLE IN CAMPAIGNING

The Space Force strengthens and amplifies campaigning initiatives for the joint force, combatant commands, and allies and partners by delivering global services and effects that enable and enhance all joint and combined functions. The unique characteristics of the space domain provide a range of options for military operations, response to gray zone challenges, and peacetime influence operations. Furthermore, space leverages its inherently global coverage to support all combatant commands as well as our allies and partners. The Space Force also supports the campaign to ensure the peaceful use of space, supports appropriate international behaviors in space, and works closely with the National Space Council to further interests in security as well as peaceful commercial and scientific uses of space.

Last year, the Secretary of Defense issued Tenets of Responsible Behavior in Space to establish foundational criteria under which the application of military spacepower complements, rather than competes with, the growing civil and commercial use of space. New capabilities, including those intended to protect national interests in space, must strengthen American leadership as well as foster a secure, stable, and sustainable space domain open to all responsible actors.

Our ability to use space effectively at all times starts with assured access. The Space Force's National Security Space Launch (NSSL) program has delivered an unprecedented record of 90 successful launches stretching back to 2002. The NSSL program has achieved commercial-like pricing for routine missions and reduced overall launch costs by half. This budget ensures our NSSL launch capacity requirement to place new capabilities in orbit. While there are fewer NSSL missions than last year, our investment is right-sized to manifest requirements, and it does not reflect a drop in capacity or space operations. Additionally, the Space Force is utilizing the four remaining Atlas V launch vehicles, effectively eliminating dependency on the Russian RD-180 engine moving forward. The Space Force's launch infrastructure is another critical element of our transformation. The Range of the Future vision enables us to keep pace with the accelerating United States space launch

market and maintain safe and assured launch for commercial, civil, and Department of Defense users.

As a member of the Intelligence Community, the Space Force collects, analyzes, and delivers intelligence on threat systems, foreign intentions, and activities in the space domain in support of national leaders, the acquisition community, and joint warfighters, before and during all phases of conflict. The National Space Intelligence Center (NSIC) will focus this effort, provide the scientific and technical intelligence necessary to support threat-based requirements development, future space acquisition decisions, campaigning in support of deterrence, and defense of space systems from anti-satellite weapons, such as those being developed and demonstrated by the PRC and Russia. The Space Force will leverage NSIC to coordinate with the rest of the Intelligence Community, and our investments in full functionality of the NSIC will better inform threat-based requirements development and future acquisition decisions.

To ensure data transport in support of ABMS and JADC2, the Space Force, through the Space Development Agency, will deliver an initial space data transport layer that will enhance secure and resilient data access for joint force and allied users across the globe at all times. This data transport layer, based on a force design led by the SWAC, will be an integral element of JADC2, delivering assured, low-latency connectivity to the full range of warfighting platforms. This initiative supports another operational imperative driving ABMS towards an operationally optimized solution. At full strength, the space transport layer will consist of a constellation of satellites to provide seamless, assured global connectivity to warfighters.

GPS is the gold standard for positioning, navigation, and timing, used daily by billions of people around the globe. Navigation and timing systems depend on accurate, reliable, and highly-precise geolocation services in support of commercial and military activity. These capabilities are mission-essential for virtually every modern weapon system and critical for public safety and government services. This year's budget continues procurement of advanced GPS III follow-on satellites and emphasizes specific modernization efforts to improve the resiliency of GPS services. This includes anti-jamming, upgrades to military user equipment, and advanced cyber protection for the ground operating systems.

SATCOM enables global voice and data connectivity for Presidential support, Command and Control (C2), Intelligence, Surveillance, and Reconnaissance (ISR), and Nuclear Command, Control, and Communications (NC3). The Space Force is ensuring joint force SATCOM availability by operating a suite of mobile, wideband, and secure systems, and by investing in programs such as Protected Tactical SATCOM and the Protected Tactical Enterprise Service to deliver reliable joint force communications. Space Force also continues to enhance SATCOM effectiveness, efficiency, and resilience through the use of international partnerships, commercial SATCOM, various acquisition pathways, and the transfer of Army and Navy capabilities and programs.

The Space Force is also responsible for the continuous operation of over 50 legacy platforms. Even as Space Force embarks on a transformation, many legacy platforms must operate for years into the future. To ensure capabilities that were designed and delivered before space was recognized as a warfighting domain remain credible and viable, the Space Force is investing in additional cyber protection, evaluating select legacy systems for resiliency upgrades, and integrating space capabilities from a number of allies and partners. These investments ensure today's space capabilities are ready to support day-to-day campaigning in the near-term as the Space Force's modernization efforts pave the way to deliver new architectures that are resilient by design.

The services that Space Force provides enable the joint force and combined force to contribute to campaigning efforts that reinforce deterrence. The Space Force also directly supports campaigning by contributing some of those same services to allies and partners and by increasing the attractiveness of cooperating with, and operating in conjunction with, the United States. Equally important, the Space Force can support campaigning by providing increased levels of security to allies and partners through the potential to negate and, therefore, deter threatening space systems.

SPACE FORCE'S ROLE IN BUILDING ENDURING ADVANTAGES

Building the future Space Force also hinges on investment in diverse and highly talented Guardians—the core of the Space Force's enduring advantages. With this budget, the Space Force assumes responsibility for its own Military Personnel account from the United States Air Force, enabling it to more fully and effectively de-

velop and manage the incredible talent resident in the Space Force. The Guardian Ideal is the Space Force's foundational document outlining the Service's boundary-pushing, innovative approaches to talent management. This inclusive, modern, and holistic talent management approach incorporates work-life balance, resiliency, training, education, and individualized development. The Space Force also needs a force structure and resourcing approach capable of adapting to changing circumstances, quickly and effectively scaling on-demand to meet mission requirements. With Congressional support, creating a Space Component with full- to part-time fluidity for all uniformed members will give the Space Force the unique opportunity to achieve those objectives.

Space Force is advancing space education by embedding space curriculum into the Department of the Air Force's Basic Military Training, Non-Commissioned Officer academies, the United States Air Force Academy, Officer Training School, and Reserve Officer Training Corps. This ensures both guardians and airmen have a foundational understanding of the space domain and its importance. Additionally, dedicated, space-centered education within officer and civilian intermediate- and senior-level professional military education programs drives long-term strategic thought and builds the technical leaders of tomorrow.

To address the operational imperative on transitioning to a wartime posture against a peer competitor, the Space Force must ensure readiness for that contingency. Currently, the Space Force is inadequately equipped to train for a high-end fight. Readiness requires education and training to equip Guardians with the knowledge, skills, and tools necessary to operate and prevail against a determined adversary with a diverse array of threat systems. To meet this need, this budget begins the transformation of the legacy Operational Test and Training Infrastructure and expands the National Space Test and Training Complex as the premier venue to develop warfighting space capabilities. This will include developing live, virtual, and constructive environments where Guardians can train against a professional, doctrinally sound, and threat-representative aggressor force. This training will be applied, tested, and validated by Space Flag, Red Flag, and various joint, allied, and partner exercises.

To further improve the joint force's enduring advantage, the Space Force, together with the Intelligence Community, is analyzing the Department of Defense's ISR requirements and examining national, commercial, allied, and partner ISR integration opportunities. By exploiting new technologies, commercial services, and distributed architectures, the space domain offers opportunities to provide greater capability to meet warfighter requirements while reducing operational risk. Under the operational imperatives, Space Force, in partnership with the National Reconnaissance Office, is also exploring options and opportunities to apply these solutions to the problem of moving target indication and tracking from space at scale.

Space Force needs a digital workforce with the skills to rapidly turn data into valuable insights. Digital fluency is foundational to being a Guardian, and, to improve that literacy, the Space Force provides Digital University access to every Guardian. The Space Force continues to build a cadre of organic software coders (known as "Supra Coders") with a plan to train 90 in 2023 and achieve a target inventory of over 200. These initial efforts will prepare Guardians to embrace the digital processes and technology required to innovate and increase effectiveness and efficiency against space operations threats.

A key aspect of digital transformation is digital engineering. The Space Force has made initial investments into an ecosystem where digital engineering will be conducted to manage the complexities of force design, requirements validation, weapon system acquisition, test and evaluation, training, and operations. These investments will accelerate and modernize the entire capability development lifecycle—from conception to deployment to operations. Further, data management is foundational to advancing capabilities. The goal of becoming the world's first fully digital Service is to deliver a force capable of winning a data-centric conflict and protecting the vital interests of the Nation, allies, and partners.

The Space Force is surging to address the first operational imperative of defining a resilient space order of battle that encompasses offensive and defensive capabilities by implementing a cost-conscious, threat-informed, data-driven force design process to define space architectures that will replace legacy, single-platform solutions built for a benign domain. The SWAC, working with DAFSA, is leading this transformational shift by analyzing thousands of possible architectures for each mission area and evaluating the performance, cost, and resilience of each to clearly define the threat, inform requirements, and increase transparency with potential solution-providers to expedite the delivery of capabilities. Space Force is adopting this approach across all elements of force design to ensure it can accelerate concept development, access the most cutting-edge science and technology, use digital engi-

neering, and integrate acquisition efforts, turning designs into fielded systems at the speed of need. This method also increases access to a more diverse base of satellite vendors and launch providers.

Through a unity of effort approach to acquisition of enduring advantages, the Assistant Secretary of the Air Force for Space Acquisition and Integration leverages the Program Integration Council to communicate and align efforts among senior leaders from the Space Systems Command, Space Rapid Capabilities Office, Department of the Air Force Rapid Capabilities Office, Space Development Agency, National Reconnaissance Office, Missile Defense Agency, United States Space Command, Space Operations Center, and the Air Force Research Laboratory. In conjunction with this process, the formal transfer of the Space Development Agency into the Space Force at the beginning of fiscal year 2023 will enhance the Space Force's ability to integrate innovative acquisition approaches and deliver new satellites and ground system prototypes into the operational baseline.

Technology and pacing threats are evolving at an ever-increasing rate, and achieving enduring advantages means the Space Force must undergo a transformation from current legacy systems to the architectures needed to be competitive. The Space Force is leveraging technology to deliver game-changing space capabilities and solidify an ecosystem through our University Research Consortium. Quantum technologies, counter-hypersonics, artificial intelligence/machine learning, and directed energy are several of the emerging technologies that are necessary to integrate into the Space Force architectures to stay ahead of potential adversaries.

UNITED STATES AIR FORCE

The United States Air Force remains integral to the Nation's defense and continues to lead the joint team by developing and deploying critical capabilities in support of Defense priorities. The Air Force does so through the execution of its mission statement: "Fly, Fight, and Win . . . Airpower Anytime, Anywhere." The Air Force brings unparalleled speed, agility, survivability, mobility, and strike to the joint fight while simultaneously providing command and control, reconnaissance, and deterrence capabilities. Simply put, no one else can do what the Air Force does, and without its capabilities, the joint force loses.

As the Air Force celebrates its 75th anniversary as an independent service this year, our airmen can look back and honor three-quarters of a century of pioneering. Since 1947, airmen have dutifully executed their mission successfully in the same way the airmen of today are called to do: "Innovate, Accelerate, and Thrive." Innovation, fueled by airmen, is the Air Force heritage. Airmen continue to push technological and cultural boundaries, making the Air Force the leader in airpower. For 75 years, the Air Force has kept pace with rapid changes in technology, modernizing platforms, and accelerating advancements in tactics with unprecedented success. Our Nation's airmen thrive as the world's greatest Air Force because of those who have gone before us—particularly those who weren't afraid to break barriers. This success was hard-fought to achieve, and it must be fiercely maintained into the future.

Maintaining the Air Force's role as the global leader in airpower requires us to Accelerate Change or Lose. In an environment of aggressive global competitors and technology development and diffusion, the Air Force must accelerate change to control and exploit the air domain while also underwriting national security through nuclear deterrence to the standard the Nation expects and requires. The necessity to Accelerate Change or Lose is the impetus behind the Department of the Air Force's operational imperatives, which are identifying the changes and investments needed to be successful. To best address these necessary changes, the Air Force must balance risk over time. The Air Force will develop and field new capabilities expeditiously while selectively divesting older platforms that are no longer relevant to our pacing challenge—all while maintaining readiness. The Air Force must ensure its path continuously drives toward readiness to be best prepared when called upon by the Nation. Accelerating change means both getting the direction right and moving as fast as possible.

In last year's budget submission, the Air Force began the process of making hard decisions to modernize the force. Last year's budget highlighted the Air Force the Nation needs for 2030 and beyond, and the message has not changed: the need to modernize is critical to counter strategic competitors. The Air Force is taking measured risks in the near-term while simultaneously prioritizing an affordable, defensible force structure that grows readiness over time and accelerates investment in critical capabilities to deter and defeat an advancing threat. Continued collaboration with Congress enables us to best execute the resources that protect the Nation and, in turn, secure vital national interests and backstop the security of allies and part-

ners. This process will not end with the fiscal year 2023 budget; additional difficult decisions will be required in the future.

The character of war continues to change. Advances in technology produce a combat environment that rewards speed, tempo, agility, lethality, and resilience. These have been hallmarks of the Air Force since its inception, and it takes the solemn task of building upon those attributes as part of the joint team very seriously. The Nation deserves and demands nothing less.

AIR FORCE'S ROLE IN INTEGRATED DETERRENCE

The Air Force plays a unique role in integrated deterrence as the Nation's leading and most agile choice for executing seamlessly across warfighting domains, theaters, and spectrums of conflict. The Air Force provides a range of combat-credible capabilities backed by a safe, secure, and reliable nuclear deterrent. As stewards of two-thirds of the nuclear triad and three-fourths of the Nation's NC3, the Air Force foundationally enables the Nation's nuclear deterrence for a stable international order. Relationships and connections with the interagency and allies and partners—whether in the Indo-Pacific with Japan, Australia, and the Republic of Korea or as demonstrated by current deployments in support of the North Atlantic Treaty Organization—are critical elements of integrated deterrence. Across the joint force, combatant commands, and allies and partners, Air Force airpower capabilities prove invaluable as demand consistently exceed supply. Through focused efforts to balance near-term risk, the Air Force is able to continue supporting these demands while accelerating investments in future capabilities.

Nuclear deterrence is a significant part of integrated deterrence. The United States' strategic deterrent provides the joint force, allies and partners, and the Nation security guarantees while deterring other nations' use of nuclear weapons. The nuclear deterrent can also serve as a deterrent to other strategic attacks on American and allied vital interests in general and provides critical reassurance to strategic allies. As the Service responsible for the majority of the Nation's nuclear capabilities, the Air Force's fiscal year 2023 budget continues investments and improvements to sustain and reinforce strategic deterrence.

Capable of providing prompt, overwhelming response, the ground-based leg of the nuclear triad is a critical capability for deterring peer adversaries and is fully funded in the fiscal year 2023 budget. To ensure this capability remains ready, the Air Force is modernizing with the Sentinel system, our Ground Based Strategic Deterrent (GBSD). Its on-time delivery is critical as the existing Minuteman III fleet ages and our pacing challenge is investing heavily to grow and modernize its nuclear arsenal. The PRC recently built more than 100 new intercontinental ballistic missile silos in its western desert. At the same time, Russia's nuclear modernization efforts are more than 80% complete, and Russian leaders publicly stated the nuclear forces were recently placed on high alert. The United States has delayed nuclear recapitalization as long as possible, and consistent investment in the Sentinel comprehensive weapon system is an absolute necessity.

The Air Force's nuclear-capable bomber force provides the second leg of the Nation's nuclear triad. The B-21 Raider represents the future of our bomber force. As the most flexible leg of the nuclear triad, the B-21 is a unique national security capability. This budget includes additions to continue Engineering and Manufacturing Development and support to nuclear certification. In support of the operational imperative, as the B-21 family-of-systems is defined, the Air Force will develop, test, and field the B-21 while pursuing the potential to introduce a lower-cost, complementary, uncrewed aircraft to provide an enhanced level of conventional capability. As the Air Force modernizes, it will continue the transition to a two-bomber fleet capable of nuclear and conventional weapons delivery through the B-21 and B-52. These modernized capabilities will provide global nuclear and conventional global strike options for decades to come.

The Air Force must continue its investment in researching, developing, testing, and fielding cost-effective long-range traditional and hypersonic weapons. The Joint Air-to-Surface Standoff Missile-Extended Range is funded at maximum production capacity, and the Long-Range Standoff Weapon continues in development, providing future nuclear long-range strike options. The hypersonic Air-Launched Rapid Response Weapon system is funded for completion of development; however, production funding is deferred until successful flight tests occur. The Joint Advanced Tactical Missile (JATM) continues in full-scale development, while the Hypersonic Attack Cruise Missile ramps up its development. The Air Force must develop these revolutionary capabilities and other advanced weapons to maintain a competitive advantage over the pacing challenge.

The Air Force's pursuit of the NGAD family-of-systems ensures air superiority in the future through cutting-edge concepts and technology. Adversaries are investing in capabilities that erode the Air Force's advantage, and NGAD investments continue development efforts for advanced sensors, resilient communications, and air vehicle technologies. NGAD's family-of-systems will provide survivable, persistent, and lethal options through a mix of crewed and uncrewed aircraft equipped with a flexible combination of weapons, sensors, electronic warfare, and other mission systems as it links with current and future targeting systems through ABMS.

In support of integrated deterrence, the Air Force will be working with our allies and partners around the world to ensure that our collective, joint, and combined capabilities are used in the most effective way possible. ABMS will provide the connectivity and collaborative decision-making needed to make this possible. The budget funds a mix of foundational infrastructure, early increment capabilities, and advanced battle management tools as the Air Force component of JADC2.

As the Air Force contributes to integrated deterrence, it will do so with the joint force, and allies and partners. The Air Force is working broadly to ensure that current capabilities and future weapons systems maximize interoperability with allies and partners alike. The Air Force is consistently engaged across borders to build, repeat, and reinforce a simple message to strategic competitors—the benefits of a stable international order far outweigh aggression and instability.

Air Force's Role in Campaigning

The Air Force will play a role in a full range of major military activities designed to achieve strategy-aligned objectives through campaigning. The Air Force will support both permanent and rotational deployments, exercises, forward presence, and other activities that contribute to maintaining deterrence and support other long-term strategic objectives. The Air Force's fielded forces are in constant global demand, providing direct military advantage to combatant commands, the joint force, and allies and partners while supporting diplomatic and whole-of-government efforts. The fiscal year 2023 budget investments in ABMS, ACE, readiness and sustainment of fielded forces, and continued support to allies and partners highlight some of the key roles the Air Force plays in ongoing campaigns to strengthen deterrence.

The Air Force's readiness hinges on the ability to operate, maintain, and sustain an aging fleet of aircraft while funding the flying hour program to the maximum executable level. Operations and maintenance, the largest of Air Force appropriations, funds day-to-day operations critical to sustaining readiness, building resiliency, and enhancing wartime posture. Weapons system sustainment requirements—funded at 85%—continue to grow due to aging platforms and the acquisition of new, highly technical, and complex weapons systems.

Air Force rapid global mobility platforms enable power projection, extend range and persistence, and ensure air superiority and joint force capabilities are in the right place, at the right time. In order to maintain our air refueling edge for the joint force, this budget continues the fielding of the KC-46 Pegasus aircraft. Recapitalizing the Air Force tanker fleet with the KC-46 increases the likelihood of mission success while lowering risk in a peer conflict.

Tactical and strategic airlift underpin the Nation's rapid global mobility capability. This budget submission maintains the long-term viability of the C-130 fleet and invests in communication and avionics capabilities for the C-17. This ensures the Air Force has the right mix of platforms to fulfill the joint force demand.

ISR underpins all military actions, and the Air Force continues to balance maintaining and fielding systems that provide combatant commands with this critical capability. The ability to win future high-end conflicts requires accelerating change across the ISR force structure to be more connected, persistent, and survivable while divesting legacy assets that lack these characteristics. In this budget, the Air Force modernizes existing ISR platforms with new sensors, cyber, and other classified capabilities while improving the ability to fuse data in a resilient network.

The ability to prosecute targets in advance of our adversaries is pivotal to the C2 advantages the Air Force currently holds. The current Air Force C2 architecture, including the AWACS and JSTARS platforms, is aging, analog, and vulnerable to failure or attack through kinetic or non-kinetic means. The fiscal year 2023 budget divests a significant portion of both the AWACS and JSTARS fleets while pursuing and funding a replacement to close the Air MTI gap while a resilient long-term solution is identified.

Detecting, tracking, monitoring, and striking moving targets at scale is a requirement in modern warfare. The Air Force's legacy Airborne Moving Target Indicator and Ground Moving Target Indicator (AMTI/GMTI) capabilities will be neither effective nor survivable in highly-contested environments. The Air Force must be able to operate in radar-jamming environments, detect low-observable and hypersonic

threats, and survive. This operational imperative must integrate with ABMS in order to share and take advantage of information at operationally-required speeds across all domains. The fiscal year 2023 budget supports this imperative through investments in future air and space capabilities as well as upgrades to existing ones. The Air Force will also leverage key allies' capabilities and systems to engage multiple mobile targets in the air, on the sea surface, and on the ground.

A modernized C2 architecture will include ABMS, the Air Force's contribution to the JADC2 concept, and will accelerate communication, enhance decision-making, and shorten the kill chain. ABMS must be operationally optimized to leverage unprecedented sensing, provide processing, and integrate data across multiple domains to warfighters when and where needed. Fiscal year 2023 increases the investment into this critical capability to connect joint and allied and partner teams enabling domain awareness, faster decision-making, and execution than our adversaries.

Exercising across the joint force and with allies and partners helps ensure the Air Force's readiness while reinforcing cooperation nationally and internationally. Continued investment in operational test and training infrastructure and exercises sends the clear message of the Nation's unified goals and collective capabilities. These exercises, budgeted to continue this year, enable the Air Force to be the partner of choice while also increasing interoperability and combined-force planning. These initiatives are especially important with those allies and partners who are more susceptible to military coercion or aggression.

AIR FORCE'S ROLE IN BUILDING ENDURING ADVANTAGES

To build enduring advantages, the Air Force is undertaking a series of initiatives to apply current and emerging technologies to solve operational challenges while simultaneously building the workforce needed for the future. Research and development accounts are increased substantially in the fiscal year 2023 budget. These investments are focused on placing meaningful military capability into the hands of airmen as quickly as possible. Programs like NGAD, B-21, and JATM are moving into and through development toward fielding.

The Air Force will continue to modernize to ensure a more lethal, resilient, sustainable, survivable, agile, and responsive force. As such, the Air Force must have a mix of multi-role air superiority capabilities and capacity to defend the homeland, project airpower globally, and operate as a joint and allied and partner force. The Air Force remains committed to the F-35 Lightning II with full Block 4 capability as the long-term cornerstone of the United States' future fighter force. This year's budget submission temporarily reduces F-35 procurement to invest in the overall tactical aircraft portfolio. This includes F-35 fleet modernization and advanced weapons, specifically advanced propulsion, the Stand-In Attack Weapon, Block 4 retrofits, and enterprise infrastructure. Accelerated F-15EX procurement provides expanded weapons carriage capacity and enables a rapid recapitalization of the F-15C over the next two years before returning to larger F-35 procurement numbers. Funding of F-22 advanced sensors provides capabilities to bridge until replaced by the NGAD family-of-systems. The NGAD crewed platform has increased funding in this budget submission for continued development, and funds are provided to initiate development of an uncrewed combat aircraft. Additionally, funding for F-16 modernization supports lethality and survivability over the remaining service life by adding capacity to Air Force air superiority capabilities.

Artificial intelligence (AI)-enabled technologies and advanced collaborative weapons are critical enablers that will transform the future joint force and fulfill a crucial role across the Air Force and joint force. In order to maintain a competitive edge and build enduring advantages, the Air Force will rely on crewed, uncrewed, and cooperative teaming platforms. The Air Force is investing to accelerate the development of advanced collaborative weapons systems to leverage AI and increase lethality in highly-contested environments. Human-machine teaming will enable airmen to process massive amounts of data and arrive at sound operational decisions more rapidly and with confidence.

Securing enduring advantages depends upon understanding and acting in anticipation of long-term challenges such as the transboundary threat of climate change. The fiscal year 2023 budget includes funding for the Adaptive Engine Transition Program to provide operational improvements and reduce energy use. The Air Force is also increasing Facilities, Sustainment, Restoration, and Modernization (FSRM) funding in fiscal year 2023 for both climate-related and operational resiliency. As the Air Force updates and repairs facilities, it is able to incorporate new climate mitigation techniques and improve energy efficiency, quality of life, and mission readiness. Additionally, the increased FSRM funding allows us to address the operational imperative of ensuring resilient basing, sustainment, and communications in

contested environments. Facility updates and repairs can be affordably executed to reduce climate risk and enhance combat capability and mission execution.

Airmen across the Total Force remain the Air Force's most significant enduring advantage. In the fiscal year 2023 budget, the Air Force provides funding to address sexual assault prevention and response reform, suicide prevention, diversity, equity, and inclusion initiatives, quality of life issues, and economic insecurity. The budget provides a \$15 minimum wage for all civilian employees and includes investments to provide affordable childcare for the Total Force. The fiscal year 2023 budget also provides funding to cover increased costs of living for our military and civilian personnel to ensure they receive the pay they deserve and need.

DEPARTMENT OF THE AIR FORCE CONCLUSION

The Department of the Air Force fiscal year 2023 budget balances risk between maintaining current readiness in support of combatant commanders today while developing, building, and fielding the force needed for the future. The seven operational imperatives help guide this transformation, which is just beginning. Throughout the last 75 years, the Department has shown its resolve and capability to execute the missions demanded by our Nation while constantly advancing to remain the world's premier air and space forces. This transformation will not be easy, but there is no alternative.

While our Department remains incredibly capable, it cannot make these necessary changes alone. Instead, we must operate as "One Team," working together within the Department, across the joint force, in the interagency, and in concert with our allies and partners. Our "One Fight" unites us all around a common purpose. Russia may pose a very visible and acute threat, but the PRC remains our pacing challenge. The PRC's military modernization program is well resourced, strategic, and sophisticated. The risks to operational and technological superiority that we face are grave and increasing over time.

Congressional support enabled the start of this transition to the future force the Nation needs, and Congressional support remains critical to our success. The necessity of Congressional backing to invest in the future while we continue divesting outdated assets and building modernized air and space capabilities will only increase as the Department continues its modernization efforts to deter, and, if called upon, to win the Nation's future conflicts. The defense of the Nation demands a transformation to the future air and space capabilities that will replace the obsolete platforms of today, and this can only be achieved with Congress' support for the difficult decisions to come.

Today, America's airmen and guardians deliver innovative solutions to some of our Nation's most challenging problems while projecting airpower and spacepower around the globe. They remain our competitive advantage, and we will ensure they are all provided the opportunity to serve to their fullest potential. Every combatant command, ally, partner, and American benefits from their selfless dedication. We have an immense responsibility to provide our airmen and guardians the tools, training, platforms, and support they need to safely and effectively defend our great Nation, and we will. Change is hard; losing is unacceptable. "One Team, One Fight."

Chairman REED. Thank you very much, General Raymond, and gentlemen, thank you for your excellent testimony.

General Raymond, Section 1602(v) of the fiscal year 2022 National Defense Authorization Act, which was signed into law December 27, 2021, requires the Secretary of Defense, within 90 days of enactment, to designate the Chief of Space Operations the Force Design Architect of the Armed Forces and notify the Congressional Defense Committees of that designation. Has this occurred, and if not, why not?

General RAYMOND. I know it is being worked by the new Assistant Secretary of Defense for Space in OSD [Office of the Secretary of Defense]. I will tell you, though, that a Space Warfighting Analysis Center, which we stood up, is doing all the force design work for the Department. It is uniting the Department in that force design, and the force design that we are funding in this budget was again led by the Space Force, and that is going to continue.

Chairman REED. Well, again, I would you to urge them and the Secretary to make the official designation and communicate it to the committee as directed by the legislation.

General Brown, the fiscal year 2023 budget request would retire roughly half of the E-3 airborne warning and control system, AWACS aircraft, 15 of 31. The Air Force just announced its intent to provide a sole-source contractor, Boeing, to buy an aircraft, the E-7 Wedgetail, to replace some of the E-3 fleet. It will take several years to get that aircraft in the air and on duty. Can we wait that long, given the pacing threat of China, particularly?

General BROWN. Chairman Reed, I appreciate the question. You know, ideally we want to go as fast as possible and we want to work very closely with this committee but also with the contractor. But I would tell you that I personally have flown on the aircraft a couple of times and worked very closely with our allies and partners, particularly the Australians, who operate it today. Our goal here is to learn as much as we can from them, and at the same time to accelerate where we can to get the procurement. But we want to put ourselves in the best place possible to make sure we have the capability that is required.

Chairman REED. Secretary Kendall, typically you fly the aircraft before you buy it, you test it, et cetera, but as General Brown alluded to the Australians are already flying the E-7. Great Britain is ahead of us in line in terms of production. Are there any thoughts about making a grand bargain and getting those aircraft faster?

Mr. KENDALL. Chairman, we are exploring options to try to do that. It is not clear that there are opportunities but we are investigating them.

The timeline is driven by the fact that we are buying new commercial airplanes and then modifying them to be the surveillance platforms that we want. Getting the airplanes is about a 2-year process, then then modifying them is another 2-year process.

So there are things that we could do, however, to maybe get access to aircraft earlier, one way or another. There are things that we might be able to do to reduce risk and to make sure that we make that schedule. So I would be happy to work with the committee on ideas to move forward at a quicker pace. That is something we all want.

Chairman REED. I concur and I look forward to working with you, Mr. Secretary.

Both the Air Force and the Space Force have set up a robust unfunded priority list, and let me underscore the word "priority." General Brown, does that list represent your carefully evaluated priorities, what your needs are, so that you we will not buy something that is nice to have but not critical?

General BROWN. Chairman, it does, and actually, the way it is laid out, it looks at some of our readiness aspects as well as procurements and weapons to go with the platforms we are pursuing. So it is a combination of not just the platforms but really all the capability we require to move forward.

Chairman REED. General Raymond, the same question.

General RAYMOND. Absolutely the same, sir. It reflects my priorities focused on modernization and readiness.

Chairman REED. Thank you.

A final question, Secretary Kendall, is that we have to renew the Small Business Innovation Research and Transitions Programs. They are expiring September 30th. You have had extensive experience in many different capacities with these programs. How critical is it is for us to extend these programs?

Mr. KENDALL. They are very important programs. They have been used for a very long period of time to provide money to encourage small businesses, particularly to develop their products and to transition them to where they are at a position where we could acquire them.

The Air Force, in particular, is using a new approach to this to try to bring in more outside competitors. I think that has been fairly successful. It brings firms to the market for the Defense Department that normally would not be there, and they try to transition those projects quickly.

General Brown and I are going to be reviewing a lot of the ongoing projects to decide which ones we think definitely need to get across the valley of death so that we can do that more predictably than it has been done in the past.

But the program itself is of very high value. We strongly support it.

Chairman REED. Thank you very much, Mr. Secretary. Thank you, gentlemen.

Senator Inhofe, please.

Senator INHOFE. Thank you, Mr. Chairman. I have a couple of questions that are very similar to what the chairman has asked, that gives you a chance to go in a little deeper if you want to do so. I have referred to the hearing that we had a week ago today with two other experts, and actually gave a quote from one of them. We have heard, at this end of the table, from contractors, from servicemembers, everyone from aircraft production to military construction, about its significant, harmful effects.

Late last night we just received your response from a letter that Mr. Rogers, from the House, and I sent some time ago. Now we only got a response late last night, but I suspect, and I want to make sure that we get this in the record, that you had your response completed prior to that time but we had not received it yet. Is that accurate.

Mr. KENDALL. Senator, we had worked on that response over a period of time and it was reviewed multiple times as it was finalized. I signed it out yesterday, just before it was delivered to you, I believe.

Senator INHOFE. Yes. But on the other hand your part was completed prior to that, I would suspect.

Mr. KENDALL. I do not know that I can say that, Senator.

Senator INHOFE. All right. That is fine.

I also talked about something very similar to what the chairman was talking about here, talking about the AWACS, the A-7, in my opening statement. Now this is an issue that is very close to us because AWACS, some 27—I think 27 are in Oklahoma, but the other 6 are forward deployed, I understand. But I think all of us agree that we need to get the A-7 as fast as possible for the high-end fight.

Now that was asked by the chairman but I would like to be a little more specific. What options are you looking at to accelerate this program? Can we accelerate the acquisition authorities and is there a way that you think we can put this together so that we could actually have the contract done in 2022, so we do not lose an extra year? That is the concern that I had in my opening statement. What do you think?

Mr. KENDALL. Senator, we would really like to accelerate the program if we could. It is not clear at this time that there are opportunities to do that, and we talked about this just yesterday with you. I am exploring some options that might be possible but I cannot say with any certainty that they can be executed yet, and some of them, quite frankly, are going to require some changes by people who we do not necessarily have control of in terms of their priorities. We have to get new airplanes and we have to modify them, and the supply chain that supports all that is a big part of what we have to do. That is what takes so much time.

I would like to be able to get things that could reduce risk, to ensure we meet that schedule. There may be things we can do to accelerate planning. But access to the aircraft we would have to modify is going to be the thing that I think limits us more than anything else. But we are going to continue to look for options and we will cooperate with you on that.

Senator INHOFE. Well, Mr. Secretary, I appreciate that, and yes, we talked about that yesterday with all three of you, and I just wanted to give you an opportunity to get on record with that, because I think that is significant.

Thank you, Mr. Chairman.

Chairman REED. Well, thank you very much, Senator Inhofe.

Let me now recognize Senator Gillibrand.

Senator GILLIBRAND. Thank you all for your testimony. I recently read about Space Force's decision to forego your annual fitness test and instead institute a program promoting physical activity, mental health, and healthy lifestyle activities. What impact do traditional fitness requirements have on the ability of Space Force to recruit and retain the technical talent needed for its mission?

General RAYMOND. Thank you for that question. One of the great advantages we have seen since establishing the Space Force is our ability to recruit talent. We have more people knocking on our door than we can take. The quality of our folks has gone significantly higher. What we are trying to do with an innovative, science-based approach is to take a holistic look at health and fitness.

So we have put together a three-part program which is incentivizing continuing fitness across the year round and then episodic, one-time-a-year test, and using data to be able to help support that. We also, focusing on physical fitness, mental health, and cognitive fitness as well.

We are also, as part of that, going to establish an advanced physical health assessment part which gives more access to mental health, and we have an education part of it as well, where throughout the entire lifespan of a guardian, from when he comes in to when he or she leaves the service, they have education on the importance of health.

Senator GILLIBRAND. Who are the types of recruits that the Space Force is seeking to fill its uniformed ranks, and do you need any additional flexibilities to recruit and retain these individuals?

General RAYMOND. As I mentioned, the recruiting is going really, really well. We are looking for largely STEM-focused folks. Also space is a data domain. You do not experience the domain unless you are an astronaut. In person you experience that through data, so we are looking at software coders, we are looking at data scientists.

One interesting point is we have had 400 folks from industry apply to us to transfer in laterally from industry, and we have narrowed that down now, scaled it down, whittled it down to about 45 applicants, and we are going to bring 6 in this summer. So we are getting a lot of great talent, STEM, software, data.

Senator GILLIBRAND. What is the difference between your civilian complement and your uniformed complement?

General RAYMOND. About 50–50, ma'am. We are just shy of 14,000, and it is roughly 50–50.

Senator GILLIBRAND. Is there an ability to recruit one over the other, or are there differences between what the requirements are for one over the other?

General RAYMOND. We are having equal success in recruiting both civilians and military. There are physical requirements on the military side, obviously, that are different than the civilians. In fact, we have had some that have not been able to get into the service physically and we have given them civilian jobs.

Senator GILLIBRAND. I have been working to create a cyber and digital services academy to help meet the cybersecurity needs of the Federal Government. Given Space Force's need for highly technical servicemembers and the Space Force's openness to alternative approaches to traditional military requirements, as demonstrated by your move away from the annual fitness test, would it be advantageous to the Space Force to send cadets to the civilian-oriented cyber, digital services, and space academy?

General RAYMOND. Cybersecurity on the space side is really important to us. It is an area that we have put a lot of focus on. I would be really interested in exploring a relationship there once that materializes.

Senator GILLIBRAND. Thank you.

Secretary Kendall, the committee was briefed that the services will be implementing the DOD's Independent Review Commission recommendations on sexual assault. Can you provide more detail on when you expect these recommendations to be implemented in the Air Force, and how will you roll these recommendations out to your force to ensure servicemembers are sufficiently informed?

Mr. KENDALL. Thank you, Senator. We are moving as quickly as we can to implement the recommendations of the Independent Review Commission. Regarding those dates as guidance, I am trying to do everything I can to accelerate the implementation of them. Frankly, I think that the timelines associated with them are longer than we need for many things. For example, we are going to be setting up the Independent Special Prosecutor's Office a month earlier than the current schedule requires.

So we are moving as quickly as we can. We use a variety of means to inform our people. We use social media, emails, various publications that we have to make sure that our airmen and guardians are well aware of the resources that are available to them so that they can get help if they need it.

Senator GILLIBRAND. Thank you. Your budget includes a significant amount for financial bonuses for critical skilled positions. Can you discuss what positions those bonuses are for and what non-financial incentives are available to retain servicemembers given that they have a number of employment opportunities in the civilian sector?

Mr. KENDALL. We have recently increased bonuses across a number of fields. I can give you a list for the record. This covers both enlisted and officer occupational areas. It is essentially the things that you would think would be in high demand. Right now the economy is doing well and there is a large demand for labor. So we are doing what we need to do to be competitive in that market.

Senator GILLIBRAND. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Gillibrand.

Senator Fischer, please.

Senator FISCHER. Thank you, Mr. Chairman.

Secretary Kendall and General Brown, first let me express my appreciation for the support shown in this budget for modernizing the Air Force's nuclear equities, including nuclear command, control, and communications, or NC3. These programs are absolutely vital and they must be delivered on time, and I appreciate the commitment to doing so that is shown in this budget.

As you both also know, Offutt Air Force Base was severely damaged by historic flooding in 2019, and is still in the process of rebuilding. I would like to thank the Air Force for its support in the rebuild efforts.

General Brown, I was pleased to see an addition \$286 million for the Natural Disaster Recovery Fund in your unfunded priority list for fiscal year 2023.

Secretary Kendall and General Brown, can I have your commitments to continue to prioritize recovery efforts at Offutt and to look for opportunities to complete these projects as quickly as possible?

Mr. KENDALL. Yes. Absolutely, Senator.

General BROWN. You have my commitment as well.

Senator FISCHER. Thank you. Secretary Kendall, I remain concerned about the toll of both inflation and supply chain issues on the Department of Defense. How do you expect the increased costs of building materials to impact ongoing MILCON projects?

Mr. KENDALL. It is something we are concerned about, and we are concerned about inflation across the board. Our biggest immediate concern is fuel prices, which have gone up substantially, and we are going to have about a \$2 billion shortfall this year that we will have to address, through one mechanism or another.

In the letter that we responded to, to Senator Inhofe and Ranking Member Reed, all of us talked about the steps that we need to take. We do not know what 2023 will be like yet, and we do not know how different aspects of the economy will be affected, so we are going to need to work with the Congress to make adjustments

as we go forward. So we will appreciate your support as we address this.

Senator FISCHER. General Raymond, nice to see you.

General RAYMOND. Thank you.

Senator FISCHER. Can you discuss the changes that are being made to the Next-Gen OPIR program in the fiscal year 2023 budget and how the new Resilient Missile Warning Missile Tracking program integrates with this effort?

General RAYMOND. Yes, ma'am. It is critical. It is our number one mission, Missile Warning Missile Tracking, and it is critical that we make this transformation, as I said, to get after two important realizations. The one is that the missiles that the satellites need to detect are changing, and it is getting after the hypersonic glide vehicles and being able to detect and track that. It is critical to make that transformation for that effort.

The other thing is that by diversifying the architecture, very similar to what we do with our financial portfolios in diversifying, you then reduce the threat in space to an attack that may occur. So on both of those efforts, in this budget we pivot from handfuls of very exquisite, very expensive satellites to an architecture that is more diversified, to get after both the emerging class of missiles and the threat that currently exists in space.

Senator FISCHER. So the plan is really to keep the Block Zero Polar and the geo-capabilities but supplement them with the distributed architecture. Is that correct?

General RAYMOND. Yes, ma'am. The challenge that we face as we make this transformation, this pivot to a new architecture, is we do not have the luxury of taking down what we have today and telling the Nation we will come back in a handful of years with a new architecture. So we had to develop a bridging strategy, and we looked at it. It is a risk-informed strategy to keep alive what we have for our Nation as we make this important transition.

Senator FISCHER. Do you still expect to have the first geo satellite in at 2025 then?

General RAYMOND. Yes, ma'am.

Senator FISCHER. It is vital. It is vital.

General RAYMOND. Yes, ma'am.

Senator FISCHER. Thank you.

Secretary Kendall and General Brown, what do you think the war in Ukraine teaches us about air power on the modern battlefield? I know we have heard some commentators argue that anti-air defenses have made sophisticated air power obsolete in the same way that others argue anti-tank munitions have made armor obsolete. What is your view?

Mr. KENDALL. I would begin, Senator, by saying that control of the air is critical to military success and the failure of the Russian military to gain control of the air is a major contributor to the difficulties that they are having.

On the other side of the equation, the Ukrainians have used the air defense systems that they had quite well. They have been able to keep them survivable against the threat, which I think says as much about the lack of capability of the Russians as it does about the capability of the Ukrainians.

So you need to be careful about trying to learn too many lessons from this until we really study it carefully. But they have reinforced my views about the importance of air power, first of all, but the successful air power must be sophisticated enough to deal with the threats that it faces, including ground-based air defense systems like the ones the Ukrainians are employing.

Senator FISCHER. General Brown, would you like to add anything?

General BROWN. I would. Air superiority cannot be taken for granted, and airpower, anytime, anywhere, it is not only the airplanes that will be airborne to go against other airplanes but it is the ability to also take out the air defenses that are on the ground. It is a combination of capabilities, and that is what we, as the United States Air Force, are focused on, to make sure we have the capability to do both and train to that as well.

Senator FISCHER. Be prepared for possible, more sophisticated encounters than we are seeing in Ukraine?

General BROWN. Most definitely.

Senator FISCHER. Thank you, sir. Thank you both very much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Fischer.

Senator KAINE, please.

Senator KAINE. Thank you, Mr. Chair, and to our witnesses I appreciate your service. This is a question for Secretary Kendall and General Brown. We had a hearing last week with Secretary Hicks, and she, frankly, talked about the challenge—it is an obvious challenge—in determining the best way to get from the force we have to the force we want to have in 2030. This kind of mid-period transition is a challenge.

When I hear phrases like “divest” and “reinvest” I am not skeptical about that. You have to do it. But I tend to think about them through the lens of workforce, being chair of the Readiness Subcommittee. As you make this transition it can be particularly challenging on our specialized workforces—shipbuilding, aircraft production, certain electronic components.

Do you think the fiscal year 2023 and the FYDP projections for procurement adequately address the sustainment of the few remaining manned aircraft production lines in the United States?

Mr. KENDALL. I do, Senator. We are continuing production on the F-35, not quite at the rate that we were at before. We are trying to wrap up production of the F-15EX over the next 2 years, and so we actually accelerated, increased the rate there in order to do that more quickly. I cannot think of any other example. KC-46, we are continuing with that production line.

So generally speaking we are continuing at a rate which we think will support the industrial base and allow them to support us going into the future.

Senator KAINE. General Brown?

General BROWN. Senator, I would agree, and the thing I also think about is the fact that I do not want my staff to talk about divest and invest. It is how we make the transition from where we are today to get to the future. We have got to make sure we are still working on procurement and then still maintaining capability to support today's operations at the same time we make sure we

are not taking undue risk that is going to impact us in the future. So it is a combination of those two that come together.

Senator KAINE. Thank you. Now for Secretary Kendall and General Raymond, I want to ask about the space domain. It is getting crowded up there. You know, many nations have assets in space that have a defense or military purpose. The commercial platforms in space just proliferate dramatically, and they can have an impact upon defense missions. We have seen what Starlink has done in terms of providing internet service in Ukraine. So these commercial platforms have a security dimension to them as well.

Then the third thing we have got to worry about in space is debris. One of my favorite government publications is NASA's Orbital Debris Quarterly. The debris can be accidental debris or it can be debris that is actually created to jeopardize other assets in space. It seems like an area where we have to do a lot to keep our platforms safe, but there is also probably need for more rules of the road on an international level to try to protect these very expensive assets in space.

So talk a little bit about how, from the DOD perspective, you are focusing on the protection of our assets in space and whether there are international rules of the road that we should be considering to try to make sure that all these assets are protected.

Mr. KENDALL. Well, Senator, one rule that we recently talked about is the one the Vice President discussed recently on the norm prohibiting the type of destructive tests that the Russians conducted recently, which was very irresponsible. They created large fields of debris. General Raymond can talk about the numbers of objects we are currently tracking up there as a result of that one test. So we have got to get people to agree not to do that. That puts everything we have in space and low-earth orbit, particularly, at risk.

There are other norms that we have talked about with regard to proximity operations and so on, and the National Space Council I think has been working on some of these to try to get wider appreciation of the need to have things that allow us all to operate in space and to do so to the benefit of every nation, frankly. General Raymond I think will have more to say about that.

General RAYMOND. You are absolutely right that space is becoming more congested, more contested, more competitive. If I were to testify in front of you 2 years I would have said we were tracking about 22,000 objects. Today we are probably tracking close to mid-40,000 objects. If I had said 2 years ago the numbers of satellites that we were tracking was about 1,500. Today that number is close to 5,000, and the trends are going up. Everybody is proliferating access to space, largely because commercial space has reduced the cost to launch. It has enabled a lot more access.

That provides us opportunities and it provides us challenges. On the challenges side we are working really hard to keep the domain safe for all. We act as the space traffic control for the world. We provide warning across the world to keep satellites from colliding. We demonstrate safe and responsible behavior by how we act, and we do so in partnership with our allies and partners. We are committed to keeping the domain safe for all.

Senator KAINE. Thank you very much. Thanks, Mr. Chair.

Chairman REED. Thank you, Senator Kaine.

Senator Rounds, please.

Senator ROUNDS. Thank you, Mr. Chairman. First of all, gentlemen, thank you very much for your service to our country. I want to take this opportunity to thank you for what you have been doing to make sure that the B-21 bomber program stays on time, on target. Folks in western South Dakota, Ellsworth Air Force Base, are truly looking forward to getting their first look at it, hopefully later on this year, and they most certainly want to be a part of the program, and they want to make sure that they are in a position to welcome the new crews and the new teams on board. I appreciate your cooperation in working with them to make sure that they know what to expect in terms of schools and so forth, and I am sure we will be able to work through all of that, make sure there are no delays in that.

The B-21 seems to be an example of a platform plan which is working according to schedule. When I look back at some of the other challenges that we have it would seem that while we are going to be able to procure the B-21s in some reasonable fashion, we are probably going to need more than what we had originally estimated.

General Brown, would you talk a little bit about what the expectations are for the B-21? I think originally we talked about a plan in which we would buy perhaps 100 of them. Would it be fair to say that in any of the new estimates, with near-peer competition growing, that our demand for that particular platform will be greater than what we originally anticipated?

General BROWN. Senator, part of that is the ongoing analysis that we do to determine not only what we have already decided on but where we might need to, in this case, procure either more B-21s or other capabilities to complement the B-21, and this one of the operational imperatives that we are working through. In fact, if you look at a crewed and an uncrewed collaborative platform that can work very closely with the B-21. So it may not mean necessarily an increased number of B-21s but it is additional capability to go with the B-21 as well.

Senator ROUNDS. I think it would be fair to say that right now if we had—the F-22 is a good example of a platform in which we started out with one number that we wanted. Today I think there are very few of us that would say that we have enough F-22s that are mission capable, because even though you have a number of them a portion of them are always either being repaired or being used for training. So fair to say that even though we talk about 100 B-21s, what we are really talking about is some of them would be in maintenance, some of them would be for training. So we really would not have that many which would be on mission. Would you agree with me on that?

General BROWN. We will always have some that are in training or in some type of maintenance. The goal here as we look at this particular program is, as you described it, it is on track, and I think one of the key areas we want to take a look at is how we do a better job to make sure we are sustaining that aircraft and making it much easier for our airmen to maintain as well.

Senator ROUNDS. Thank you. Secretary Kendall, this budget, this proposal this year plans for the elimination or the divestment of about 250 aircraft, but it looks like we are only going to be able to procure about 87 new aircraft. Granted there is, at least from what I can see, first of all some of the aircraft are flat out there Hangar Queens. They are there, they are on the inventory list, but they are really not operational, and the cost to maintain them, even to get them out, is such that it is really not worth the taxpayers dollars to try to continue to make them operational. But that also means then that we are going to end up with a shortfall with regard to the number of platforms we can put in the air.

Is it fair to say that we are trying to do as many new platforms as we possibly can? Is the holdup the budget or is the holdup the inability of our manufacturing teams to be able to produce the number of new aircraft that we need?

Mr. KENDALL. We are trying to get the balance right and trying to sustain our support to combatant commanders, give them what they need while we go through this transition. So that is essentially what we try to do in the budget.

What we are taking on includes a mix of systems. About 100 of them are MQ-9s, which are actually not coming out. They are transferring to another government agency. We are taking out trainers, the T-1, which is our multi-engine trainer, and what we are going to do is something that is more like the commercial airlines, where pilots that are going down the multi-engine path will go directly from their primary trainer to the aircraft that they are going to actually operate. So we will actually have some efficiency in the pilot production line because of that.

In the case of the F-22, we are taking our oldest and least-capable F-22s, about 33 of them. They are only used for training right now. So we can work on that capability of aircraft for training and have those aircraft available for contingency if we needed them in an emergency. But to have some efficiencies as well in terms of operating cost.

So it is a mix of things that we are trying to do. Some of it is simply divesting to replace, as in the case of the tankers, for example.

Senator ROUNDS. Thank you. Mr. Chairman, my time has expired. Thank you.

Chairman REED. Thank you very much, Senator Rounds.

Senator Ernst, please.

Senator ERNST. Thank you, Mr. Chairman, and gentlemen, thank you so very much for your service and your willingness to testify in front of the committee.

General Raymond, we will start with you. The investment in Space Force in this year's proposed NDAA is pretty significant. We have a top line of \$24.5 billion, and over \$16 billion is marked for research and development.

We are briefed constantly in this body about the speed of acquisitions, or lack thereof, and we know that the Chinese's acquisition timelines are much faster, sometimes three to five times faster in domains like space and cyber. It is so much quicker than the way we move at the Pentagon. I think that justification for a Space Force distinct from the Air Force requires a distinct 21st century

culture that will move quickly to adapt and modernize with all of these new technologies and really closes the gap on where we are with our near-peer adversaries.

So we hear all the time in posture hearings, we are bemoaning the fact that acquisition timelines are too long, we have these risk-averse cultures, and they really trouble the other services. You are a brand-new service. So how will you build that culture in Space Force that will ensure and encourage a fast-follower type model for private industry and is willing to assume that prudent risk and fail faster? So how can we do that? We want to make sure that you are successful but we have to compete with our near-peer adversaries.

General RAYMOND. I could not agree more with you. We have to be bold and be innovative, and I think space provides an opportunity to do that. The model, the business model that we have used in the past in space are very large, very exquisite satellites that are very expensive and not very easily defendable. This force design work that we have done shifts us to less-exquisite, with higher numbers that allows us to adopt more of a business model that you might see commercial companies doing, and so that is on the transformation of our capabilities. That is the path we are headed down.

On the people part of this, we are investing in developing and acquiring talent that has commercial experience. In fact, last year, when the Air Force Academy cadets graduated, 118 were coming to the Space Force. They had a little bit of time before they were going to go into training and we sent them to commercial companies and said, "Go figure out how they do that." So everything that we are doing is focusing on getting after a culture that can go fast, be agile.

But I will tell you, it is not like Amazon Prime where you can order it overnight. It is going to take a little bit of time to build this, but that is exactly where we are headed.

Senator ERNST. So with that model—and I am glad you mentioned the personnel aspect of that because we have to make sure that as new authorities are being pushed to the service branches, in your case Space Force, that your acquisition personnel are properly trained on those new authorities. Do you feel that they are receiving the training necessary to move as quickly as possible and use some of these new models?

General RAYMOND. I am satisfied that the training allows them to do that. We have got great folks. I think just the capabilities that we had set us on a path that did not allow us to take risk, and what we are trying to shift towards is a model that does.

Senator ERNST. Yes, thank you, and Secretary Kendall, just sticking on this theme as well, you had noted last week in front of HASC that the Chinese are better than us at, "starting a lot of new things and then taking them through to fielding". Why is that? What is it that we can do differently? We have heard General Raymond talk about Space Force. How can we do this different in Air Force and our other service branches?

Mr. KENDALL. Senator, I want to first take a little bit of issue with what you said earlier about how long it takes the Chinese to do things. They are actually not faster at engineering than we are. But what they do is, what I was talking about in the HASC was that they have made decisions quickly. I think somebody earlier

mentioned how they can do a decision in 3 days and we take 3 years to do a decision, and then to get money it takes us time to get money and start because of the process that we go through here.

But I looked recently at the J-20, their most modern fighter, for example, and the development time for that aircraft was comparable to the F-35. It was not remarkably faster.

But they do seem to be very creative and innovative. They are studying how we fight, what we depend upon to project power, in particular, and designing systems that are intended to defeat us. I have talked to people earlier about how when the Soviets were in existence and they wanted to do a new program, the question of leadership I always asked was, "Are the Americans doing it?" If the Americans were not doing it then the Soviets did not do it either.

But with the Chinese they do not care about what we are doing. They are looking at how we fight, what we depend upon, and they are being very creative about the things that they are buying to come after us.

Senator ERNST. Good, thank you, and I do hope that we can continue with the model of efficiency and be less risk-averse as we move forward. We want to make sure that you have everything you need to succeed.

Thank you very much, Mr. Chair.

Chairman REED. Thank you, Senator Ernst.

Senator Warren, please.

Senator WARREN. Thank you, Mr. Chairman. Secretary Kendall, I want to talk about this proposal to retire 33 F-22s that is part of the Air Force's budget submission. Now I have got to say, my ears perk up any time the Pentagon talks about wanting to cut costs, and I am inclined to support you on this. But how we got here is a real problem.

The F-22 fighter jet designed to establish air superiority over enemies like Russia. The Air Force started buying them from Lockheed Martin in 1999, and said we would be using them until the 2060s.

Secretary Kendall, you are Secretary of the Air Force but you used to run the acquisitions program for the whole Pentagon, so I know you know all of the issues behind this. When the Air Force started buying F-22s in quantity, was the testing and development for this aircraft complete or were we still figuring out a number of its major capabilities?

Mr. KENDALL. You raise a great question—

Senator WARREN. Yes.

Mr. KENDALL.—and I am afraid I do not know the answer. I was there for the F-22 Milestone B Decision. It was the decision to start development. I was not there for the production decision.

Senator WARREN. Okay, but—

Mr. KENDALL. But I understand where you are coming from, and I think it is really an interesting thing to pursue.

The ones we are retiring are less capable. They were the first ones we bought and they did not have the full combat capability. So it would be worthwhile to go back and do the case study to understand why that is the case.

We have a similar problem with F-35, where a lot of our earlier aircraft need a lot of modifications, and I know you are going to go to my acquisition malpractice comment.

Senator WARREN. You bet I am. But let's unpack this a little bit as we go forward, because it is my understanding, and I think the record shows pretty clearly that we started buying these planes before we had uncovered all the design deficiencies and capability shortfalls that had to be fixed in order to make them work the way they were supposed to work. These are very expensive planes, so we spent \$6 billion on them. The GAO [Government Accountability Office] now estimates we are going to need to make upgrades that will cost \$11.7 billion, nearly double what we spent to buy them in the first place.

I understand why the Air Force decided that was just too much and you want to retire these planes, and frankly, I applaud you for making the tough call. But the F-22 is not the only program where we have seen this problem. The GAO thinks we will have purchased a third of the F-35 fleet before testing is complete. I appreciate the capabilities of the F-35 and the role that they are going to serve in the military, but the process gives me pause here.

Secretary Kendall, you know where I am going with this. You called the F-35 program, "acquisition malpractice." Can you just say a word more about what you mean by that?

Mr. KENDALL. What I meant at the time that the decision to enter production was made before any flight testing of the production prototype, and so we did not have data to verify the design. It was not a stable design. My rule of thumb for aircraft programs is you should have about a year a flight testing under your belt, at least, before you commit to production.

As good as our digital models are, and as more sophisticated they get, we just push our designs to be as close to the edge as possible. We often push for more performance than we have had before, so our models are not as good.

There is always this tension, Senator, between people who are really, really anxious to get the new product. You know, they want that new, wonderful airplane that is coming out and they do not want to wait another 2 or 3 years to have you finish the design and then put on it the upgrades that are coming.

The other factor that comes into it is that almost all of our aircraft evolve over time to respond to the threat. If you look at the F-16, for example, it has gone through a number of different models. You look at the F-15, the same thing. The F-35 is now going through, you know, it is Technology Refresh 3 and it generally gets Block 4 level of sophistication. Part of this is that the threat keeps changing, and part of it is that technology keeps changing.

Senator WARREN. Look, Mr. Secretary, I understand that. When the threat changes and we have to make adjustments I totally get that. But I would not buy a car from a car company that said, "We are not sure if we have figured out all the details to keep this thing from bursting into flames, but do not worry. We are going to go ahead and sell it to you and later on you can buy the parts that will keep it from burning up."

You know, I think you have it right when you say we need to fly before we buy. Otherwise, we just run the risk of not only flush-

ing money down the drain but time and effort that we put in this direction.

So now we are replacing the F-22s, the ones that we are scrapping after having spent \$6 billion on them, with the Next Generation Air Dominance program. I just want to make a point about this program. It is largely classified, and that may be necessary, but it also means there is going to be even less oversight over this program. No public reports, less public scrutiny from the GAO, from the DOD IGs [inspector generals] and from the press. This lack of transparency means the process that we have already seen fail us becomes an even riskier process.

So I see that I am out of time. I would like to talk to you more about how we estimate the costs around this. But I would like to urge you to rethink this question about making it more transparent, what we are doing in the development of this new product.

The American people are willing to pay what it costs to keep us safe. We want cutting-edge technology. But they do not want to be in the position of flushing more money down the toilet because we were out purchasing something before we even knew if it would work.

So that is my request, Mr. Secretary.

Mr. KENDALL. I think you are slightly overstating the case with the F-22, because those earlier models were of use to us operationally and have been up until this time. It is not that they have no capability or that they have a defective design. It is just not upgraded to the state that we need to meet the current threat. It would cost—I think my number is about \$2 billion to upgrade those aircraft, \$50 million apiece, roughly, and it is not a high enough priority for us to do relative to other investments.

Senator WARREN. I know we are out of time but I just want to say, it was sold as a \$6 billion airplane that was going to meet these specifications and accomplish these ends, and now we are being told it will cost \$11 billion extra to be able to meet those qualifications. That means there is something wrong in the process.

Chairman REED. Thank you, Senator Warren.

Senator Cramer, please.

Senator CRAMER. Thank you, Mr. Chairman. Thanks to all three of you for being here and for your service.

First of all, I do want to join Senator Fischer in thanking the Air Force for maintaining the nuclear deterrent, keeping it on track, on target. All of that is fantastic, and thank you all for doing that.

I want to talk a little bit, at first, about the radar station, the PARCS [perimeter acquisition radar attack characterization system] radar station at Cavalier. I sort of chuckle when I look at the three of you because all three of you have visited North Dakota in your capacity in the wintertime, and that is special. Particularly special, Mr. Secretary, was your visit to Minot right before Christmas. Thank you for that.

But I have to say General Raymond visited Cavalier on a day when it was 41 degrees below—that would be zero, for those of you who do not know what below means—below zero windchill, so he knows a little something about how remote and how difficult an environment that is.

But that radar is 50 years old, the PARCS radar, and I am concerned a little bit because this year's budget document say that the radar has, "a high risk that equipment failures will cause unacceptable mission downtime." I believe that the last year's budget had some similar language to it.

So my staff took a briefing recently from the program office that said they are planning for digital upgrade that would "drastically decrease detection time, accuracy, and contributions to both missile warning and space domain awareness missions". You have all talked about the importance of a lot of that, but I do not see the funding for it in this budget.

So I will maybe start with you, General Raymond. You are obviously aware of the precarious situation at Cavalier. I know you are going to visit there again. What do you think? Do we need to upgrade?

General RAYMOND. Sir, first of all, missile warning, missile tracking, and space domain awareness are critical missions, and Cavalier and the radar at Cavalier, the PARCS radar, is a very important radar. We have upgraded that throughout the years. We have spent about \$22 million a year sustaining that, operating and sustaining that capability. The priority for this year's budget was the space missile warning segment because we have to get after being able to detect and track hypersonics.

As you mentioned, the program office right now is looking at an analog-to-digital modernization effort and we will address that in the coming budget years.

Senator CRAMER. Great. Mr. Secretary, anything you would want to add to that?

Mr. KENDALL. No. I think General Raymond covered it pretty well.

Senator CRAMER. Beautiful. Thank you.

General Brown, you and I and others have had very frank discussions, of course, about ISR [intelligence, surveillance, and reconnaissance] and the ISR retirements and the tradeoffs. There has been a lot of discussion already today again about how to balance all of that, and I appreciate that. Some of us, of course, had doubts about the retirement of the RQ-4, the Global Hawk, because Air Force ISR capacity really was not keeping up, at least with what many of the COCOMs would like, whether they need them all or not, but it seems like they could always use more. But we ultimately agreed, and I think based on your wisdom and your counsel to trade some capacity for new capabilities.

But this year's budget is cutting even more Air Force ISR, even though the COCOMs are relating, in their hearings, that they need more. I am also hearing that you are looking at cutting some of the manpower, including up to maybe 30 percent at Grand Forks. Again, I have not confirmed that but we are hearing that.

I just want to get a sense of your vision and goal in this transition.

General BROWN. Sure. Well, first of all I support your support. I know we got a chance to engage on this particular topic a number of times. There is no intent to cut any manpower at Grand Forks. Hopefully that will put you a bit at ease.

Senator CRAMER. It does.

General BROWN. One of the areas I would highlight, though, as we look at the ISR we have today versus the ISR that we need for the future, the ISR in the future needs to be connected, persistent, and survivable. Persistent we do have. Connected and survivable, not so much. I look forward to maybe talking a bit more. When we go to our closed session I can get into a bit more detail on the capabilities that we are pursuing, and this is something that I think will help us along the way.

I would also offer the fact that how we get information today, not from our classified systems but also from our open source, plays a key role in how we bring all the information together. This our advanced management system and some of the other tools that help us with the decision superiority will actually add to, to cover some of the ISR from a different perspective as we look at how the character of war has changed.

Senator CRAMER. I appreciate that. I appreciate all of you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Cramer.

Senator ROSEN, please.

Senator ROSEN. Thank you, Chairman Reed. It is really an important hearing that we are having here today on the Air Force. Secretary Kendall, I really appreciate you being here today, for taking the time to speak with me last week ahead of today's hearing. Of course, thank you to all the witnesses.

I understand the Air Force has an updated legislative proposal to modernize the Nevada Test and Training Range. While I agree that modernization is critical for our national security and our overall readiness, I am disappointed that the Air Force once again did not work with me or the rest of the Federal delegation on its proposal, even after every Air Force senior leader promised that they would do so. Since learning of its existence, my staff and I have been asking for details on the proposal, but the Air Force has been reluctant to provide many.

Our delegation, we have really enjoyed open lines of communication with the Navy as we work through its proposal to modernize Naval Air Station Fallon, and we just want to have the same relationship with the Air Force regarding your proposal to modernize the Nevada Test and Training Range.

So Secretary Kendall, recognizing where we are in the calendar year, it seems likely that your proposal would be under consideration for the fiscal year 2024 NDAA. Can you recommit to me now that you will work with me and Senator Cortez Masto and the rest of the Federal delegation on this proposal which will be submitted to Congress for our consideration?

Mr. KENDALL. I would be happy to work with you, Senator. I have looked into this since we talked and there is some discussion within the Executive branch between agencies that has to take place to finalize the proposals. I think you are aware. The Intergovernmental Executive Committee that is involved is meeting in about 2 weeks, so hopefully that will free things up so we can move forward. I have asked my staff to share with you in general what our intentions are. We cannot share the specific proposal because it is going through the legislative proposal process. But we would

be happy to work with you to try to make sure there is communication about what we are trying to do.

Senator ROSEN. I understand. At least talking generally about it is a good start.

I also want to talk to you a little bit about housing for junior enlisted. It is an issue that I have been working on. Our junior enlisted servicemen, including airmen stationed at Nevada's Nellis Air Force Base, are averaging only 12 months in on-base housing. They are being forced to move off the base due to shortages. You know this. The troops are forced to cover their rental deposits and moving costs before they are eligible to begin receiving their basic allowance for housing, or BAH. It is why I have worked to include a provision in last year's NDAA directing DOD to brief Congress by March 1st of this year on the Pentagon's plan to provide partial dislocation allowance for these troops. We still have not received this briefing, and I recently heard from Nellis that none of their junior airmen who were forced to move out of the dorms received a dislocation allowance.

So Secretary Kendall, why is not the Air Force supporting and providing our junior enlisted airmen with the dislocation allowance you are authorized to provide them?

Mr. KENDALL. Senator Rosen, I have looked into that as well and there is some relief available for the airmen who have to move off the base. They can apply for advanced base allowance for housing and accelerate payments for that. They are not currently getting dislocation allowance because of some limitations in the joint travel regulation, but we are working to change that and correct it. It is a DOD issue, not just an Air Force.

Senator ROSEN. We need to change that because the most junior enlisted airmen—and I know this is happening at other places—they are the least likely to be able to afford this. It is really putting a strain on them. We have authorized it. Let's have a discussion, because this is really hurting our service men and women, particularly the young ones. So thank you.

I want to move on, in the time I have left, to talk about C-130J recapitalization, because Nevada's Air National Guard's 152nd Airlift Wing in Reno, it flies its legacy C-130s in some of the hottest temperatures, highest elevations, and in the most challenging and mountainous environments of any C-130 unit. Integral to their mission is flying the Modular Airborne FireFighting System. We call it MAFFS.

Upgrading the Nevada Air National Guard's C-130 fleet with C-130Js would have a substantial impact on their readiness and the firefighting capabilities, not just in Nevada but the entire Western United States. I know you have seen the wildfires. They are just burning out of control. We are just plagued, and I cannot imagine it is going to get any better.

So I am really discouraged that the Air Force is still not considering MAFFS when evaluating base candidates for C-130J. During last year posture hearing General Brown and then Acting Secretary Roth both committed to considering making MAFFS' mission part of the Air Force basing criteria for C-130Js.

So, Secretary Kendall, again I am putting you in the hotseat. Can you update the committee where you are on the process? Can

we get a commitment that the 152nd Airlift Wing in Reno will be seriously considered, given its critical mission to saving lives in the West?

Mr. KENDALL. Senator, we will be looking at the special missions, for various special missions that C-130s do. MAFFS is an important one, obviously. We will be taking those special mission capabilities into consideration as we go through the basing decisions for the 130Js.

Senator ROSEN. Thank you. I appreciate it. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rosen.

Senator Cotton, please.

Senator COTTON. Secretary Kendall, General Brown, I want to commend you again for your clear-headed and even single-minded focus on regaining our technological edge against China. I have supported those efforts in the past and I continue to support them now.

General Brown, I want to talk to you a little bit about some of those efforts and something of a challenge you face. For a few years now the Air Force has talked to us about divesting certain assets. Those things are known there, apparent to the eye. Local communities depend on them, whether it is Little Rock or C. Moore Johnson or Nellis. But you are investing in a lot of things that we cannot necessarily see. Either they are in development or they are highly classified programs. These are capabilities, though, that we need to continue to outpace and deter China.

I know we are going to have a closed setting later where we can touch on some of those as a committee, but can you just confirm you are going to provide in that closed session the classified details that we need on the following programs, the first would be the F-35 along with other future fighter force investments?

General BROWN. Senator, we will. If I could also add, one of the areas that I am focused on with my staff is to get as many briefings as possible, at the same time providing some unclassified talking points like we did for Grand Forks on the ISR being consistent, persistent, and survivable, so they have an idea of things they can talk about with their constituents as well as the other Members of the Congress.

Senator COTTON. Okay. A second one is the future of air-to-ground weapons and air-to-air weapons and that especially includes hypersonics.

General BROWN. I will be very happy to talk about that in the closed session.

Senator COTTON. The future of ISR, you have already touched. Some key space capabilities I cannot even name here. I will ask you first and then turn it to General Raymond.

General BROWN. I really depend on General Raymond. I am a beneficiary of his capabilities.

Senator COTTON. Okay.

General RAYMOND. Sir, I look forward to talking to you in the closed hearing.

Senator COTTON. Okay, and General Brown, we have touched on this with a few other Senators, the B-21. We will get a classified update on that as well?

General BROWN. You will.

Senator COTTON. Okay. I just want to say that I understand some Senators' desire to have some of these programs at a lower classification level, and I do believe there are certain cases where the government overclassifies matters. But some of these are extremely sensitive programs, and if the Chinese or the Russians were to understand these capabilities it would put all of our troops and our Nation at graver risk in the future.

Senator Warren said that we need to have more ability for oversight and transparency and she cited inspector generals and NGOs [nongovernmental organizations] and the press. That is what we are here for, though. NGOs' job is not to oversee the government. The press's job is not to oversee the government. They are not elected by the people and they are not vested with that authority under our Constitution. It is this institution, and in particular this committee, to oversee these programs. That is exactly what we do, even if they are highly classified.

General Brown, I want to touch on another issue with you. I am concerned about the threat of China acquiring land and property in the vicinity of some sensitive bases. It is not just an Air Force problem. It happens across our military and our intelligence community as well. I just want to bring to your attention one specific project. This is at the Grand Forks Air Force Base in North Dakota. Fufeng, a Chinese company, is investing millions in a local corn mill there. Maybe it is just a corn mill, but it would also provide the potential, at least, for Chinese intelligence to engage in intelligence collection of various kinds, both signals collection and human collection.

What is the Air Force's plans to be sure that that is not happening, not just at this one site in Grand Forks but at any of its bases around the country, if you can discuss that in an open setting?

General BROWN. I really cannot discuss that, the details, in an open session like this. I recently just became aware of this one in particular, but it is something we do pay attention to across the board.

Senator COTTON. Good. I am glad to hear that. Again, it is a concern about all our military and intelligence installations around the country. It is not just Grand Forks. But Senator Cramer and I have discussed this at length. I would feel exactly the same if some giant Chinese conglomerate started building a facility outside of Little Rock Air Force Base as well. But I look forward to exploring that with you in a closed setting.

Thank you, gentlemen.

Chairman REED. Thank you, Senator Cotton.

Senator Tillis, please.

Senator TILLIS. Thank you, Mr. Chair. Secretary Kendall, I had not expected to ask this question but based on the exchange with Senator Warren, I think it may be helpful and it may be necessary to do in a classified briefing, but it would be helpful with the F-22 and the F-35 to talk about some of the kinks that we are working out, technical kinks, and separate those from modifications that we are making specifically because we have identified new threats.

We got a briefing a week or so ago, but I think that would be helpful.

I, for one, think one of the reasons why the acquisition process is so difficult is we have a near-perfection requirement for specifications before we move forward. If we do not understand with some of these platforms, some of the more technically challenging ones, I can understand where you want to do a lot of homework, but in some respects we have got to be able to accept failure if we are going to actually learn from failure. I use SpaceX as a classic example of that. One of the reasons why they have got such a successful program now is they were prepared to go on TV and have what I think Elon Musk referred to as a “rapid, unplanned disassembly.”

So we cannot, on the one hand, say you have got to compress the time to value and then on the other hand say in every case it has to be perfect. I think maybe for a future hearing we should talk about that.

You know, I have got a little bit of a history of bringing up the KC-10, and the KC-46 we are going to be happy to host down at C. Moore Johnson. But I was curious with the current conflict in Ukraine, the increase in refueling needs, and then gaming out how this conflict could go, if there is any thought process in the Air Force behind whether or not we are retiring KC-10s a little bit faster than we should, based on threats that we did not know about before February the 24th, or did not necessarily anticipate?

Mr. KENDALL. Yes, Senator, I am not aware of any impact coming out of the Ukraine lessons learned that would affect that. General Brown, do you want to comment?

Senator TILLIS. If you could also just give me an update on KC-46 and some of the technical challenges that we are working through. General Brown?

General BROWN. Sure. Nothing in a threat that actually would change where we are with the KC-46. What I will also tell you, we did send KC-46 to Europe for about 5 weeks and have a chance to work and support some of those operations, and even air refuel some of our NATO partners. The airplane performed very well. I think our airmen learned a lot while we were there about how to work in a deployed environment.

As far as the KC-46, one of the key areas that we have been working on was the remote visual system. We have come to an agreement with Boeing on that and we will start that process here in about a year or so to start the conversion.

But I have personally flown the airplane and flown on the airplane, and had a chance to talk to the airmen that operate it. They are very pleased with the airplane, and what we are finding is as we go through and certify different airplanes, we are about eight airplanes away from all of the fleets that we would actually be able to air refuel.

So again, the airplane is going well. It does have some issues we are working through, but by and large it is meeting some of the requirements, and we will continue to work that with the other platforms we have, with the KC-10 and the KC-135.

Senator TILLIS. Okay. General Brown, maybe sticking with you. I know that you are cutting the Active Duty end strength. To my

understand some of that is primarily due to budget constraints. So if you did not have the budget constraint would you be able to use those personnel?

General BROWN. Well, all the personnel that were taken out of the Active Duty strength, and the Guard and Reserve—we are coming down in the Active, a little bit up in the Guard, and down a little bit in the Reserve—all of that is tied to force structure. So it is not arbitrary, just taking airmen out. It is tied to actual capability.

Senator TILLIS. Okay. So then it really was not budgetary driver for the force reduction?

General BROWN. No, it was not.

Senator TILLIS. Okay. General Raymond, Senator Cotton mentioned some of the classification and de-classification. I believe we were supposed to get a report due out at the end of March. We have not gotten that. Do we have any idea when we should expect to see that report?

General RAYMOND. I know OSD policy, specifically the new ASD [Assistant Secretary of Defense], is working that, and he is doing the work. I do not have an estimate on when it will get to you.

Senator TILLIS. Okay. If you could report back and give us an expected due that I would be interested in hearing that.

I guess a final question, I got a briefing before the Personnel Subcommittee. All of our service lines had some headwinds on recruiting. Air Force and Space Force seems to be maybe not as challenged as the Army. How are we doing on recruiting? What more do we need to do, as a matter of authorities or resources, to make sure you can hit your recruiting goals?

Mr. KENDALL. We do have issues on recruiting but we think we will be close to our meet our goals this year. Looking forward we are using up some of our delayed entrants in order to make that goal.

So there are some headwinds, the economy and demand for labor, a few other things, that are impacting recruiting. We are addressing this at the Department level, the Department of Defense as well as the Department of the Air Force. We have a number of things, such as bonuses, that we are offering now, increased advertising, and so on, outreach to places we have not been able to go. Under COVID our recruiters could not get into schools for a long time so that has been a big setback and that is corrected now, in general, we are doing a lot of things.

I am not aware of anything that we need from the committee or from the Congress at this time, though.

Senator TILLIS. Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Tillis.

Senator Wicker, please.

Senator WICKER. Thank you very much, Mr. Chairman. General Brown, I think the chairman of this committee is correct to worry aloud in his opening statement that the budget proposal comes against a backdrop of a very dangerous environment, including a very heated shooting war in Eastern Europe. Yet we have a list of \$4.6 billion that are not funded, including hypersonic testing, F-35 procurement, and weapon system sustainments, among other things.

Why aren't these in the budget request? I think I know the answer. You know, General Washington established a provision over two centuries ago that the military is answerable to the elected leadership of this country, and that is one of the crowning jewels of our system. I support that, and when the President tells you what to do, you salute.

But am I to understand that hypersonic testing, F-35 procurement, and this \$4.6 billion worth of unfunded priority list would help us in this dangerous environment?

General BROWN. Senator, they would, and this is in addition to what we have in the budget, but these are the capabilities provided for the Air Force to be able to do what the Nation is asking it to do.

Senator WICKER. So if we do not get them, what will the result of that be, General Brown?

General BROWN. Well, anything we do not have is going to drive some level of risk, and this is something that we talk internal to the Department of the Air Force and with the Department of Defense of how best to balance against the current threat and then also posture ourselves against a future threat.

Senator WICKER. I hope it is going to be the position of Republicans and Democrats in this committee that these are risks we do not need to take in this current environment.

General Brown, we know that you cannot predict the future. That is why the fiscal year 2022 budget planned for 2.2 percent inflation, and yet here we are, over 8 percent. What do you think the inflation will be for the things you need? I think it certainly will be more than 2.2 percent, and actually it's 5 percent plus difference in predicted inflation and actual inflation. That is having a negative impact on the Air Force's fiscal posture, is it not? Is it more expensive for you now to procure the needed items and train airmen than it was for you last year? Therefore, would you support more funding through a defense supplemental in order to account for the difference in what we thought inflation as going to be and what it actually is?

General BROWN. As you might imagine, with inflation, as you said, I cannot predict the future. But as we see what is happening today and what the trend lines might be, the aspect for us really to come back and work with the Committee and the Congress on how best to approach this and how both internal but also with the committee on how best to approach where inflation is taking us, not only right now but what might happen here in the future, as well.

Senator WICKER. So I am asking your advice on whether this committee and this Congress should come back and account for higher inflation in a defense supplemental.

General BROWN. Well, whether it is a supplemental or whatever other approaches you might take, what I am tell you is we do want to work with the committee and the Congress on how best to address inflation.

Senator WICKER. Well, a defense supplemental would do it quicker, would it not, General?

General BROWN. It probably would.

Senator WICKER. Okay. Now let me also ask General Brown about undergraduate pilot training. The budget process proposes retiring 50 T-1 training aircraft, including many in my state of Mississippi. These requirements are part of the Air Force's shift to Undergraduate Pilot Training 2.5, which incorporates simulators to a larger extent. Do you expect to produce the quantity and quality of pilots needed in the Air Force by shifting to these virtual simulators in the Undergraduate Pilot Training 2.5 model?

General BROWN. I do, and I think one of the areas that—I go back to when I went to pilot training, you know, nearly 37 years ago. The technology we have today in our simulator capabilities is much different from when I went to pilot training. So we are really taking a different approach and also understanding how our young people, our lieutenants that come to pilot training, how they learn and learn differently from the way I did. So I do see that we will still be able to make the numbers and provide the quality.

Senator WICKER. How long has that been in the works?

General BROWN. We have been working on this process for probably about 3 to 4 years.

Senator WICKER. It is not budget driven.

General BROWN. It is not budget driven.

Senator WICKER. Thank you, sir, and thank you all for your service.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Wicker.

Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman. Thanks to all the witnesses for being here.

Mr. Secretary, if we could start with you. Can you tell me, just give me a sense with regard to the budget, what specifically does this budget request do to increase the Air Force's ability to deter a Chinese fait accompli situation in Taiwan in the next several years?

Mr. KENDALL. Generally I think it provides a number of capabilities that will effectively do that. It sustains the current force to a level which supports combatant commanders. It is acquiring systems like the F-35, though not quite at the numbers we would have originally intended, as well as transforming some other elements of the force structure with increased capabilities.

Some of the capabilities I mentioned in my opening statement, however, will be longer. It will take longer to get them than the next few years, so there is a period of risk there.

Senator HAWLEY. Well, you are hinting at what my concern is here, which is that you appear to be cutting capabilities that we could use to deter China in the near term in favor of making investments, which I support for the long term, but of course that sets us up with a scenario where when we are in this potential danger zone between now and, say, 2030, as Chinese capability ramps up, we want to be sure that we can deter and deny in that window as well. I am concerned that this budget may not have us on track to do that.

Do you want to just respond to that, allay my concerns?

Mr. KENDALL. I do not think any potential adversary should underestimate the United States' military capability. We have the

most powerful military in the world, by a wide margin, and anyone who wants to challenge us should recognize that and realize that we are prepared. It is a very ready military as well. It has global responsibilities, and because of that it is fairly large, but it can swing those capabilities from one theater to another fairly quickly.

So any potential adversary I think should be given great pause when it looks at possibly taking on the United States, at any point in time. The risk is increasing over time because our adversaries, potential adversaries—China, who I am concerned about the most—is fielding increased capability over time. So we have to respond to that, and we are making marginal changes in the near term in order to have better capability in the longer term.

Senator HAWLEY. Let me ask you specifically about the Pacific Air Force's, PACAF. This would be the point of the spear for the Air Force, is the point of the spear for the Air Force and the Pacific. Were all of the posture requirements identified by PACAF or this fiscal year, fiscal year 2023, this budget cycle, were they funded in the budget request?

Mr. KENDALL. We do not fund posture requirements per se. We fund organizations that then are used to provide forces to combatant commanders. There is a constant dialogue, and General Brown was very involved in this, about what portions of our force are forward and how, as we modernize, we take forces out and replace them.

So there have been discussions about what forces to keep forward and as we retire certain aircraft, what should be changed in terms of forward posture. That is a continuing dialogue that really happens in the context of the Joint Staff and under the Secretary of Defense's direction.

General Brown, do you want to comment about that a little bit more?

General BROWN. Sure. So part of that dialogue is not only with PACAF but also, in this case, with INDOPACOM [United States Indo-Pacific Command], with Admiral Aquilino, on his requirements, and balance that between all of our global commitments to be able to not only support INDOPACOM but also the other combatant commands, and EUCOM [United States European Command] is one of those today that you see.

So there is a constant dialogue about how we base, how we posture, and how we actually train our airmen as well to handle really all the threats that we think we might face.

Senator HAWLEY. So are you telling me, Mr. Secretary, that there are no unfunded requests from PACAF? They got everything they wanted?

Mr. KENDALL. I am not aware of their requests, the unfunded requests from PACAF. They may have them but I am just not aware of them.

Senator HAWLEY. Okay, great. Could you take that for the record for me? If there are unfunded requests would you provide those to me?

Mr. KENDALL. Certainly.

Senator HAWLEY. Thank you. Let's talk about long-range anti-ship missiles if we could. If we were to be in a kinetic situation

with China, a fight with China, we would burn through LRASMs [Long-Range Anti-Ship Missiles] pretty quickly, would we not?

Mr. KENDALL. That would be speculating. We are acquiring some LRASM for the Air Force in our budget, and we probably will be doing more as we go forward.

Senator HAWLEY. Here is my concern. Last year you requested zero LRASMs. This year it is 28. Combined with the 60 LRASMs requests by the Navy for fiscal year 2023 that means we are only buying 88 total LRASMs in this budget year. I mean, can our industrial base not produce more than 88?

Mr. KENDALL. I am not sure what the limitations is there, but LRASM is not our only anti-ship capability. There are other weapons that can be effective in that mission as well.

Senator HAWLEY. So why are we not buying more then? Let me just put it to you that way. They are not the best bang for the buck? They are not efficient? I mean, help me get some clarity here.

Mr. KENDALL. We basically try to balance our munitions acquisition across all the different demands, and that is one of several. This is a new acquisition, I think, for the Air Force. So we are going to be integrating them into the force and learning how to use them. I would tell you there will definitely be more anti-ship capability going forward. Whether it is the LRASM or not, I am not certain at this point.

Senator HAWLEY. Great. My time has expired. I will have a few additional questions for each of you for the record. Thanks again for being here.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Hawley.

Senator Peters, please.

Senator PETERS. Thank you, Mr. Chairman.

Secretary Kendall, good to have you here. Thank you for your testimony. As we have discussed many times together, and you are well aware, Michigan's national defense footprint, including Selfridge Air National Guard Base and its A-10 and KC-135 missions that they have are critical for our national defense. It was an honor to host Deputy Secretary Hicks last year at Selfridge, so she could see the capabilities of that airfield firsthand, and for former Acting Secretary Roth to affirm the Air Force's commitment to Selfridge, writing in a letter to me as well as to Senator Stabenow, and I will quote, "As we adapt our Air Force to meet current and future national security challenges, Selfridge will continue to play an essential role," end of quote.

So, Mr. Secretary, my question for you is do I have your commitment that Selfridge will continue to play an important role in the Air Force's long-term plans as those are developed?

Mr. KENDALL. Senator I have no reason to believe otherwise.

Senator PETERS. I appreciate that.

General Brown, when speaking with Air Force Magazine on April 13th of this year, General Nahom stated that the Air Force needs to buy 72 new fighters a year in order to recapitalize a fighter force that can fight and win against a near-peer threat such as China. Yet the fiscal year 2023 Air Force budget only calls for 33 F-35s and 24 F-15EXs to be purchased this year. It also calls for overall

cuts in terms of the F-15EX, about a 50 percent reduction, from 144 aircraft to only 80.

By your own admission and statements that you have made, the F-15EX has several unique capabilities and for certain missions in particular, such as homeland defense, it is a superior platform to fifth-generation aircraft.

So my question for you, sir, is why is the Air Force planning on reducing the procurement of a proven, capable platform that can help us recapitalize the National Guard's fighter fleet, and more importantly, free up fifth-generation aircraft for more relevant missions?

General BROWN. Senator, we, as an Air Force, we are committed to 72 a year. That actually helps us to bring down our average age, and there is some analysis that has been done to work through that.

One of the things, as we went into this budget, was to balance the capability, not just from the fighter itself but it is also the weapons, it is the support and infrastructure that goes with it, which has put us in a position this year not to actually go after 72. So it is a balance of all the capabilities that need to come together to support the fighter force, we have a full capability, not just a partial capability, as we go forward.

This will be a continuing dialogue and continuing analysis that we will do as an Air Force to make sure we have the full capability for each one of the platforms we do procure.

Senator PETERS. Given that, the last question, would you purchase more F-15EXs if you were appropriated funds to do so by Congress?

General BROWN. We would definitely consider that, but I would also, as we do that, I would also look at the weapons that go with the platform so we actually have not only the capability but the capacity to go with those particular fighters.

Senator PETERS. Very good.

Secretary Kendall, I have sent a letter to Secretary Austin regarding my concern's with the Department missing some critical PFAS reporting deadlines, including both a deadline that requires the Department to explain a delay in reaching agreement with the state on proposed CIRCLA cooperative agreement cleanup plan as well as a March 1, 2022, deadline for reporting to Congress on status of PFAS remediation at 50 priority military installations.

Two of those installations are located in Michigan. PFAS remediation remains a high priority for all Michiganders, including myself. My question for you, Mr. Secretary, is what are your PFAS-related priorities, and just given the sheer scale of the contamination challenge that we face right now, how will you use your limited budgetary resources in the most effective way to deal with this problem?

Mr. KENDALL. PFAS is a well-recognized and national problem, of course, in the Air Force because of its use of it in firefighting and training over the years. That is obviously been a big source of that getting into the environment.

We are working through the CIRCLA process, and I think we are doing assessments, generally, now. We are well into that and finishing that. What we are all waiting for, of course, is for an EPA

standard that will help us understand what the remediation requirements are going to be, and then we will be able to move forward on remediation as well.

Senator PETERS. Thank you, and I appreciate your focus on this very important issue.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Peters.

I am going to recognize Senator Sullivan. We have a confidential session, closed session, afterwards, so if we can restrict our questions to 5 minutes I would appreciate it. Thank you.

Senator SULLIVAN. Thank you, Mr. Chairman, and gentlemen, good to see you. I want to begin by thanking you for your service to our country, which has been exceptional from all three of you. I also want to compliment the Air Force in a big way. You know, General Brown, Mr. Secretary, the F-35 bed-down at Eielson started on April 20th. A pretty difficult time if we all remember April—I am sorry, April 2020, and I am sure you have heard the last F-35 of the two squadrons has arrived. So on time, on budget during the biggest pandemic in 100 years. It is remarkable—remarkable work by the Air Force. I do not even know how you did that, so thank you.

As you know, that now provides Alaska with over 100 fifth-gen fighters. No place on the Planet Earth has 100 combat-coded fifth-gen fighters. I think the Russians and the Chinese certainly are noticing, so I appreciate that exceptional work by your team, and please pass that on to all the members in Alaska and everybody else who made that happen. It was a really incredible feat, so thank you very much for that.

Secretary Kendall, and for both generals, I have been disappointed, to be honest, by the budget submitted by the President. Last year he put forward a budget that was real defense cuts. Secretary Austin and Chairman Milley testified a couple of weeks ago, saying this was the biggest threat situation globally they have seen in 50 years and yet the budget is a 4 percent cut—4 percent increase, 8 percent inflation is an inflation-adjusted 4 percent cut—to the Department. Are you supportive of that kind of cut, Mr. Secretary?

Mr. KENDALL. I do not believe we made a cut. I think we had a significant increase, at least in the Air Force and the Space Force.

Senator SULLIVAN. Overall, I am talking about.

Mr. KENDALL. Overall we are 11 percent above the 2022 request. We are 6 percent, I believe, above the 2022 enactment.

Senator SULLIVAN. No, I asked for the overall DOD budget. It is a 4 percent cut by any measure.

Mr. KENDALL. I am not sure how you are doing your math, Senator.

Senator SULLIVAN. Well, I will do my math right now. Four percent increase from last year, which we boosted because the President put forward a weak defense budget. We increased it here in the Armed Services Committee. Eight percent inflation, which is actually 8.5 percent. That is pretty simple math, Mr. Secretary. That is a 4.5 percent real inflation-adjusted cut to the Department

of Defense. Maybe you can just wave off and say you are in charge of the Air Force, but do you support that? That is a cut.

Mr. KENDALL. We are prepared to work with the Congress on inflation. We know that inflation is uncertain right now for 2023.

Senator SULLIVAN. Well, look. I know that a number of our uniformed members do not support this but have to because the President is the Commander in Chief, and I understand that and I actually respect that. But we do not have to support the President's budget. We did not last year, and I doubt we will do it this year, in this committee.

Let me ask, Mr. Secretary, with regard to the Joint Pacific Alaska Range Complex, JPARC, I have been briefed on the need for the Joint Range Operation Center, the JROC, as a necessary item to integrate highly classified systems on fourth-, fifth-, and sixth-generation aircraft, simulating combating and superior adversaries. A number of folks have seen that as very important. Should we expect to see this as a priority in the Air Force's budget, both the JPARC upgrades and the JROC, that will enable us to not only operationalize the training there but to make it have implications for real-world contingencies?

When I went to Northern Edge last year with Admiral Aquilino this was a topic that was on everybody's mind. I know you and I have talked about it. General Brown, I would welcome your view on this as well.

Mr. KENDALL. JPARC is obviously of great importance to us. It is one of our premier ranges. It is critical for us to be able to train the way we need to train.

I do not have information for your now, and I will have to take it for the record, on the specific facility that you asked about.

Senator SULLIVAN. The JROC? General, do you have a view on that?

General BROWN. JPARC is one of our key ranges. The other one is the Nellis Test and Training Range and JPARC is the second. As we look at our range complex across the Air Force, those are the two primary ones that we want to upgrade. I will have to look into the details on the JROC, but knowing you have got to have that capability in order to actually be able to operate and train like we need to for an increasing threat.

Senator SULLIVAN. Great. Thank you.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Sullivan.

Senator King, please.

Senator KING. I will have several questions in the classified session, but a couple of questions. First, Mr. Secretary, it is good to see you again. Thank you. Congratulations.

How are we doing on the sustainment costs of the F-35? Are we making progress? Is that a black hole or is that something that we have an opportunity to fix?

Mr. KENDALL. Senator, I think there is still opportunity there. We have worked that hard over the years. The costs of the F-35 are roughly comparable to, say, the F-15. They are not dramatically out of line but that does not mean we cannot work harder to get them down. We are modernizing the Alice [phonetic] system, for a number of reasons, part of it operational and partly to reduce

cost. There are problems with the engine that need to be addressed to try to reduce the cost there.

Part of this is about readiness and about having the operational availability that we need as well as about reducing costs. It is going to be an ongoing, continuous effort.

As we modernize the system and go through Block 4 hopefully we will get the systems that are more reliable as well and reduce sustainment costs there.

Senator KING. You mentioned availability. How does the Air Force stand up against Delta Airlines, for example, in terms of readiness and availability of its aircraft?

Mr. KENDALL. I think the short answer would be not well, but we have a very different operating model. I have been to Delta and looked at how they do their maintenance, for example. It is built around keeping their aircraft constantly in the air to provide revenue, essentially. We try to provide combat readiness, so it is a very different model.

But nevertheless, there is a lot we can learn from airlines like Delta in terms of how to keep the fleet current and manage the resources that you have much more effectively.

Senator KING. I hope so, because that is one of the answers to the financial problem is to have more planes ready to fly.

On that note, where are we with the KC-46? Are the problems behind us? Are we ready to deploy those or is it still being worked out with Boeing?

Mr. KENDALL. We are using the KC-46 operationally. We just signed an agreement with Boeing to do the redesign of the remote vision system that is used for refueling by the operator controls and refueling. We have some other technical issues that they are working on to resolve. Right now we are able to service about 85 percent of our types of aircraft we have to refuel, and that is up pretty dramatically from where we were a year ago.

So the trends are very much in the right direction. We still have a little way to go to get the product that we absolutely have to have. I never project how an acquisition program is going to go. I think that is folly because they always have problems. But I think given the progress that has been made we can be reasonably hopeful about where we are going to be in terms of where we will end up with the aircraft.

I make the analogy to the C-17, which was plagued with horrendous difficulties for years and ended up being a product that we are all very happy to have now.

Senator KING. With regard to personnel rather than equipment, we have had a lot of discussion here about a shortage of fighter pilots and also a shortage of maintainers. Are we making progress on those two fronts? At one point, I cannot remember, I think we were short 1,500 or over 1,000 fighter pilots. How are we doing in that, both in recruitment and retention?

Mr. KENDALL. We have brought the backlog or the gap in fighter pilots down by about 300. It was on the order of 1,800, and we brought it down to about 1,500.

The shortage we have is not actually in units that have people flying. It is in rated officers who serve in staff jobs, where we want that kind of expertise available to help us with staffing functions.

So we are managing our way through this, but it is something we are addressing.

We are particularly interested in trying to increase the diversity of our pilots, our members in that operational career field, and C.Q. Brown can talk about that a little bit. We have not made the progress we would like to have made in that area, so we are doing a lot to reach out to communities that we would like to be able to draw from, and we are trying a number of initiatives to open up the opportunities to serve in aviation, to become a pilot, to be in the Air Force to groups that might not have that expectation. That is starting to bear some fruit, I hope.

On the maintenance side, I am not aware of any critical shortfalls there, but let me ask General Brown to comment on that.

General BROWN. The only thing I would add to that, Senator, on the maintenance piece, is that there are maintainers that are actually operating the systems we have today that are the same maintainers that we are going to actually have to transition to the capabilities we are going to procure. As we maintain some capability, if we maintain it too long then we cannot actually man and maintain the aircraft that are coming off the production line and coming into our units. So there is balance of how we make that transition.

Senator KING. Thank you.

I have got just a few seconds left. General Raymond, you are doing well on recruitment, I trust. This year's Air Force Academy graduates, do they want to join the Space Force?

General RAYMOND. Sir, we are going to commission 101 here in another few weeks into the Space Force. Recruiting is going very well.

Senator KING. Thank you.

Final point, congratulations, Mr. Secretary, on the emphasis on R&D [research and development]. Wars are generally won on new technology, and I think you are putting money exactly where it needs to be. I want to commend you on that budget priority. Thank you.

Thank you, gentlemen. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator King.

Senator Blackburn, please.

Senator BLACKBURN. Thank you, Mr. Chairman, and thank you all so much for your service to our Nation and for your time. General Brown, thank you for your time last week on the phone. I appreciated the conversation about hypersonics and AEDC [Arnold Engineering Development Center] and that importance to us in Tennessee.

We talked some about ARRW [Aerospace Rescue and Recovery Wing], and so, Secretary Kendall, I want to come to you on that, because the reports indicate, recent reports indicate that you are looking to move that funding away from ARRW and the hypersonics, and you are looking to pivot to R&D. So if you would, talk about the implications of this decision and moving away from ARRW, what that is going to mean to how you use those funds, where they are going to go, critical infrastructure, and how can Congress support the R&D that is necessary for ARRW and hypersonics?

Mr. KENDALL. Senator, we fully funded ARRW for research and development for the development of the program in the 2023 budget. We have not funded procurement yet, and ARRW, as I think you know, has had a series of test failures. As much as we are encouraged to have failures we have to have success before we can move forward to production. There are, I think, two tests that are planned over the next several months that will give us a better indication of where we are in the program, and then we will look at it again as we—

Senator BLACKBURN. Okay. Let's talk about that, because General Brown and I talked a little bit about how we become less risk averse. Because there has got to be a way to do this, especially when you look at the Communist Chinese and the amount of emphasis that they are putting on hypersonics, what you see happening in North Korea with hypersonics. There has to be a way that the Air Force says we are accepting failures because we learn from failures, and maybe even looking at this as there is no such thing as a failed test because we have to be learning and become competitive.

Mr. KENDALL. Yes, it is well understood in engineering that tests are ways to learn about your product and find problems and fix them. Eventually, though, you do have to get to successful performance in order to go ahead and field.

The best place to have failures and to tolerate them is in the early stages of technology maturation, when you are doing experimental prototyping to demonstrate whether or not something can actually be done at all. Once you are committed to a product that you want to take to production, you have a different—

Senator BLACKBURN. We understand that. We understand that. But what we are concerned about is falling behind.

Mr. KENDALL. I agree.

Senator BLACKBURN. There has to be a balance brought to this, where you are doing the appropriate R&D. AEDC is the place for doing much of this R&D, and testing, which we have to be committed to that testing phase so we can get to procurement and deployment, and those necessary components. But it also means that we have to invest in infrastructure and maintenance so that we have the ability to do that. I hope you will commit to visiting AEDC with me.

Mr. KENDALL. I think I have made that commitment before, and I will do so, Senator.

Senator BLACKBURN. Well, that sounds good.

General Raymond, I want to move to Space National Guard. There is quite a bit of interest in this. Some of us have legislation that would move forward with establishing a Space National Guard. Of course, we have wanted to do this—we have asked several times for reports, is the best way to say it, on the value and the feasibility of establishing a Space National Guard but we have not received reports.

So what can you tell me about where that is in the process?

General RAYMOND. When the law established to establish the Space Force, or passed to establish the Space Force, Congress directed us to do a study, and we have done those studies. The number one legislative proposal that we have this year is to take the

Reserve forces and Active and push them together in one. It is a legislative lift, but we want to work with the committee to do that.

On the Guard side, today we have been operating with the Guard for 25 years.

Senator BLACKBURN. Okay. In my time left, then, what is the most effective and efficient way to make certain we have a Space Force National Guard?

General RAYMOND. There are several ways you can do it. There are three ways. You can have a separate—

Senator BLACKBURN. Best way.

General RAYMOND. Best way is one of two. Either have a separate Space National Guard or take the capabilities from the Guard and move them into this one component.

Senator BLACKBURN. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Blackburn.

Senator Kelly, please.

Senator KELLY. Thank you, Mr. Chairman.

Mr. Secretary, as you know, any modern-air combat requires substantial jamming capability and suppression of enemy air defenses. I personally benefitted from that in the first Gulf War, often, flying with prowlers right behind me, shooting anti-radiation missiles.

As you know, currently the Air Force is transitioning from EC-130H aircraft to EC-37B for the Compass Call mission. The last of the 14 remaining EC-130s are supposed to retire in early 2026, and currently the Air Force has only funded 6 of the 10 replacement aircraft. So while I was really pleased to see an additional 4 Compass Call EC-37Bs listed as the Air Force's number two unfunded priority. I am also concerned with the fiscal year 2023 budget treatment of this capability, which requires Congress to find the funds to make this request a reality.

So, Mr. Secretary, how important is the EC-37B Compass Call's role in maintaining our decisive advantage in the battle space, and how does the platform fit within the Department's operational imperatives?

Mr. KENDALL. Senator, it is important, but like any similar aircraft against the most advanced threats it is going to have some issues with survivability. The judgment was made in the course of doing the budget that the inventory of six would be adequate to meet our needs. I know that General Brown has suggested that we should have more than that, but I will let him address that.

Senator KELLY. So if you do receive additional funding, what is the plan? Do you want to still rapidly field a minimum of 10 airplanes?

Mr. KENDALL. If the Congress provided additional resources we would use them as directed.

Senator KELLY. Okay, and maybe in the closed session we can discuss some of those vulnerabilities and the plan to get around those.

General Raymond, I want to ask you briefly about anti-satellite testing and capabilities. So the Administration recently announced an intent to ban anti-satellite, or ASAT, tests. As someone who has flown in space and had to maneuver around these debris clouds, particularly the one in 2007, created by the Chinese, I have witnessed the devastating effects that this irresponsible testing can

have, ASAT testing, and what it can do to low-earth orbit and our ability to operate there.

You know, I do believe we need to lead from the front on this issue and I applaud the Administration's steps here. However, it is clear that our adversaries do not share this goal, and this policy should not impede our military readiness, much like the Nuclear Test Ban Treaty did not impede our ability to field a nuclear triad. It is imperative that we continue to develop our Nation's space capabilities.

So how will the U.S. Space Force continue to develop the capabilities needed to maintain a competitive advantage in space, in a responsible manner, despite the Administration's call for an end to ASAT testing?

General RAYMOND. I could not agree more with you and your words, and I look forward, in the closed hearing, to go into a lot more details. We do not need to test capabilities in a destructive way, and I think to do so is irresponsible and not a behavior that we appreciate. So there are plenty of opportunities for us, and I really looking forward to talking to you more about that in the classified hearing.

Senator KELLY. All right. Thank you, General, and Mr. Chairman, I yield back the remaining minute.

Chairman REED. Thank you very much, Senator Kelly.

Senator Scott, please.

Senator SCOTT. Can you hear me?

Chairman REED. Yes.

Senator SCOTT. Secretary Kendall and General Brown, can you tell me how you will anticipate using A-10s over the next 5 years?

Mr. KENDALL. A-10s still have some utility in certain situations—counter-insurgency, counterterrorism, in particular.

Senator SCOTT. Are you using them—

Mr. KENDALL. They are less useful against more advanced threats.

Senator SCOTT. All right. But there is no place where you are using them today. Is that right?

General BROWN. We do not have them deployed right now, today.

Senator SCOTT. So in your budget you are continuing to maintain these aging A-10s, and then it seems to me that what we are doing is that you have got—you are only requesting 33 F-35As, which is the fewest since 2015. Does that make any sense? I mean, why do we keep these maintainers on the A-10s which we are not going to use and we do not anticipate using, and then we do fewer F-35s?

General BROWN. Our goal, Senator, is to transition away from the A-10, and what I want to have, from a nuclear fighter fleet, multi-capable, multi-role platforms. The intent here is, as we retire the A-10, just to take those maintainers and those operators and put them into the other capabilities like the F-35 and the F-15EX.

Senator SCOTT. But in your budget you are still maintaining A-10s. I mean, we do not have unlimited dollars, right? So it just does not seem logical that we are continuing to maintain A-10s and then you have less money to get F-35s. I mean if it is just politics I get it. I mean, you can tell me it is just politics. But that does not seem to make much sense.

General BROWN. Part of it, Senator, is the transition and our ability to transition and maintain some level of capability, not only for today's combatant commanders but as we make the transition what our future commanders will require.

It is something that we have talked about, as you might imagine, over the years, of how we make that transition, and it is something we will continue to work with this Congress and this committee on how best to do that.

Senator SCOTT. General Raymond, it was previously understood that the Air Force, Space Force, and the National Guard Bureau all agreed that it was prudent to establish a Space National Guard. Now OMB is fighting this, and claims the establishment of Space National Guard will cost hundreds of millions of dollars—I do not think that is true. There is no need to establish a Space National Guard in every state, and I do not think that OMB should be saying that otherwise. It seems to me that we only need about 17 units across 7 states. So do you think that makes sense?

General RAYMOND. We have been operating with the Guard for 25 years. They are in eight states and one territory. We have 839 guardsmen that perform space missions, and those are critical folks today operating critical capabilities for us today.

Senator SCOTT. Okay. So in your opinion it would be more cost-effective and operationally efficient if we established a Space National Guard?

General RAYMOND. There are several ways you can do this. There are several courses of action. You can establish a Space National Guard, you can have the Air Force National Guard continue to support us, like they do today, or you can take the capabilities out of the Guard and move them into this one component. There are several different options. The NDAA of last year directed us to do a study, and we will do that and come back to you with more thoughts on that.

Senator SCOTT. Okay. Secretary Kendall and General Brown, let's go back to the A-10s. I mean, it is just pure politics? Does it not bother you? I mean, you have unbelievable expectations. You watch what is going on in Europe. You watch what is going on in Communist China. You do not have an unlimited budget. I just do not get this idea that we have to maintain something that we are not anticipating using any time again, and we are not spending enough money on F-35s.

So in your opinion what would you do? I mean, forget what you have to do based on your jobs. What is your opinion of what we should do with A-10 versus more F-35s?

Mr. KENDALL. Senator, we are divesting, I think, 21 A-10s in this budget, in Indiana, replacing them with F-16s. We would expect to divest additional A-10s in the future.

General RAYMOND. We are continuing on the path of the transition away from the A-10 to the F-35 and F-15EX.

Senator SCOTT. But is your money—would you keep maintaining the A-10s?

General BROWN. Part of this again, Senator, it is a transition away from the A-10 to where we are today. As you might imagine, I cannot predict the future, but my sense is we are not going to

be in many environments where the A-10 will survive, which is why we have got to make the transition away.

Senator SCOTT. Thank you for what you are doing, I do not think your jobs are easy, and good luck.

Chairman REED. Thank you, Senator Scott.

Senator Manchin, please.

Senator MANCHIN. Thank you, Mr. Chairman.

This will be to all three and I will start with General Brown. Just you all's evaluation from a professional level what you can share with us today in the whole Ukraine-Russia, or let us say Putin war on Ukraine in the air, the air war that is going on there, and the perception of a lack of defense or lack of a force coming from Ukraine, or the support of NATO or us. People have criticized why did we not do this, why did we not get more involved, air cover, why did we not do a complete support of air retaliation.

Can you speak on that, General Brown, just in generalities? I know from detail you cannot get into it, but if you evaluate the Ukraine, what Russia has done, how we have been able to defend, why Ukraine is not flying the planes they already have, but they are asking for more, and they want air cover or basically they want a no-fly zone?

General BROWN. I cannot speak to exactly why the Ukrainians are not flying. I know they are doing some flying. But what I would tell you, Senator—

Senator MANCHIN. They do have aircraft. I mean, they are not utilizing all their aircraft that they already have access to. Is that correct?

General BROWN. That is somewhat correct.

But here what I will tell you, Senator. Air superiority cannot be assumed, and one of the things that the Ukrainians have been able to do, based on their air defense capability, is actually threatens the Russian air power. From that aspect it is a combination of not only what you are able to do with the airplanes in the air but what you are able to do with your other defenses. That is something, I think, as you look at the—I would say the Ukrainians have been fairly successful in using their air defenses.

Senator MANCHIN. Are you talking about the missile defense, things of that sort?

General BROWN. Some of the missile defense. Some of the capabilities they already had indigenous into the Ukrainian Armed Forces. They have had some capability and they made it more challenging for the Russians from an air power perspective.

Senator MANCHIN. I am just saying I have not heard any attacks coming from their air, from the Ukraine Air Force, if you will, and the planes they already had. I heard it is coming mostly from basically air and missiles or that were drones and things of that sort.

Secretary, if you had any information you could share in an open meeting like this?

Mr. KENDALL. I do not think I have any we can share in an open forum. We might have some information we can give you in a classified setting.

Senator MANCHIN. We are going to that next.

General Raymond, did you have any observation you want to share?

General RAYMOND. I would just——

Senator MANCHIN. People are interested. They ask me all the time, and I want to let them know that we are supporting every way possible, Ukraine.

General RAYMOND. I think it is clear that the character of war has changed, as I said in my opening statement, and I think this war shows the value of space being able to provide information. I think one of the things is that it also showed the value of commercial capabilities, and commercial space specifically, and being able to share intelligence more broadly, being able to shape the gray zone operations. So it has been really important.

Senator MANCHIN. General Raymond, this will be for you all. You know you have one of the smallest uniformed services within the Department of Defense, and I know you are actively getting the best of the best. I would just ask, where do you stand on the Space National Guard? If that is a way, there are a lot of talented people all over this country. I know in West Virginia National Guard they are ready to go. How are you looking at that?

General RAYMOND. Yes, sir. Today we operate with 839 guardsmen. We have been operating with them for 25 years. They are really important to us. They are limited in states on where they are located. They are located in eight states and a new unit that is standing up in Guam, and so those capabilities that are there and the people that are there are very important to us and we cannot do our job without them.

Senator MANCHIN. Are they integrated into the space part?

General RAYMOND. Currently they are in the Air National Guard and they support us in the Space Force, like they did when we were in the Air Force. That has continued.

Senator MANCHIN. You all are actively involved in evaluating their capabilities of where you might have the strongest support?

General RAYMOND. Absolutely. Yes, sir.

Senator MANCHIN. Secretary Kendall.

Mr. KENDALL. I will just add that those people are important to the Space Force and we want to keep them. The exact mechanism by which we do that and how they are titled and structured, I think we are open to discuss.

The concern the Administration had, I think, was that we would create a lot of overhead costs associated with a new organization. There were concerns that CBO had, I think, about establishing a headquarters and so on. I do not think that is necessary. I think we can find a way to keep those people doing what they are doing. They are a very valuable part. They are significant fraction of the Space Force. They are about 10 percent of the force right now.

So we want to keep them around. They are important to us. They are valuable. Obviously we need to find the right mechanism to do it.

Senator MANCHIN. We are very proud of the West Virginia National Guard, and they do an unbelievable job, and so much talent is coming from different arenas that I think can be very, very supportive.

Thank you all for your service. Thank you.

Chairman REED. Thank you, Senator Manchin.

Senator Duckworth, please.

Senator DUCKWORTH. Thank you, Mr. Chairman, and thank you, gentlemen, for joining us today.

I have advocated consistently in this committee for combat-credible air mobility and aerial refueling capabilities that need to reside not just in our Active component but that maximizes the incredible combat power of our Guard and Reserve components. I applaud your use of total force integration, or TFI, in your concept of operation for the KC-46. Formally associating Active Duty units with Guard and Reserve units truly acts as a combat multiplier for our crewed airlift squadrons.

Yet I am deeply aware of the challenges classically associated that units face as they start to employ TFI operations. It can take years to build the administrative processes, and most importantly, the trust between Active and Reserve components working shoulder to shoulder.

General Brown, could you comment on the value of total force integration for units that provide vital capabilities like aerial refueling, and how does this concept of integrating Active and Reserve component servicemembers impact the total Air Force's readiness operations and budget?

General BROWN. There is great value in our total force, and when I think about our airmen both that are Active Duty but also that are Guard and Reserve, and the experience that they have had, it is tremendous. I will just tell you that I have watched this over a number of years. When I was a lieutenant colonel in the Pentagon I ran the Total Force Initiative program operational planning team to actually get us on a path. Hill and Langley were a couple of examples. Vermont was another example.

What we have learned here, you kind of talked about the culture and the trust. We have come a long way in the past—I would say it has probably been about 17 years when that occurred.

So great value in the ability to work very closely with our Guard and Reserve, and it gets to a point where you almost cannot tell the difference, when we all go out and deploy and operate together. That is the real benefit of the total force.

Senator DUCKWORTH. Thank you, General. I am proud of the excellent track record of successful total force integration operations at the 126th Air Refueling Wing out of Scott Air Force Base in Illinois. The recently won their tenth Air Force Outstanding Unit Award, which is their third in a row. I am very proud of them.

Looking past the final fueling of the KC-46, though, the future of aerial refueling is somewhat ambiguous. We agree that the future concept of aerial refueling may look vastly different from today, and I appreciate that developing this concept of operations and the technology to enable it will take time and investment from both government and industry. It is imperative that we are transparent in our industrial base and suppliers as to our plans. This transparency builds the trust needed to achieve our future combat capabilities and ensure that we are not left with a critical capability gap.

Secretary Kendall, how are you working with our defense industrial base to provide transparency on the KC-Y commercial derivative tanker plans, and when do you intend to start identifying requirements for the future KC-Z tanker to ensure that the Air

Force stays on track to replace our aging KC-135 fleet by the mid-2050s with the fully capability tankers required to meet the needs of USTRANSCOM and the other combatant commanders?

Mr. KENDALL. That is a great question, Senator Duckworth. Our plan for the tanker fleet is evolving over time, and we are having to react to what the threat is doing. At one time we had a plan that the KC-46 would be followed by the KC-Y, as what we called a "bridge tanker" to a future KC-Z, which had not really been defined.

As we look at the requirements—and I am trying to be very direct about this—it does not look at necessary or as cost-effective as it once did to introduce another aircraft that is KC-Y. So we are not sure what we are going to do about that yet. We have not finished analyzing the requirements, but if the needle was over here at competition it has moved back towards not necessarily having competition, part of the way anyway.

As far as KC-Z is concerned, what we do really for a next generation, I think that is going to be threat driven. What I am seeing happening with the threats is that they are trying to find creative ways to reach out further and engage our tankers at ranges at which they would once have been secure, and that is going to be a very big problem for us. We have to rethink how we support our forward tactical aircraft, in particular, and what the tanker of the future looks like, in a much broader sense. So that work is really just getting underway.

Senator DUCKWORTH. Thank you, Mr. Secretary.

As we aggressively modernize our forces we expect the services to achieve a delicate balance between funding new acquisition programs and the maintenance programs necessary to maintain today's fleet. Across the DOD, some program offices are using FAA-certified used and refurbished parts and engines, known as used serviceable materials, into their supply chains. When implemented, this practice has demonstrated significant cost savings, potential and increased availability of parts, yet used serviceable materials are not consistently incorporated into the supply chain for all commercial derivative platforms. I know I have brought this up with both of you before.

General Brown, what benefit do you see used serviceable materials playing in the maintenance of our commercial derivative platforms and how can Congress help the Air Force to expand the use of this innovative approach, allowing you to realize the potential cost savings and greater repair parts availability of used serviceable materials, and the advantages that they offer?

General BROWN. The advantages they offer, as you actually highlight, is cost. It also makes a broader pool of parts availability to us. I think one of the things we will have to continue to work with, with the Congress but also internal to the Air Force, is laying out a bit of the process and culture to do that. It is not something we have done as much, typically, but it something I think we could take advantage of here, more so in the future.

Senator DUCKWORTH. Well, count on me to help you in whatever way you can to help change that culture. The commercial airlines use them. There is no reason why we cannot use them in the Air Force as well.

Thank you.

Chairman REED. Thank you, Senator Duckworth, and gentlemen, thank you for your excellent testimony. We will reconvene immediately in SVC-217 for the classified portion of this hearing. With that I will adjourn the open portion of the hearing.

[Whereupon, at 11:52 a.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR RICHARD BLUMENTHAL

COMBAT SEARCH AND RESCUE (CSAR) DEMAND IN A RUSSIA/CHINA CONFLICT

1. Senator BLUMENTHAL. Secretary Kendall and General Brown, we saw significant use of Air Force Rescue Squadrons in Iraq and Afghanistan, where the numbers of downed pilots or isolated personnel was relatively low. How much greater a demand signal would you expect for combat search and rescue missions in a conflict with Russia or China?

Secretary KENDALL and General BROWN. Our analysis and the nature of the threat indicate demand would increase, but there would also be a dramatic increase in the threat to our CSAR helicopters, if we experienced losses over land. In the Pacific, we would expect more losses over the ocean, where CSAR specialized assets would not be required.

OTHER CSAR PLATFORMS

2. Senator BLUMENTHAL. Secretary Kendall, what other platforms are you fielding within the next decade that will be more survivable and have the same versatility as an H-60 Whiskey to perform the CSAR mission?

Secretary KENDALL. Science and technology investments are underway to explore advanced, high-speed, vertical takeoff and landing technologies that could increase survivability against advanced threats.

LONG TERM PLANS FOR CSAR

3. Senator BLUMENTHAL. General Brown, on the Combat Rescue Helicopter (CRH), the United States Air Force has already begun to retire ahead of plan the existing HH-60G fleet, leaving these high demand fleets stretched. What is your long-term plan to provide rescue capability for combat forces to ensure we “leave no one behind”? How will the United States Air Force keep the Active and Guard and Reserve fleets available to support the growing rescue demands of the DOD?

General BROWN. The AF Personnel Recovery triad of HH-60W Jolly Green II helicopters, HC-130J Combat King aircraft, and Guardian Angel extraction teams will provide combat search and rescue capabilities to the Joint Force for the foreseeable future. Each of these weapons systems has Active, Guard, and Reserve components. Both aircraft-based weapons systems are new and have higher aircraft availability rates than the legacy systems they replaced. The demand signal for Combat Rescue aircraft was originally based on two Counter Insurgency fights. Today, China is our most consequential strategic competitor and the pacing challenge for the Department. The HH-60W is not effective in the highly contested environment, nor is it effective across the distances required for Pacific operations. Long-term plans include leveraging Science and Technology investments, which are underway, to explore advanced, high-speed, vertical takeoff and landing technologies that could increase survivability against advanced threats.

H-60 AVAILABILITY FOR A PEER CONFLICT UNDER FISCAL YEAR 2023 PROCUREMENT PLAN

4. Senator BLUMENTHAL. Secretary Kendall and General Brown, will United States rescue squadrons be able to meet the demand of a conflict with Russia or China in the next 10 years under the acquisition plan laid out in the fiscal year 2023 budget?

Secretary KENDALL and General BROWN. With the existing force, Air Force Rescue Squadrons will have a reduced utility to meet combat rescue demand in a peer conflict. This is an example of an area where the Air Force is taking prudent risk in order to transition from the force we have today to the force needed to meet our pacing challenge, China.

TIMELINE TO REESTABLISH SQUADRONS

5. Senator BLUMENTHAL. General Brown, if we stand down squadrons, or do not replace all our Pavahawks, how long would it take to reconstitute or reestablish combat rescue squadrons and capabilities necessary for a China or Russia fight?

General BROWN. Current CSAR systems will have limited utility in a conflict with China or Russia due to their lack of survivability against advanced threats. It is unlikely we would increase those capabilities, but if we did so, it would likely take several years.

MATERIAL CONDITION OF CURRENT PAVEHAWK FLEET

6. Senator BLUMENTHAL. General Brown, I have heard reports from the 33rd Rescue Squadrons in Kadena, Japan and from other squadrons of structural issues with their Pavahawks from their heavy use in Afghanistan. Which squadrons will be fully recapitalized with the H-60 Whiskey and which will not due to the decreased buy?

General BROWN. Reduced HH-60W procurement will limit the ability to recapitalize HH-60G units one-for-one. The Air Force is completing a Global Posture Review for fighters and rescue, intended to provide options to the SecAF and CSAF of required force structure changes, strategic basing recommendations, and recapitalization plans for legacy aircraft. Results of this review will inform the strategic basing process.

PAVEHAWK SERVICE LIFE EXTENSIONS

7. Senator BLUMENTHAL. General Brown, how many of our current Pavahawks are currently at or near or at the end of their service lives and will not be replaced? How long will they continue to fly and what has been the effect on aircraft readiness?

General BROWN. The remaining HH-60G fleet of 82 aircraft are at or near the end of their service lives and retirements will be complete by the end of fiscal year 2026. Aging fleets such as this are more costly to sustain, and they maintain lower levels of readiness.

QUESTIONS SUBMITTED BY SENATOR MAZIE HIRONO

DELIVERY OF THE NEW AERIAL REFUELING AIRCRAFT

8. Senator HIRONO. General Brown, in last year's NDAA, Congress set limits on the number of KC-135 and KC-10 refueling aircraft the Air Force could retire over the next three years as a result of acquisition delays and capability limitations the new KC-46 replacement aircraft is still experiencing. Has the Air Force made any progress on speeding up the delivery of additional KC-46 aircraft?

General BROWN. Delays caused by re-work from quality escapes on aircraft coming from the factory represent the greatest impact to the Boeing delivery schedule. Boeing has matured its engineering designs and manufacturing processes. These areas have stabilized since the early phases of the production program. The Air Force and the Defense Contract Management Agency are exploring corrective options available with FAA partners to further improve Boeing's quality and production rate. Concurrently to the Government working with Boeing to improve delivery timelines, Air Mobility Command (AMC) has been successfully fielding KC-46 interim capability to support operational and training missions and meet USTRANSCOM air refueling requirements. Currently, the KC-46A can refuel receiver sets that constitute about 85 percent of USTRANSCOM receiver-type taskings. AMC is evaluating adding other receivers for operational use, with the target of increasing that number by mid-summer 2022.

9. Senator HIRONO. General Brown, what is the timeline for correcting the KC-46's problem with refueling planes in different lighting conditions?

General BROWN. The current KC-46 Remote Vision System (RVS) has deficiencies preventing safe and effective refueling in changing lighting conditions. RVS 2.0 is expected to resolve the deficiencies of the current system, providing marked improvements through a complete re-design of the refueling operator station, along with upgraded sensors, displays, and associated hardware/software. The RVS 2.0 Preliminary Design Review officially closed in April 2022, and the program schedule is currently on track, with retrofit and production cut-in planned to start in mid-to-late 2024. The full KC-46 fleet is expected to be outfitted with RVS 2.0 by end of 2029.

In parallel to these RVS deficiency resolution efforts, Air Mobility Command (AMC) has been successfully fielding KC-46 interim capability to support operational and training missions and meet USTRANSCOM air refueling requirements. Currently, the KC-46A can refuel receiver sets that constitute about 85 percent of USTRANSCOM receiver-type taskings. AMC is evaluating adding other receivers for operational use, with the target of increasing that number by mid-Summer 2022.

SUPPORT FOR INDOPACOM AND PDI

10. Senator HIRONO. Secretary Kendall, General Brown, and General Raymond, Admiral Aquilino published his “Seize the Initiative” concept which describes how INDOPACOM plans to implement integrated deterrence as a part of the National Defense Strategy. The DOD’s Fiscal Year 2023 President’s Budget request also includes \$6.1 billion in targeted investments to specific programs for the Pacific Deterrence Initiative (PDI). How do projects such as the Pacific Multi-Domain Training and Experimentation Capability, or PMTEC, shape these initiatives and enhance the Air Force’s presence in the Pacific?

Secretary KENDALL, General BROWN, and General RAYMOND. The pace of China’s military modernization, its increasingly aggressive actions in the Indo-Pacific theater, and its ability to threaten the Homeland should be continuously evaluated. Initiatives such as PDI help us to continue deliberate prioritization of requirements, guiding decisions regarding trade-offs between short-term and long-term risks associated with modernization efforts. The Pacific Multi-Domain Training and Experimentation Capability (PMTEC) provides an environment for joint and coalition partners to conduct integrated training across all domains (ground, air, maritime, cyber, space, and information). Integrated training events demonstrate resolve and reinforce the value of integrated deterrence.

11. Senator HIRONO. General Brown, how will Air Force military construction projects on islands around the Pacific enhance PDI?

General BROWN. To win in an Indo-Pacific theater contingency, DOD must design a lethal and resilient forward-deployable force, able to protect the interests of the United States, as well as our Allies and partners. DOD must also posture that force to permit effective and timely employment to credibly deter and/or decisively engage in the future fight. The Pacific Deterrence Initiative (PDI) Military Construction (MILCON) investments help ensure the United States is best equipped, trained, and positioned to accomplish this. The investment of resources to improve infrastructure and facilities throughout the Indo-Pacific theater provides our allies, partners and strategic competitors a clear indication of the United States’ long-term commitment to the Pacific. These MILCON projects will build resiliency in the Indo-Pacific region and include establishing a Pacific Divert capability, key facility recap & hardening, resource dispersal, and fuel support facilities.

12. Senator HIRONO. General Brown, how do the divestitures of aircraft included in your budget affect the Air Force’s operational commitments in the Pacific in the short-term?

General BROWN. The Air Force continues to work with INDOPACOM, and more broadly across the joint force, as we make decisions to retire certain aircraft. When determining what forces we must keep forward positioned and what we can divest in order to advance modernization efforts to address the challenges of tomorrow, we strongly consider the Combatant Commands’ operational knowledge and military recommendation.

13. Senator HIRONO. Secretary Kendall, General Brown, what else is the Air Force doing to support INDOPACOM and PDI?

Secretary KENDALL and General BROWN. We would be happy to discuss your question in a classified setting. What we can say is, the most important metric for the Nation is that its Air Force has confidence in the ability to win wars against near-peers and especially our pacing challenge. Balancing investments with affordable capacity, the Air Force must identify and prioritize critical capability gaps in order to build a force that best supports the Joint Force mission and wins the future fight. The solution to minimizing capability gaps is not hanging on to legacy capabilities, not only across the fighter fleet, but the entire Air Force.

We remain committed to supplying the Nation with a fighter force that is capable, sustainable, and affordable, with the ability to operate across the entire range of mission sets.

SMALL BUSINESSES

14. Senator HIRONO. Secretary Kendall, in conjunction with AFWERX, the Air Force has been awarding Small Business Innovation Research (SBIR) contracts that include technology research and development projects ranging from artificial intelligence to supply chain security. These types of initiatives coupled with the Air Force's annual Tech Warrior Exercise help small businesses bring much needed technological advancements into the Department. What progress has the Air Force made in removing barriers to entry for small businesses to access both SBIR contracts and other small business initiatives?

Secretary KENDALL. AFWERX established the United States Air Force SBIR/STTR Open Topic Program in part to remove barriers to entry for small businesses. Out of approximately 1,800 AFVentures-funded companies, more than 75 percent received their first Air Force SBIR/STTR award through the program. Additionally, AFWERX has streamlined the evaluation and contract award process, dramatically reducing the timelines for award. Currently AFVentures issues 85 percent of SBIR/STTR awards in under 180 days—an increase from 42 percent prior to AFWERX' founding. AFWERX is implementing a cross-SBIR/STTR standard of a maximum 90 days to award and objective of 75-day timeline to award. By implementing standardized processes and disciplined parameters for execution, the program intends to continue to improve award timelines and other barriers to small businesses. Additionally, the Department of the Air Force (DAF) initiated the "DAF CISO's Blue Cyber Initiative" for DAF SBIR/Small Business/Academic-Research Institution contractors and potential contractors to ensure these defense industrial base partners have no cybersecurity or information protection questions. It provides connection to the multitude of state and federal resources available to assist small businesses to become cyber secure; many funded by the DOD Office of Local Defense Community Cooperation (OLDCC) grants-to-states for defense industrial base cybersecurity development program.

Over the last 6 months, the DAF Office of Small Business Programs (SAF/SB) successfully assisted DOD and OMB with development and issuance of the following comprehensive guidance on reducing entry barriers: (1) OMB Memorandum M-22-03, Advancing Equity in Federal Procurement, (2) DOD Equity Action Plan, and (3) DOD EO 14017 Action Plan, Securing Defense-Critical Supply Chains. The DAF is beginning to implement this guidance, in coordination with the DOD and the other Military Departments. We will keep Congress informed of our progress. Further, SAF/SB provided extensive recommendations to the Defense Business Board (DBB) on improvements and expansion of the DOD Mentor-Protégé Program, which the DBB adopted in its MPP Report to Congress.

SAF/SB is currently assisting DOD with updating the 2019 DOD Small Business Strategy, which is expected to include measures to reduce entry barriers consistent with Congressional direction at 10 U.S.C. 4901. Other examples include efforts to eliminate barriers: DAF is working proactively with the Department of Defense on implementing important flexibilities provided by Congress to let small businesses take advantage of SCIFs and facility clearance (FCL) resources of partner firms through joint venturing, as well as through the DOD and SBA Mentor-Protégé Programs. The DAF Office of Chief Information Officer has recently announced the Blue Cyber initiative to assist small businesses with cyber security compliance.

15. Senator HIRONO. Secretary Kendall, what is the Air Force doing to overcome the dreaded "valley of death"?

Secretary KENDALL. The two great barriers to transition are funding availability and low prioritization. Nevertheless, we are working to improve transition opportunity and efficiency.

Last fall, I directed a Department of the Air Force Management Initiative to assess technology transition pipelines and mechanisms, and recommend improvement actions. The team, spanning 35 DAF organizations, reviewed current technology transition pipelines and engaged partners to identify common themes, barriers, and areas for improvement. Key findings include the importance of transition funding for concept refinement and risk reduction, and the prioritization of acquisition, requirements, and resourcing activities to facilitate transition. Detailed results are currently being formulated into actions to improve tech transition speed and effectiveness.

In fiscal year 2022, the DAF established the AFWERX Prime program to identify emerging commercial technologies that can enhance military capabilities, and co-invest with industry to deliver capabilities in 2 to 4 years. Industry benefits from the government expertise, infrastructure, and certification expertise (e.g., airworthiness, safety). The DOD benefits from accelerated capability of emerging disruptive tech-

nologies. The first Prime program, Agility Prime, is enabling alternative mobility options, reduced carbon footprint, flexibility, and runway independence. SPACEWERX initiated an Orbital Prime program, which will advance dual-use markets for active debris remediation.

PILOT SHORTAGES

16. Senator HIRONO. General Brown, the Air Force has been experiencing significant shortfalls in both pilots and aircraft maintainers in recent years. What steps are you taking to address the pilot and aircraft maintainer shortage?

General BROWN. There are 6 initiatives to innovate and increase production to meet the minimum annual production target of approximately 1,500 pilots:

1. UPT 2.5 seeks to increase combat capability and prepare for a peer fight.
2. Rotary-only Undergraduate Helicopter Training increases our production by approximately 90 grads per year in fiscal year 2024, using a rotary only path to wings.
3. Civil Path to Wings is a currently unfunded program to produce military pilots from highly qualified civilian pilots.
4. Remote Civilian Simulator Instruction could increase production by up to 100 grads per year, through increased simulator instructor manning—prototype contract awarded in Oct 2021 with demonstration in fall 2022 (no funding beyond demo).
5. Pilot Training Next increases utilization of simulator training; several recently graduated students attended Air Mobility Fundamentals using a simulator-only curriculum.
6. Proposed Accelerated Path to Wings [T-1-only track] increases pilot production with 200–250 grads per year through fiscal year 2024

To address the maintainer shortage, the Air Force continues to focus on the aircraft maintenance retention strategy that has successfully contributed to the current 98 percent fill rate for our funded maintenance billets. The 2 percent dip from last year is the result of the maintenance community gaining additional authorizations in this fiscal year. The retention strategy focuses on building and maintaining the right skill levels and specialties within its enlisted maintenance workforce. It focuses on cyclical evaluation of historical retention trends; on-going review and adjustments to retention goals by skill level and maintenance specialty; clear understanding of retention rates necessary to attain those goals; and establishment of metrics needed to track performance against those goals from year to year. Keeping maintenance manning and retention high relies on being able to coordinate timing for aircraft divestment with arrivals of new weapons system (e.g., F-35, KC-46, B-21, NGAD). Without the ability to repurpose our maintenance manning in a timely manner, retention levels will be put at risk again.

17. Senator HIRONO. General Brown, what efforts are you undertaking to recruit, retain, and remove barriers for a more diverse force, and in particular what steps are you taking to diversify the pool of pilots serving in the Air Force?

General BROWN. The DAF is taking an integrative approach to recruit and retain diverse talent representative of the best of the United States, as well as mitigate barriers. It stood up the Secretary of the Air Force Office of Diversity and Inclusion and also have seven DAF Barrier Analysis Working Group Teams that identify barriers for underrepresented groups. The Air Force has updated policies and continues to evaluate policies, guidance, and procedures to remove exclusionary practices or language, as well as eliminate unnecessary barriers for career progression and development. Additionally, we have conducted surveys to allow members an opportunity to inform us where additional barriers may exist as well as convey why personnel choose to continue to serve or end their service.

The DAF, through the Air Force Recruiting Service (AFRS), specifically recruits diverse talent for military personnel, and the Air Force Personnel Center does marketing for civilian personnel. AFRS is conducting in-person and virtual events that include special events, conventions, expos, conferences, job fairs, air shows, school visits, etc. to reach a diverse field of potential applicants. AFRS conducts targeted campaigns on various platforms such as streaming video, social media apps, premium video advertising, and experiential marketing.

Recruitment of a more diverse pool of personnel includes a multi-pronged effort focused on outreach and engagement. In particular, our recruiters recently participated in the largest collegiate ESPORTS live event to date—offering an opportunity to explain how technology is the basis for our STEM career fields. The DAF currently has multiple STEM-specific partnerships that strategically target this audience: First Robotics, Major League Hacking, 4H, USA Science and Engineering, Skills USA, Aircraft Owners and Pilots Association, Organization of Black Aero-

space Professionals, Women in Aviation, and American Institution of Aeronautics and Astronautics, and Space Camp.

University Partnership Program (UPP) facilitates the education and recruitment of a diverse pool of military and civilian STEM talent into the Guardian workforce and funds research projects of vital interest to the universities and the United States Space Force. UPP provides a consistent pipeline of required talent through scholarship, internship, and mentorship opportunities. The UPP is comprised of 14 nationally-renowned universities. The DAF is establishing first-ever University Affiliated Research Center (UARC) to develop opportunities to better connect Historically Black Colleges and Universities (HBCU) and MSIs with STEM and Science and Technology needs of the Department. The UARC is expected to be awarded in fiscal year 2023.

The DAF has stood up an office at the Air Education and Training Command that directly works on rated diversity initiatives and an aviation Task Force at the Air Force Headquarters-level. The Air Force has a Rated Prep Program that expanded in fiscal year 2021 to include enlisted applicants. Underrepresented group participants increased from 51 percent in fiscal year 2019 to 65 percent in fiscal year 2021. Moreover, The Rated Prep Program increases United States Air Force Academy (USFA) Cadet Engagement with Diverse Rated Officers and increases career mentorship opportunities. The USFA class of 2024 is the most diverse class ever with 30.2 percent women and 36.2 percent self-identified as racial/ethnic underrepresented groups.

The Air Force JROTC Flight Academy Summer Program in 2021 had 299 AF JROTC Participants = 27 percent minority/35 percent female (52 percent underrepresented groups). 103 cadets of 216 graduates are from underrepresented groups; 68 cadets of 216 graduates are female (31 percent). In fiscal year 2022, the Aim High Flight Academy conducted three camps with 72 students in which 53 percent of the students were from racial/ethnic underrepresented groups and 40 percent were females.

MISSILE WARNING AND TRACKING

18. Senator HIRONO. General Raymond, the Space Force is collaborating with other DOD partners, including the Missile Defense Agency, on the Next Generation Overhead Persistent Infrared missile warning and tracking system—what can you tell me about your progress on this system?

General RAYMOND. Successful multi-agency collaboration resulted in an updated Missile Warning/Tracking/Defense force design formalized in the 4th quarter fiscal year 2021. Since then, the United States Space Force's Space Systems Command, the Space Development Agency, and the Missile Defense Agency partnered with the broader mission area team to allocate capability requirements, establish a Combined Program Office, and begin the acquisition of a first-ever proliferated architecture consisting of more than 150 satellites and associated open architecture ground segments. This revolutionary missile warning and tracking capability is an essential component of strategic deterrence; it will provide global coverage of infrared events, and detect advanced tactical to strategic threats, including advanced hypersonic threats. It will provide reliable warning for the National Command Authority's nuclear response decision process, thereby informing senior decision makers to include the President, the Secretary of Defense, and Combatant Commanders.

19. Senator HIRONO. General Raymond, how is the Space Force planning to protect critical intelligence, missile warning and tracking, and communications satellites in space from emerging Chinese and Russian threats?

General RAYMOND. China and Russia have been developing, testing, and deploying an array of ground- and space-based counter-space systems that could directly threaten the United States space assets. In order to counter these current and future threats, United States Space Force created an analytically-based, threat-informed force design process to determine the space capabilities needed by the Nation, and in some cases by our allies, to provide missile warning and other functions.

United States Space Force designs inform operational requirements and budget needed for future space programs, and incorporate resiliency against current and projected threats into our design through system attributes, such as orbit diversity and proliferated satellite architectures. In addition to greater resiliency, proliferated and distributed architectures also provide opportunities for increased mission capacity and/or capabilities.

United States Space Force completed its first major force design study on our missile warning and tracking mission, the results of which form the foundation of the

fiscal year 2023 budget request. We are currently conducting force design assessments on the space data transport architecture and other mission areas.

FUTURE FIGHTER MIX

20. Senator HIRONO. General Brown, last year the Air Force and CAPE launched a tactical aircraft study which was to inform your fiscal year 23 budget request. What were the key takeaways from the study?

General BROWN. The United States Air Force Tactical Aircraft (TACAIR) report is classified SECRET and was used to inform capability and capacity options for our future fighter force. The unclassified portions of the executive summary align with the Fighter Force Narrative made public in September 2021. This effort was a comprehensive report of previous modeling, simulation, war gaming, and analysis from the last five years. We would be happy to brief you at a classified level on the results.

21. Senator HIRONO. General Brown, what is the overall timeline of the Next Generation Air Dominance (NGAD) aircraft?

General BROWN. The NGAD timeline is classified. Further details can be provided in classified correspondence.

22. Senator HIRONO. General Brown, how will NGAD fit in the Air Force's future fighter mix over the next two decades?

General BROWN. The NGAD family of systems is foundational to United States Air Force air superiority capability in the future fighter force structure. The NGAD platform will be the Air Force's primary air superiority fighter in the highly contested environment and has the ability to strike ground-based threats. The NGAD family of systems will be integrated with uncrewed collaborative combat aircraft. The NGAD platform will replace the upgraded, but aging F-22 that cannot be made competitive against the future threat expected two decades from now. Advanced NGAD capability is enabled through Digital Engineering, Open System Architecture, and Agile Software Development.

23. Senator HIRONO. General Brown, what lessons have you learned from the F-35 development that you intend to apply to the NGAD?

General BROWN. The NGAD program is using engineering technologies and processes that are a generation more advanced than the F-35. These include: digital engineering, agile software development, and open system architectures. This approach drives upgrade opportunities through modularity, maximizes competition across a broad industrial base throughout the life of the program, and retains government ownership of the technical baseline and the final design.

24. Senator HIRONO. General Brown, how does the Air Force see the future of unmanned systems complementing or replacing current fighters?

General BROWN. Controlling the air domain is an absolute imperative if the Nation, and our allies, are going to be successful in future operations. The United States Air Force needs to add less expensive, uncrewed autonomous aircraft to the air dominance suite of capabilities, in order to increase overall capability at an affordable rate. Uncrewed systems will complement current fighters. The exact mix of crewed and uncrewed teaming is under development.

SATCOM PERSONNEL

25. Senator HIRONO. General Raymond, what is the timeline for consolidating Army and Navy satellite operations under Space Force?

General RAYMOND. The Global Army Wideband and Navy Narrowband SATCOM Operations missions are set to transfer to the United States Space Force in fiscal year 2022, along with the Army SATCOM Support Centers that plan and task SATCOM support to Combatant Commanders. In fiscal year 2023, the United States Space Force is prepared to receive the transfer of the Navy program office that fields and sustains the Narrowband SATCOM space and ground segments supporting Joint Force mobile, tactical, shipborne, and airborne users.

26. Senator HIRONO. General Raymond, over the past several years, the Regional SATCOM Support Center-Pacific has experienced a significant amount of mission growth, as the Armed Forces have become more reliant on satellite communications. Unfortunately, Regional SATCOM Support Center-Pacific has not seen a corresponding manpower increase to support this additional work. The Army recognized a requirement for more personnel to support all four regional SATCOM plan-

ning cells after conducting a Total Army Analysis in 2019. With Army satellite operations set to be consolidated under Space Force in the near future, will you consider increases to the Space Force's manpower levels to ensure every unit is able to keep pace with its mission requirements?

General RAYMOND. The Army and Space Force have jointly planned to transfer 502 associated manpower authorizations (302 military/200 civilians associated with its SATCOM elements) to support transfer of SATCOM missions. Once this transfer is complete, we will evaluate the Total Army Analysis of its four regional SATCOM Support Centers and will consider increases to the manpower levels to ensure every unit is able to keep pace with its mission requirements. Fiscal limitations will require we make risk-informed trade-offs in manning prioritization, while we address competing combatant command requirements.

QUESTIONS SUBMITTED BY SENATOR ANGUS KING

UKRAINE LESSONS LEARNED

27. Senator KING. Secretary Kendall, General Brown, and General Raymond, what are some of the preliminary lessons learned from the conflict in Ukraine on the future of warfare? Please be specific with the new perceived effectiveness of different weapon systems and changes to military doctrine regarding tactics and strategy.

Secretary KENDALL, General BROWN, and General RAYMOND. Control of the air is critical to military success, and air superiority cannot be assumed. The failure of the Russian military to gain control of the air is a major contributor to the challenges the Russians are facing.

Conversely, the Ukrainians have used air defense systems quite well. They have been able to keep them survivable against the threat, which we think says as much about the lack of capability of the Russians as it does about the capability of the Ukrainians.

We need to be careful about trying to learn too many lessons from this until it is studied in detail, but the situation is a significant testament to the importance of airpower. To ensure success, airpower must be sophisticated enough to deal with the threats that it faces; including ground-based air defense systems like the ones Ukrainians are employing.

Additionally, it is clear the character of war is changing. This war shows the value of the space domain: being able to provide information. It also showed the value of commercial capabilities in space; being able to share intelligence more broadly, being able to shape the gray zone operation.

28. Senator KING. Secretary Kendall, General Brown, and General Raymond, based on observations in Ukraine and Afghanistan, what has the military learned regarding assessing an enemy's 'will to fight'? How can this be applied to future situations of heightened tension and conflict?

Secretary KENDALL, General BROWN, and General RAYMOND. What the military has learned about assessing an enemy's 'will to fight' is that it remains difficult to do adequately and is challenged by inadequate intelligence access, collection, and analysis. We do not focus intelligence collection on our allies and partners, which further impedes insights into how strong an ally or partner's 'will to fight' might be when tested. Conveying the intelligence that is available and the associated uncertainty is a challenge for the Intelligence Community, policy makers, and commanders because 'will to fight' is not readily measured or counted. Tangible things like numbers of tanks, artillery, surface to air missiles systems, fighter jets, and naval ships are easier to observe, collect, and are often prioritized by policy makers and commanders. A correlation of forces approach has a long history of how to perform such complex analysis, but the variable of how forces interpret what they are fighting for, what they are willing to die for, and what their leadership can inspire them to do can lead to unexpected results. Moving forward, while we may continue to rely on correlation of forces to assess combat power in periods of heightened tension and conflict, we need to continue to invest in our understanding of populations, their military forces and political leadership.

One lesson we have re-learned from our observation of the Russia-Ukraine conflict is that multiple factors combine to influence the "will to fight." National motivation, pride, the role of military and political leadership, confidence in training and equipment, and faith in the man or woman to your right or left drive thousands of individual decisions within a military force or an entire population. We are proud of the contributions made every day by Airmen and Guardians to making sense of all

kinds of data and transforming it into intelligence supporting decision advantage for commanders.

Discerning ‘will to fight’ is not an easy task. We recognize that while more easily measured, military technology and equipment alone does not lead to an effective fighting force. The men and women who comprise a military force matter; as does their character, their training and their leadership. Areas that are unfortunately difficult to collect and analyze effectively. We will continue to utilize the tools, training, and lessons learned to advance the tradecraft to get after this challenging analytic problem.

We also will focus on our own warrior ethos, so that when the Air Force or Space Force is called upon, we remain ready and lethal. It is why we owe so much to those Airmen and Guardians that have gone before us, and why we need to lead, train and equip the next generation of Airmen and Guardians to effectively fly, fight, and win. Whenever Airmen and Guardians work and train alongside our allies and partners, they are bolstered and we reinforce ideals that keep the peace. We are both strengthened and gain confidence in our ability to defend freedom together. This in turn challenges a potential adversary, eroding their confidence to take us and our allies or partners on in the next period of heightened tension or conflict.

RESEARCH AND DEVELOPMENT

29. Senator KING. Secretary Kendall, General Brown, and General Raymond, what is the expected timeframe for the United States to match and surpass China and Russia’s capabilities in hypersonic missile technology and directed energy weaponization

Secretary KENDALL, General BROWN, and General RAYMOND. China and Russia are pursuing these technologies and capabilities to address their goals, while the DAF is investing in multi-domain capabilities to address our requirements for maintaining flexibility and options for superiority. The DAF is making substantial investments in the development of both boost glide and air breathing cruise missile hypersonic weapons. Operational hypersonic air-launched weapons will enable the United States to hold high value, time sensitive targets at risk in a contested environment. Hypersonic weapons will be employed within the context of a larger force mix.

Our current hypersonic technology is comparable to China. The United States is ahead in some areas in terms of technology and China is ahead in others. The DAF assesses our advancements in air-launched, air-breathing hypersonic cruise missiles are second to none, while China has demonstrated impressive ground-launched capabilities. However, this is not a race with China to field hypersonics, but rather a race for technological superiority and the ability to service the target sets that we’re concerned about operationally.

We would be happy to discuss further program details at a classified level. In the meantime, unclassified information on existing programs is provided here. The DAF is developing an air-launched boost-glide hypersonic weapon, AGM-183A Air-launched Rapid Response Weapon (ARRW), as well as an air-breathing Hypersonic Attack Cruise Missile (HACM). The AGM-183A ARRW is planning to field an early operational prototype based capability in fiscal year 2023. ARRW is a hypersonic maneuvering, boost-glide system designed to engage and kill soft, fixed, time-critical targets in contested environments from standoff range. The fiscal year 2022 new start HACM program leverages the Southern Cross Integrated Flight Research Experiment (SCIFiRE) investment, which is a bilateral United States-Australia air-breathing hypersonic cruise missile prototyping effort.

The DAF is also supporting a national directed energy weapon development roadmap with increased investment in directed energy Science and Technology activities, which will improve effectiveness, reduce cost, and identify key risks of integrating advanced ground and airborne directed energy effectors into a hybrid base defense architecture.

HYPersonic INVESTMENTS

Our strategic adversaries, China and Russia, have invested heavily in hypersonic weapons and have a significant advantage on the United States in this critical area. As you know, hypersonic air vehicles require the use of exotic alloys, polymers, and ceramic composites that can withstand extreme temperature and flight environments. Although great effort is going into the development of these materials, we often overlook the more basic manufacturing systems and processes, such as full-size determinant assembly (FSDA) and model-based engineering (MBE), that are essential for rapid and affordable production. Unfortunately, this lack of vision results in too few airframes at excessive cost.

30. Senator KING. Secretary Kendall, General Brown, where should the AF invest resources to create the ability to mass produce complex hypersonic airframe structures rapidly and affordably?

Secretary KENDALL and General BROWN. The DAF fully funds the completion of the ARRW RDT&E budget, and has applied lessons learned from the ARRW program and others to appropriately fund HACM RDT&E in fiscal year 2023. We prioritized ARRW's RDT&E to finish the flight test campaign to inform a future production decision. ARRW and HACM represent the two primary approaches to hypersonics—boost glide and scramjet cruise missile technology—which both have unique airframes, structures, manufacturing, and materials. These programs were enabled by the hypersonic Science and Technology (S&T) activities the Air Force Research Lab performs and we continue to invest there as well. To make future air-launched hypersonic airframe structures more affordable and rapidly producible, and to create a wider competitive industrial base, we are considering technology investments in the following areas: carbon-carbon materials and manufacturing processes, ceramic matrix composites for hypersonic thermal protection systems, high temperature metals and alloys, high temperature coatings, 3D printing for manufacturing, model-based systems engineering tools, and large diameter solid rocket motors and propellants. To bolster these investments, we would also consider investing in expansion of classified facilities, tooling, and equipment for increased production.

31. Senator KING. Secretary Kendall, General Brown, what analytic tools are needed to model the thermal, structural, and environmental performance of ultra-high temperature material for hypersonic vehicles?

Secretary KENDALL and General BROWN. Verification and validation of existing or developing modeling tools within government and industry are necessary, followed by high temperature mechanical and relevant environmental testing of metallic and composite compounds, and subcomponent structures. We need a full understanding of the effects of defects, as we do not know what the critical defect size is today. As a result, the safety factors being used are currently likely to be oversized, in part due to manufacturing variability. We need methods to separate up front good parts from bad, so bad parts don't go through multiple expensive processes. Ideally, we would like to have validated models that link Non-Destructive Evaluation (NDE) from green parts to a go/no-go decision point so that we only take known-good-parts to full density and final machining state.

ADVANCED MANUFACTURING

32. Senator KING. The United States Air Force has prioritized the development of “uncrewed” companion aircraft for the B-21 Raider and Next-Generation Air Dominance (NGAD) platforms as operational imperatives. Similarly, there is growing interest in pairing autonomous collaborative platforms (ACP) or Skyborg uncrewed companion with existing 4th and 5th Generation aircraft. Pairing an exquisite, high-end system with a low-cost attritable aircraft creates a dilemma for our adversaries—capability and capacity. However, the traditional way of designing and manufacturing structures intended for long service life is not a cost-effective model. Design and manufacturing low-cost attritable aircraft development should reflect new expectations in cost, performance, and safety. Among those expectations is a demonstration of scalable and responsive manufacturing approaches tied to certification strategies, as well as material selection and topology optimization for military relevant cases.

Secretary Kendall, General Brown, what initiatives are you taking to identify scalable and responsive manufacturing approaches, material selection, and design optimization to maximize the value of low-cost attritable structures?

Secretary KENDALL and General BROWN. The DAF has several initiatives to identify scalable and responsive manufacturing approaches, material selection, and design optimization to maximize the value of low-cost attritable structures.

For example, in terms of manufacturing approach initiatives, the Air Force Research Laboratory (AFRL) is leveraging mature automotive/trucking composite manufacturing processes, such as RapidClave and Long Fiber Injection, to increase production. We are addressing responsiveness by leveraging large scale additive manufacturing and robotic sheet metal forming for composite tooling. In conjunction with DOD, AFRL is sponsoring high speed thermoplastic forming and welded assembly initiatives. We are collaborating with the Institute for Advanced Composites Manufacturing Innovation to identify manufacturing processes of interest and encourage engagement with the aerospace community. We are also establishing strategic partnerships supporting Agility Prime and Urban Air Mobility to understand needs and identify alternative rapid composite manufacturing processes.

In terms of material selection initiatives, we have evaluated multiple composite resin suppliers and identified five rapid cure resin systems that are of interest and currently being processed on Globes' RapidClave system. We are also partnering with Covestro for the identification of rapid cure, aerospace relevant polyurethane composite resins and Zoltec's debundling carbon fibers for application to the automotive Long Fiber Injection manufacturing process. AFRL and Arkema are working on the development of UV-cured resin systems that are compatible with the Continuous Composites robotic additive manufacturing of composite structures.

Finally, in terms of design optimization initiatives, we have developed Topology-Optimized (TO) wing frame designs and are providing the design to Continuous Composites for robotic additive manufacturing fabrication of wing frame as part of a Phase II SBIR effort. We are managing the Phase II SBIR with Big Metal Additive for Siemens software-supported, topology-optimized spacecraft designs and fabrication, using aluminum.

33. Senator KING. Secretary Kendall, General Brown, what is the United States Air Force doing with industry partners that possess experience in large-scale, high-rate commercial metallic and composite aerostructures to develop transformative structures technologies for attritable aircraft?

Secretary KENDALL and General BROWN. The Air Force is engaged with industry to demonstrate design methodologies for a new class of uncrewed aircraft able to support a variety of missions in support of a family of future collaborative combat aircraft. The aircraft design methodology is based on the automotive practice of using a standard chassis for multiple variants. This is complemented by additional activities with industry to advance collaborative aircraft autonomous capability, operations modeling, hardware in the loop platforms, and a network architectures.

34. Senator KING. Secretary Kendall, General Brown, how can the United States Air Force leverage "lessons learned" by Allied partners in similar programs, most notably the Royal Air Force's Project MOSQUITO?

Secretary KENDALL and General BROWN. Partnerships with allies to move important, mutually-beneficial research and development forward is vital in today's security environment, including our efforts with the United Kingdom (Project MOSQUITO) and Australia (GHOST BAT). All partners are actively sharing approaches and lessons learned from the design and manufacturing of low-cost attritable aircraft. The DAF, through bilateral partner agreements and collaborative partnership forums such as AUKUS and The Technical Cooperation Program (TTCP), is engaged with the UK's Royal Air Force MOSQUITO program, as well as the Australian's RAAF GHOST BAT program. In April, AFRL met with the RAAF Capability Development Team, and had a similar in-person meeting in May with the RAF, gaining insight into program details and leveraging their experiences. AFRL will reconvene for a combined Capability working group and S&T working group this fall to focus on "red teaming" each other's analysis and concepts.

SEXUAL ASSAULT PREVENTION AND RESPONSE

35. Senator KING. Secretary Kendall, General Brown, the Air National Guard Director, mentioned the initiation of the XYZ program in order to better address sexual assault and harassment cases in the Air National Guard. How do you feel this initiative will impact sexual assault instances in the Air Force?

Secretary KENDALL and General BROWN. We believe this Prevention Workforce program approach will improve the climate within the ANG because it allows us to increase prevention personnel at all levels, develop and implement assessment tools for identifying risk and protective factors, address negative attitudes and beliefs that can lead to an environment that tolerates harmful behavior, and manage key sexual assault risk and protective factors. We believe our long-term goal focused on equipping leaders at all levels and promoting positive unit culture is key to preventing sexual harassment and sexual assault.

UNCLOS

36. Senator KING. General Brown and General Raymond, do you support the ratification of the United Nations Convention on the Law of the Sea (UNCLOS)?

General BROWN. Although the United States is not a party to the UNCLOS, the Convention's provisions concerning traditional uses of the sea and airspace, including with respect to navigation and overflight, reflect customary international law. The Air Force defers to the Administration to advise regarding ratification of the UNCLOS.

General RAYMOND. The Space Force would defer to the Administration regarding ratification of the UNCLOS, and whether the UNCLOS would have any applications to the conduct of our operations in the space domain.

DRUG INTERDICTION

37. Senator KING. Secretary Kendall, what coordination is currently underway by the DAF with the ONDCP to stem the flow of illegal drugs into the United States?

Secretary KENDALL. While the DAF does not have a counter-narcotics mission and does not coordinate directly with ONDCP regarding illegal drug flow into the United States, the DAF does work directly with the Deputy Assistant Secretary of Defense for Counter-narcotics & Stabilization Policy (DASD CN&SP) and Combatant Commands (CCMDs) to facilitate force provider support to drug interdiction missions. The Civil Support Division, within the Air Force Deputy Chief of Staff for Operations, develops Air Force goals and objectives that integrate into the President's National Drug Strategy and objectives.

The DAF also serves as the Counterdrug Program Manager for all DOD Counterdrug activities and is responsible for developing and/or implementing Air Force and Space Force counterdrug programs congruent with DOD policy and guidance.

The DAF provides timely information to the Joint Staff (JS), supported combatant commanders (CCDR), and the Deputy Assistant Secretary of Defense for Counter-narcotics and Stabilization Policy (CN&SP) enabling responsive and effective decision making. Examples include utilizing GPS to counter trans-national crime, and leveraging GPS applications in coordination with NGA and commercial partners to map transnational criminal activity, which is related to counter-narcotics.

The DAF provides administrative support to the Director, Narcotics and Transnational Crime Support Center (NTC). The DAF is also finalizing a MOA with Deputy Assistant Secretary of Defense for Counter-narcotics and Stabilization Policy (CN&SP) to provide full administrative support for all NTC DOD-personnel.

38. Senator KING. Secretary Kendall, General Brown, and General Raymond, what operations, exercises, capabilities acquisitions, or other efforts are planned this year in the Western Hemisphere to secure the Homeland and build partner capacity to help with the war on drugs?

Secretary KENDALL, General BROWN, and General RAYMOND. The DAF is a force provider for DOD Counter-narcotic (CN) missions and supports the Deputy Assistant Secretary of Defense for Counter-narcotics and Stabilization Policy (CN&SP), who has responsibility for developing strategy and policy, establishing priorities, and providing guidance applicable to DOD CN and counter-transnational organized crime activities consistent with national security and defense strategies and with DOD policies and objectives. United States military, interagency, and partner nation aircraft work together to support detection and monitoring missions. We have allocated ISR support to USSOUTHCOM in the fiscal year 2023 Global Force Management Allocation Plan (GFMAP), and participate in routine Joint Force exercises, along with regional partners, to practice assisting law enforcement with counter-narcotic and counter-transnational organized crime activities. PANAMAX 2021, and TRADEWINDS 2022, which is currently in planning, are examples of such cooperative exercises.

CHINA COMMISSION

39. Senator KING. I believe we must establish an unbiased and non-partisan commission to examine a grand strategy for our approach to China, similar in intent to President Eisenhower's Solarium Project. We need to think of a holistic approach to create a stable international order in which China (or Russia) cannot dictate regional developments.

Secretary Kendall, General Brown, and General Raymond, In order to avoid the United States trying to "spend our way out of conflict," how can we specifically counter China's major activities in your area of responsibility?

Secretary KENDALL, General BROWN, and General RAYMOND. We need to emphasize technological superiority embedded in an affordable mix of capabilities and concepts. Our framework to accomplish this is the Operational Imperatives. The first thing we can do is divest legacy platforms not well-suited for today's contested environments or tomorrow's high-end conflicts, in order to free up resources to invest in new capabilities supporting the National Defense Strategy and our Operational Imperatives. These come with significant opportunity cost, and as good stewards of the taxpayers' dollars, the Department of the Air Force needs the flexibility to pivot

investments from sustaining weapons systems not effective in a near peer conflict to those that deter, and if necessary, win, relative to our pacing challenge.

Importantly, we need to continue work across the whole-of-government, with our allies and partners, and with the private sector to find novel ways to achieve advantages outside of traditional capability investment. The swift and unified response of our network of allies and partners to the situation in Ukraine demonstrates the advantages of integrated deterrence.

We also need to take advantage of the unique characteristics of space systems. Space is an inherently global domain, meaning that China's major activities not only threaten the freedom of action of our space and terrestrial forces, but also threaten the freedom of action of our allies and partners. This underscores the imperative that the United States not attempt to counter PRC aggression alone, but instead continue to leverage ally and partner activities in space.

Expanding partner participation will complicate the PRC's decision calculus, allow us to reduce costs when closing gaps in capability, increase resilience with complementary capabilities, and accelerate modernization efforts across the enterprise. By not only further developing existing relationships, but also striving to be the "partner of choice," we can most effectively counter major PRC activity and provide the collective security for those who join us.

40. Senator KING. Secretary Kendall, General Brown, and General Raymond, what would be the greatest benefit this commission could deliver?

Secretary KENDALL, General BROWN, and General RAYMOND. Establishing such a commission would be a Presidential or Congressional initiation, outside the scope of our responsibilities. The National Security Strategy and National Defense Strategy provide adequate guidance to the DAF. If successful however, such a commission could provide a basis for a unified national approach to China.

41. Senator KING. Secretary Kendall, General Brown, and General Raymond, What would put us in the best position to avoid the United States and China from escalating conflict and careening into a war with China?

Secretary KENDALL, General BROWN, and General RAYMOND. If we advance the priorities of the 2022 National Defense Strategy—integrated deterrence, campaigning, and building enduring advantages—the Department can deliver the unique capabilities we provide to national security and deter strategic attacks and aggression.

Our wargaming has consistently demonstrated how helping our allies and partners field credible interoperable defenses bolsters deterrence and increases the chances of victory. There exists a dynamic tension between shaping the competitive space to avoid armed conflict and setting favorable conditions to prepare for armed conflict. Creating favorable conditions and demonstrating the prohibitive cost of PRC aggression are key to deterring China. For the Department of the Air Force, this means building a credible, capable, and lethal force ready to transition to war-time.

42. Senator KING. Secretary Kendall, General Brown, and General Raymond, what are the 'toughest problems' OUTSIDE of military imbalances?

Secretary KENDALL, General BROWN, and General RAYMOND. We have reason to believe that future adversaries will attack our population with disinformation/propaganda and attempt to weaken our institutions. They will do this to weaponize internal divisions in an attempt to undermine our will to fight.

ARCTIC

43. Senator KING. I supported Senator Sullivan's Arctic Security Initiative amendment last year, and helped get it into law with the Chairman.

Secretary Kendall, General Brown, and General Raymond, what specific resource shortfalls do our armed forces currently possess that would limit its ability to conduct exercises/operations in the High North? Please be specific to include operations and sustainment funding for exercises, equipment shortfalls such as weather gear for soldiers or unique platforms.

Secretary KENDALL, General BROWN, and General RAYMOND. As required by the Fiscal Year 2022 National Defense Authorization Act, the U.S. Northern Command (NORTHCOM) is in the process of completing the Arctic Security Assessment (ASA), an independent assessment of activities and resources required for fiscal year 2023 to 2027, to implement DOD-wide and service-specific Arctic strategies. The DAF was involved in that effort and looks forward to working with the combatant commands and Congress to address identified shortfalls in resourcing for exercises and oper-

ations in the High North. The DAF is currently funding several Arctic initiatives. Implementation and current investments are focused on enabling capabilities, including homeland defense and communications architectures, engagement with allies and partners, and modernization of the Joint Pacific Alaska Range Complex (JPARC) for advanced threat training.

This budget proposes approximately \$1.2 billion in additional investments with Arctic relevance that support exercises, equipment, and platforms. Some examples include planned investments in Over the Horizon Radar (OTHR) sites in Northern Tier States, JPARC enhancements, Cobra Dane, Enhanced Polar System Recapitalization, Evolved Strategic Satellite Communications RDT&E, and weather system follow-on improvements.

Regarding Space, specifically, we operate from Thule, Greenland (Missile Warning, Space Domain Awareness, and Satellite Command and Control), Clear AFS, Alaska (Missile Warning, Missile Defense, and Space Domain Awareness), Eareckson AFS, Alaska (Missile Warning, Missile Defense, and Space Domain Awareness), and Cavalier SFS, North Dakota (Missile Warning, Missile Defense, and Space Domain Awareness). Aging equipment and infrastructure affect mission equipment, voice and data communication, power and fuel storage, and personnel facilities. These challenges complicate our ability to maintain domain awareness and access, high-latitude communication, and homeland defense. We have sustainment accounts for our radars that will help keep them operating, while we move to a more resilient architecture, and partnerships with allies to help address high-latitude communications. Support for infrastructure investments in Greenland and Alaska will help us more quickly mitigate shortfalls.

KC-46 BASING

44. Senator KING. Maine is the proud home of the Air National Guard's 101st Refueling Wing, the "MAINEiacs." Maine geographic location and air corridors offer a strategic hub for supporting trans-Atlantic deployments as well as Arctic operations.

Secretary Kendall, would you support modernizing the unit with the new KC-46 aircraft?

Secretary KENDALL. Our number one priority in the Air Refueling portfolio is continuous recapitalization of the KC-135 fleet. KC-135 recapitalization in Maine and other locations is dependent on the Air Force ability to expeditiously procure additional tankers after the current KC-46 contract is complete. Any delay in delivering new tanker aircraft beyond the current KC-46 procurement plan will also delay providing modernized aircraft to units flying the KC-135. We look forward to working with Congress to ensure seamless modernization of the tanker fleet.

45. Senator KING. General Brown, do you believe having a modernized and capable fleet of KC-46s at the strategic location of Bangor, ME is beneficial to the facilitating operations in the Arctic and trans-Atlantic flights to EUCOM?

General BROWN. Air Refueling is important in all regions of the world and provides an asymmetric advantage that allows the United States to globally project power. Our number one priority in the Air Refueling portfolio is continuous recapitalization of the KC-135 fleet. Maine and other potential KC-46 locations are dependent on our ability to expeditiously procure additional tankers after the current KC-46 contract is complete.

SPACE NATIONAL GUARD

46. Senator KING. Secretary Kendall, General Brown, and General Raymond, what is the cost of establishing a Space National Guard?

Secretary KENDALL, General BROWN, and General RAYMOND. The Administration strongly opposes establishing a separate Space National Guard (as stated in the Statement of administration Policy for H.R. 4350—National Defense Authorization Act for fiscal year 2022), because of cost considerations. The Department of the Air Force continues to work with the Executive Branch to review alternatives that are efficient, effective and appropriate for Air National Guard space units and personnel. We highly value the people and units in the Air Guard who perform space related missions.

47. Senator KING. Secretary Kendall, General Brown, and General Raymond, what is the benefit of establishing a Space National Guard?

Secretary KENDALL, General BROWN, and General RAYMOND. Space professionals in the Air National Guard are critical to the Space Force, and the DAF and United States Space Force benefit from their skills and expertise. Presently, ANG space units provide 60 percent of the Space Electromagnetic Warfare capability, 42 per-

cent of National Reconnaissance Office (NRO) Operations Center (NOC) critical augmentation, and 25 percent of the national Missile Warning & Space Domain Awareness capability. Additionally, the ANG has the only survivable/endurable, mobile Missile Warning & nuclear detonation detection capability, and the only back-up capability for Milstar Satellite Communications & Advance Extremely High Frequency (AEHF) systems—protected satellite communications for NCA, NC3, and priority joint operations. United States Space Force cannot execute our missions today without their operational capability. As a result, keeping these capabilities and units in uniform and serving our country is a high priority. There are equally viable ways of accomplishing this, of which a Space Guard is one, but not the only, viable model.

The Department of the Air Force continues to work with the Executive Branch to review alternatives that are efficient, effective and appropriate for space units and personnel. The Administration strongly opposes establishing a separate Space National Guard (as stated in the Statement of Administration Policy for H.R. 4350—National Defense Authorization Act for fiscal year 2022).

EXPEDITIONARY TACTICAL OPERATIONS CENTER

48. Senator KING. The shift to a more scalable, lethal, and mobile combat elements such as the Marine Littoral Regiment and Multidomain Task Force is critical to the countering the dynamic threats in your Area of Responsibility. The DOD's recent investments in the University of Maine's composites and advanced manufacturing initiatives has resulted in improving blast and ballistic resistant structures and materials. Maine small businesses are the direct benefactor of the growing talent and innovation in this sector and are concurrently providing critical capabilities to the warfighter. The Modular Panelized Shelter System (MPSS) is one system of note and is currently employed by NORTHCOM in Alaska, EUCOM in Italy, and AFRICOM headquarters.

Secretary Kendall, General Brown, how have the Air Forces units benefitted from utilizing MPSS?

Secretary KENDALL and General BROWN. The Modular Panelized Shelter System (MPSS) is currently employed by some combatant commands. These Commands are reaping tangible benefits from MPSS. Currently, MPSS is not an asset in the Air Force War Reserve Materiel (WRM) inventory. Potentially, the Air Force could benefit from expeditionary, affordable, all weather, TS/SCI-certified structures, such as the MPSS.

49. Senator KING. General Raymond, could your command and service component commands benefit from an expeditionary, affordable, all weather, TS/SCI certified structures such as the MPSS?

General RAYMOND. Yes, potentially. The United States Space Force has deployable space forces providing Combatant Commanders with regionally focused space capabilities. Technologies such as MPSS might enhance the deployability and utilizations of those forces.

QUESTIONS SUBMITTED BY SENATOR ELIZABETH WARREN

NEXT GENERATION AIR DOMINANCE (NGAD)

50. Senator WARREN. Secretary Kendall, I am very concerned about reduced transparency in the Next Generation Air Dominance program and how that will impact oversight. You recently said that each plane would cost hundreds of millions of dollars. Do you have a cost estimate for how much Engineering and Manufacturing Development (EMD) will cost?

Secretary KENDALL. The 2023 President's Budget submission includes \$15.8 billion in Research, Development, Test, and Evaluation dollars within the FYDP that will be used to continue NGAD development. Any funding detail beyond what is provided in the justification books is classified. I would be happy to share that information with you in a classified setting.

51. Senator WARREN. Secretary Kendall, Will you publicly release the total contract dollar amount of the EMD contract?

Secretary KENDALL. The topline budget is releasable, but contractual details to include the vendors and dollar amounts are classified, and there are currently no plans to declassify and release this information. I would be happy to provide it to you in a classified setting.

52. Senator WARREN. Secretary Kendall, what major program information for NGAD does the Air Force expect to be able to publicly release?

Secretary KENDALL. Due to the extremely sensitive nature of this program, very little information will be releasable to the public.

53. Senator WARREN. Secretary Kendall, you said NGAD can skip risk reduction activities because the technology is already mature. Which specific risk reduction activities is the Air Force forgoing?

Secretary KENDALL. The NGAD prototype program was a risk reduction program. It allows NGAD to move into EMD with acceptable risk. In order to accelerate the program, we are initiating many activities typically not done until closer to fielding, to include prototyping and technology demonstrations. In the later program phases, we can take advantage of those activities that were already accomplished to reduce risk. Digital engineering and tight relationships between the government and contractor teams also allow us to do this.

54. Senator WARREN. Secretary Kendall, has the Air Force skipped any of those risk reduction activities for previous programs?

Secretary KENDALL. The Air Force has had several programs perform pre-Engineering and Manufacturing Development (EMD) trade studies and enter the acquisition process at the EMD phase. Examples include the B-52 Radar Modernization Program, as well as the B-61 Mod 12 LEP Tailkit Assembly. During the pre-EMD effort, we focus on ensuring the technology maturity and readiness is at the appropriate level to enter at Milestone B. There is risk in every program. The DAF attempts to balance risk with urgency, cost impacts, and other considerations.

55. Senator WARREN. Secretary Kendall, which programs skipped any of those risk reduction activities?

Secretary KENDALL. The Air Force has had several programs perform pre-Engineering and Manufacturing Development (EMD) trade studies and enter the acquisition process at the EMD phase. Examples include the B-52 Radar Modernization Program, as well as the B-61 Mod 12 LEP Tailkit Assembly. During the pre-EMD effort, we focus on ensuring the technology maturity and readiness is at the appropriate level to enter at Milestone B. There is no fixed rule for their decisions, they are dependent on specific factors for each program.

56. Senator WARREN. Secretary Kendall, did the Air Force, Government Accountability Office, or the Department of Defense Inspector General find any delays in program schedule or increase in program cost that may have been connected to skipping those risk reduction activities?

Secretary KENDALL. Skipping risk reduction can lead to disastrous consequences, there are many examples. The NGAD prototyping program initiated in 2015 was structured to reduce the major risks in the EMD program. The Air Force regularly updates the Government Accountability Office on our progress and approach to accelerate NGAD. We will continue to provide insight on our approach with digital engineering and acquisitions as we pull risk reduction efforts earlier in the acquisition timeline.

AIR FORCE RETIREMENTS

57. Senator WARREN. Secretary Kendall and General Brown, can you quantify, in real terms, capability gap risks from divesting legacy fighters over the future years defense program (FYDP) given delays in procurement of future fighters?

Secretary KENDALL and General BROWN. We would be happy to discuss your question more fully in a classified setting. The most important metric for the Nation is that its Air Force has confidence in the ability to win wars against near-peers and especially our pacing challenge. Balancing investments with affordable capacity, the Air Force must identify and prioritize critical capability gaps in order to build a force that best supports the Joint Force mission and wins the future fight. The solution to minimizing capability gaps is not hanging on to legacy capabilities, where capability gaps already exist. This is true across the fighter fleet and the entire Air Force. We remain committed to supplying the Nation with a fighter force that is sizeable, capable, sustainable, and affordable, with the ability to operate across the entire range of mission sets. Funding made available through strategic divestment (approximately \$15.5 billion across the 5-year Future Years Defense Plan) will be reallocated to advance the capabilities of the total force, minimizing to the max extent, near-term capability gaps while reducing gaps overall. We would like the opportunity to discuss our capability gap concerns in a classified setting.

58. Senator WARREN. Secretary Kendall and General Brown, my understanding is that manpower associated with legacy fighter fleets would be directly repurposed to future fighter fleets. What is your plan for preserving the highly skilled manpower associated with Air National Guard legacy fighter fleets being divested?

Secretary KENDALL and General BROWN. We value the experience of the Air National Guard and see it as a force multiplier. We expect recapitalization to be balanced across the Reserve and Active components, but it is unlikely all Air National Guard legacy fighter units will transition to newer fighter fleets. Our team is in the process of completing a posture review for fighters and rescue, intended to identify required force structure changes, strategic basing recommendations, and recapitalization plans for legacy aircraft. The DAF is committed to finding suitable missions (which may include non-flying missions) for these affected units to insure these highly skilled Airmen remain assets to the total force.

59. Senator WARREN. Secretary Kendall and General Brown, the Air Force has committed to divesting the F15C over the FYDP. What is the recapitalization plan for the six Air National Guard units that presently fly the F15C?

Secretary KENDALL and General BROWN. The Air Force is completing a posture review for fighters and rescue, intended to identify required force structure changes, strategic basing recommendations, and recapitalization plans for legacy aircraft. Results of this review will be reflected in the strategic basing process. We will share relevant details as they become available.

60. Senator WARREN. Secretary Kendall and General Brown, what is the specific plan to recapitalize the Air National Guard F-15C fleet in MA?

Secretary KENDALL and General BROWN. The DAF is completing a posture review for fighters and rescue, intended to inform the CSAF and SECAF of required force structure changes, strategic basing recommendations, and recapitalization plans for legacy aircraft. Results of this review will be reflected in the strategic basing process. As legacy aircraft divestments and conversion plans are finalized, the Air Force will develop operational concepts to cover the homeland defense mission within acceptable risk.

61. Senator WARREN. Secretary Kendall and General Brown, the top priority in our national defense strategy is to protect the Homeland. How will the Air Force ensure that units that support the aerospace control alert, including potentially closed F-15C units, are able to continue to support this mission with manned aircraft?

Secretary KENDALL and General BROWN. The United States Air Force is completing a posture review for fighters and rescue, intended to inform the CSAF and SecAF of required force structure changes, strategic basing recommendations, and recapitalization plans for legacy aircraft. Results of this review will be reflected in the strategic basing process. As legacy aircraft divestments and conversion plans are finalized, the Air Force will develop operational concepts to cover the homeland defense mission within acceptable risk levels.

QUESTIONS SUBMITTED BY SENATOR JACKY ROSEN

ADVERSARY AIR TRAINING

62. Senator ROSEN. The contractor providing adversary air training at Nellis Air Force Base was recently notified by Air Combat Command (ACC) that ACC does not intend to continue the contract, which expires next month. A-C-C instead intends to operate adversary air support completely organically. In written responses to my staff, the Air Force states that it will use Nellis' F-16s "while ACC builds an F-35 Aggressor capability" but that the "timing of this capability growth is yet to be determined." I am concerned by these responses, and by the capability gap that will exist until the Air Force can completely compensate for the adversary air training currently being performed today—at some future, unspecified date.

Secretary Kendall, given that the Air Force does not currently have the capability to carry out sole adversary air missions without reducing training capacity, why has ACC chosen this path—without the aircraft or pilots—particularly when the Air Force has warned for years of the growing pilot shortage? Specifically, how does the Air Force intend to bridge the capability gap for adversary air at Nellis AFB after losing the aircraft and personnel responsible for 63 percent of aggressor flying hours?

Secretary KENDALL. The AF is moving to 100 percent organic F-16/F-35 ADAIR at Nellis AFB and we expect no degradation to the training capabilities or pilot readiness from this change.

63. Senator ROSEN. Secretary Kendall, what will be the impact on adversary air training at Nellis AFB in terms of delayed training and pilot readiness?

Secretary KENDALL. The AF is moving to 100 percent organic F-16/F-35 ADAIR at Nellis AFB and we expect no degradation to the training capabilities or pilot readiness from this change.

64. Senator ROSEN. Secretary Kendall, when can we expect the first F-35 Aggressors to be delivered to Nellis AFB and when will delivery be complete?

Secretary KENDALL. The F-35 Aggressor Squadron is expected to receive two aircraft in June 2022, with plans to add an additional nine aircraft, when funding and maintenance conditions permit. The earliest delivery of the remaining nine aircraft is expected to be in fiscal year 2024.

65. Senator ROSEN. Secretary Kendall, given the current situation, is the Air Force considering re-competing the adversary air contract at Nellis AFB?

Secretary KENDALL. The Nellis Contract Air Support contract remains open and does not have to be re-competed for one year. However, at this time, we have elected not to exercise the remaining option year on the Nellis Contract Air Support effort. The decision was based on the contractor not being able to support high end threat replication, which is necessary for training at Nellis AFB. The remaining funds for this option year, which expired 4 June, will be used at other operations and training units throughout the Combat Air Force locations, where Contract Air Support threat replication remains sufficient.

SPACE SUPERIORITY

66. Senator ROSEN. General Raymond, the Space Force now has a seat on the Joint Chiefs, which is critical given space power is a foundational support to the entire Joint Force. However, China and Russia continue to advance their technology and capabilities in space, which degrade the United States' ability to support our Joint Force Team. These advancing threats will significantly impact our way of life, how we deter conflict, and how we project force as a Nation. Given current policy restrictions, what is the Space Force doing to develop flexible, responsive, reusable, and multi-domain systems that can meet current and projected threats that seek to deny our advantage in space?

General RAYMOND. We have begun the pivot to transforming to resilient architectures for missile warning and space communication constellations. We are working closely with the intelligence community to ensure our joint operational and intelligence needs are being met.

There are no policy restrictions that inhibit these or other programs.

QUESTIONS SUBMITTED BY SENATOR MARK KELLY

A-10 WING REPLACEMENT

67. Senator KELLY. Secretary Kendall and General Brown, Arizona is home to 89 A-10 aircraft at Davis Monthan—by far the largest concentration of these jets anywhere. These uniquely capable aircraft have proven themselves time after time in every major conflict the U.S. has engaged in since the first Gulf War, saving countless lives while delivering unmatched close air support. As the security situation in Ukraine clearly demonstrates, the world is a dangerous and unpredictable place, and it is foolish to think that we will not find ourselves in a position that requires the A-10's unique capabilities in the future. I am concerned then that the Air Force's budget does not request funding for procurement of additional wing sets, and notes that the Air Force has procured enough wings for a fleet of 218 aircraft. This is significantly less than the fleet size of 260 aircraft proposed by the Air Force or the current fleet size of 281 aircraft. It is also counter to the fiscal year 2022 NDAA requirement that the Air Force continue modernization of the full fleet. If the A-10 fleet is maintained above 218 aircraft, does the Air Force agree that additional wing sets must be procured to support that fleet size?

Secretary KENDALL and General BROWN. Of the A-10 fleet maintained above 218 aircraft, each aircraft has a different amount of wing life. The remaining wing life ranges between 9 flight hours and 3,000 flight hours depending on aircraft. The United States Air Force continues to overhaul and install legacy wings on our high-

est-hour jets via scheduled Programmed Depot Maintenance (PDM) and unscheduled Depot Field Teams, as wing availability allows. Legacy wings are either overhauled existing wings or regenerated boneyard wings that still have service life available.

68. Senator KELLY. General Brown, you have indicated in recent Congressional testimony that the Air Force could be on a “path” to procure additional wings. There is no procurement money requested for additional wing sets in the budget documents. What is the path?

General BROWN. If required to maintain a fleet above 218, additional wings must be awarded on contract no later than April 2023 (fiscal year 2021 estimate) to prevent a break in production on the existing wing contract. In order to maintain a fleet of 281 A-10s, an additional 63 wings would need to be procured with an additional \$615 million across the FYDP.

69. Senator KELLY. Secretary Kendall and General Brown, my office has heard reports that the Air Force may be pursuing a plan to replace wings on A-10 aircraft with wings out of the Boneyard rather than procuring new wings. This would be concerning since wings from the Boneyard have far less life on them than the 10,000 flight hours or more that new wings provide. Is the Air Force engaged or planning to engage in a process in which wings from the Boneyard will be installed on operational aircraft rather than procuring new wings? What is the relative cost to take these wings off of aircraft in the Boneyard and then install them on operational aircraft relative to procuring new wings? What effect does this have on service life?

Secretary KENDALL and General BROWN. The DAF previously installed 173 Enhanced Wing Assembly (EWA) wings, and purchased an additional 50 with installations currently underway. The additional 50 will complete a fleet of 218 with 4 spares. As a result of long lead times for new wing deliveries, the Air Force bridged the gap between EWA and the purchase of the additional 50 wings by overhauling existing wings (Legacy A wings) or installing regenerated Boneyard wings (Legacy B wings) that still had service life available. Because new wings were not yet available, the Air Force installed 27 Legacy B wings from fiscal year 2017 to fiscal year 2021. We do not plan nor see a need to install additional Legacy B wings. Legacy B wings service is variable based on hours remaining to next overhaul for each individual wing, ranging from 500 to 2,671 additional flight hours. Wing installs are typically combined with Scheduled Structural Inspection (SSI) rather than a stand-alone wing install process. The cost of an A-10 SSI/Legacy B wing is \$6.9 million (fiscal year 2021), whereas the cost of a comparable SSI/new wing is estimated at \$5.9 million (fiscal year 2021 SSI costs combined with new wing installation estimate). Aircraft service life is affected by a multitude of factors not limited to wings; however, new wings will provide 10,000 hours before first major depot overhaul, whereas Legacy B wings deliver 500 to 2,671 hours prior to next depot overhaul.

KC-135 REPLACEMENT

70. Senator KELLY. Secretary Kendall and General Brown, I am increasingly concerned about the age and wear on our KC-135 fleet. As you may know, I’ve had the privilege of piloting both space shuttles Discovery and Endeavour. The oldest of these, the Discovery, entered service in 1984. That is 20 years after the newest KC-135 tail in the Arizona Air National Guard’s 161st Air Refueling Wing entered service. And while the Discovery has been retired for ten years, that KC-135 is still flying daily in support of local, national, and global missions. As I understand it, the KC-Y will bridge the gap between the 179 planned KC-46 tankers and the future KC-Z, or “Advanced Air Refueling Tanker.” The expectation is that the KC-Y, like the KC-46, will continue replacing our aging KC-135 fleet and will enter service sometime late this decade. Understanding that there is more than one competitor for the KC-Y contract, what would be the operational impacts, with respect to the aging KC-135 fleet, of a protest and subsequent delay of the KC-Y contract?

Secretary KENDALL and General BROWN. The Air Force is currently refining requirements/capabilities for KC-Y and will be using them to inform the acquisition strategy for tanker recapitalization. The two acquisition strategy options under consideration are Full and Open Competition and Sole Source. The KC-Y will be a non-developmental aircraft with limited developmental mission systems for connectivity and survivability. Delaying planned KC-Y procurement increases maintenance and sustainment costs and increases operational risk associated with the aging KC-135 fleet.

71. Senator KELLY. Secretary Kendall and General Brown, what is your plan to mitigate risk to the oldest KC-135s in the fleet in the event of a contract delay?

Secretary KENDALL and General BROWN. The KC-135 remains the backbone of aerial refueling operations and will continue to be for the foreseeable future. To ensure the aircraft's longevity, the Air Force is funding eight modernization efforts, including three new efforts in fiscal year 2023—Center Console Refresh and replacement of two legacy radios.

In addition, all KC-135s are inducted into Programmed Depot Maintenance (PDM) every five years, where they undergo a thorough inspection and repair of defective components. This rigorous process has been key to the aircraft's longevity, and the aircraft will continue undergoing regular PDM induction until retirement.

Modernization efforts and regular scheduled PDM visits are key to ensuring the remaining KC-135s serve the Air Force until 2040 and beyond.

72. Senator KELLY. Secretary Kendall and General Brown, our KC-135 unit in Arizona has an extremely high demand signal as one of the few in the West. How are you thinking about distribution of tanker assets as more modernized platforms come online?

Secretary KENDALL and General BROWN. Our number one priority in the Air Refueling portfolio is continuous recapitalization of the KC-135 fleet. We look forward to working with Congress to ensure seamless modernization of the tanker fleet. KC-135 recapitalization in Arizona and other locations is dependent on the Air Force ability to expeditiously procure additional tankers after the current KC-46 contract is complete. Any delay in delivering new tanker aircraft beyond the current KC-46 procurement plan will also delay providing modernized aircraft to units flying the KC-135.

QUESTIONS SUBMITTED BY SENATOR JAMES M. INHOFE

UAS

73. Senator INHOFE. General Brown is the Air Force seeing an increase in UAS overflight of its bases in the United States and overseas?

General BROWN. Yes. The commercial proliferation and availability of Unmanned Aircraft Systems (UAS) created new risks for the Air Force and other Services. In 2021, there were 497 UAS overflights at Air Force and Space Force bases overseas and in the Homeland that impacted our missions in various ways, such as ceasing airfield operations and posing aircraft strike hazards. Since 1 January 2022, we've already experienced 129 UAS overflights.

Technology trends have dramatically transformed legitimate applications of UAS, while also making them increasingly dangerous hazards and weapons in the hands of state and non-state actors, criminals, and negligent hobbyists. The United States Air Force and DOD must continue to protect and defend our personnel, facilities and assets in all environments, where increasing numbers of UAS share skies with DOD aircraft, operate in airspace over DOD installations, and are employed by adversaries and negligent operators. The United States Air Force will continue to invest in the latest kinetic, non-kinetic, and directed energy solutions to keep pace with threats and ensure our missions are not negatively impacted.

74. Senator INHOFE. General Brown, what actions is the Air Force taking to defend against UAS threats?

General BROWN. After fielding various kinetic and non-kinetic Counter-small Unmanned Aircraft System (C-sUAS) technologies to meet urgent needs at locations in Europe, the Middle East and Asia, and to safeguard missions supporting United States Strategic Command (USSTRATCOM), we designated Air Force Materiel Command as the Lead Command to support strategy and technology development. Our Security Forces perform operator duties to integrate this important mission with our air base ground defense skillsets. The United States Air Force has programmed to spend \$269 million on C-sUAS research and development (R&D), fielding and sustainment over the next five years (fiscal years 2023 to 2027). Currently, 87 of 187 United States Air Force locations have C-sUAS capability that allows for response to incursions.

To keep pace with the threats, our strategy focuses on delivering a government-owned, modular, open-system with automated Command and Control architecture that enables a backbone for rapid integration with the latest sensors and effectors developed by industry, academia or labs.

The Secretary of Defense designated the Army as the Executive Agent for C-sUAS Groups 1–3 in 2020 to unify Service efforts within the Department. This led to the establishment of a Joint C-sUAS Office (JCO) headed by the Army. We continue to work closely with the JCO, who is responsible for coordinating joint requirements, minimizing duplication and redundancy across the Services, integrating testing and training efforts, and managing R&D funding for new, emerging capabilities that will become joint solutions across the force.

DIRECTED ENERGY WEAPONS

75. Senator INHOFE. General Brown, is the Air Force looking at utilizing directed energy, to include lasers and high-power microwave technology, for base security and integration on Air Force aircraft?

General BROWN. Yes, the United States Air Force has ongoing science and technology and prototyping activities that are maturing the technology and informing our understanding of the current and future utility of directed energy weapons (both high-powered microwave and high energy laser). The focus has included force protection for our bases, as well as other mission capabilities, such as aircraft system integration. These efforts are collaborative with our Service counterparts. My staff can provide more details as appropriate.

COMMERCIAL INDUSTRY

76. Senator INHOFE. General Raymond, is the Space Force working with commercial industry to incorporate advancements in power efficiency technologies?

General RAYMOND. Yes, the Air Force Research Laboratory (AFRL) is looking at multiple approaches to improve the power efficiency in our space systems through partnership with commercial industry. Three prime examples are:

1. Partnering with Sandia National labs through the Space High Performance Computing Center of Excellence in New Mexico. This is a multi-year joint effort supported by an Other Government Agency (OGA) that is investigating and screening processing technologies working towards high-performance computing on-orbit.

2. Leveraging commercial state of the art chips that yield improved performance and efficiency with a wide variety of processor architecture types with fault tolerant designs.

3. Collaborating with industry partners, who are providing new rad-tolerant Single Board Computers. These partnerships are aimed at growing the LEO small-sat market to support increasing reliability and faster radiation qualification and validation, which AFRL's Hope program seeks to address.

EMERGING TECHNOLOGIES

77. Senator INHOFE. General Raymond, there are emerging technologies such as digital predistortion (DPD) that are improving the efficiency, power, and linearity of non-linear circuits. Is the Space Force looking at this and other technologies to improve on existing power efficiencies within our systems in space? Has this exploration been included in the Space Force budget?

General RAYMOND. Yes, AFRL is working on solutions to improve the power efficiency in our space systems. Digital/Analog convergence, as well as ideas for leveraging Artificial Intelligence/Machine Learning in space-electronics are being worked through multiple projects at AFRL, such as our Spacecraft Processing Architectures and Computer Environment Research focusing on new solutions for data processing on-board spacecraft to improve the power efficiency, computational performance, and radiation tolerance. The approach identifies and prioritizes the areas providing the biggest return on investment, while exploring new trade space for game changing concepts—adiabatic circuits, a low-power electronic circuit that uses “reversible logic” to conserve energy, is a great example of this. There is funding in the Science & Technology portfolio to pursue these efforts.

NATIONAL SECURITY SPACE LAUNCH PROGRAM

78. Senator INHOFE. Secretary Kendall and General Raymond, has the National Security Space Launch (NSSL) program benefited United States national security and the Space Force? If yes, how?

Secretary KENDALL and General RAYMOND. Yes. Since 2013, the NSSL program has saved over \$7B, successfully launched 59 missions, and put more than \$48 billion of space capability on orbit. NSSL is a force enabler, so maintaining our 100 percent mission success is the best way to maximize on-orbit capability that is crucial to countering emerging threats. The NSSL program will continue to benefit from the savings associated with competition.

79. Senator INHOFE. Secretary Kendall, General Raymond, what are cost impacts of launch failure on our national security in terms of payload and, more importantly, the loss of capability?

Secretary KENDALL and General RAYMOND. Cost impacts of a launch failure could exceed more than a billion dollars for some of today's satellites; however, the loss of space capability is unacceptable and degrades our advantage over our adversaries. A launch failure could result in significant launch delays until we can get to the root cause of the failure and are able to address the cause. As an extreme example, we lost a MilStar secured communications satellite in 1999 and it took us more than 10 years to replace that capability with the first AEHF launch.

80. Senator INHOFE. Secretary Kendall, General Raymond, last week Ms. Lord testified before this committee about the importance of block buys for National Security Space Launch (NSSL). How has block buy purchases impacted National Security Space Launch (NSSL)? Has it reduced the overall price of National Security Space Launch (NSSL)?

Secretary KENDALL and General RAYMOND. Yes, since 2013 the Department of the Air Force has reallocated \$7 billion from the launch budget to other warfighting capabilities. These reductions were achieved through block buys and competition. The future acquisition strategy is in work, and aims to continue providing affordable, reliable launch services, leveraging competition from the robust domestic launch industry, and providing flexibility to the warfighter.

81. Senator INHOFE. Secretary Kendall and General Raymond, as the Department considers the next launch procurement contract, what new requirements will be included to ensure the United States leapfrogs Chinese and Russian efforts to impact our space capabilities?

Secretary KENDALL and General RAYMOND. The National Security Space Launch (NSSL) program's current contract performance requirements are unchanged and will continue to drive the launch systems we need. Affordable and highly reliable launch services are critical to our success. To achieve this end, NSSL's next contract will utilize full and open competition and continue leveraging the nation's robust domestic launch industrial base, thus reducing the cost of launch, harnessing launch industry innovations such as reusable rockets, and providing assured access to space.

QUESTIONS SUBMITTED BY SENATOR TOM COTTON

DIVESTMENT OF EA-18G

82. Senator COTTON. Secretary Kendall, the Navy recently submitted a plan to divest of 5 EA-18G squadrons, all of their land-based electronic attack capability. The Air Force relies on this capability heavily in training and deployments as a key part of operations. What will the real effect on the Air Force be with this divestment?

Secretary KENDALL. The entire Joint Force, not just the Air Force, relies on the United States Navy Expeditionary EA-18G squadrons for many critical missions. If the Navy divests the 5 expeditionary EA-18G, we will have a reduced ability to exploit the Electromagnetic Spectrum to impact our adversaries and protect our forces. Recent analyses by several COCOMs indicate that the remaining carrier-based EA-18Gs will not be enough to fulfill their needs, and there will be a gap in capability as a result of this divestiture. In this event, Air Force platforms will primarily be dependent on on-board defensive self-protection jammers, until we can develop our planned future capabilities.

83. Senator COTTON. Secretary Kendall, if the Navy's request is approved, what is the Air Force's strategy for stand-in electronic attack?

Secretary KENDALL. The Air Force has both a Department Electromagnetic Spectrum Superiority Strategy and an Air Force Service Electromagnetic Spectrum Superiority Operating Concept. Both documents outline our plan for networked, distributed electromagnetic attack, using cognitive algorithms to compete with adversary complex emitters. Further information is available at another classification level. We are currently exploring ways to fund the key parts of our future EA strategy, Cognitive EA and Electromagnetic Battle Management, to meet DAF's pacing challenge.

ORBITAL DEBRIS

84. Senator COTTON. General Raymond, it is undeniable at this point that space is congested, especially in low earth orbit but increasingly in others as well. We have seen the Russians and Chinese conduct destructive tests against satellites on orbit, and who only knows what else is going on up there. We keep hearing about space debris from these kinds of events from you and others in the Space Force. Please tell us, what are you doing about space debris.

General RAYMOND. The most important contribution the Space Force makes toward solving the debris problem is preventing the generation of additional debris in the first place. Guardians perform this function everyday by providing collision warnings to any and all satellite operators regardless of affiliation of nationality to support space traffic management. The Space Force is also committed to norms of responsible behavior, to include not conducting destructive direct ascent anti-satellite missile tests, enhanced engineering standards so satellites do not break apart at end of life, and new launch debris mitigation steps. From a technology perspective, knowing where the debris is and what spacecraft are threatened is the next step in mitigating the danger of orbital debris—in close collaboration with mission partners like U.S. Space Command and the Department of Commerce, the U.S. Space Force continues to modernize its Space Domain Awareness architecture to track and disseminate the orbital debris hazard. The U.S. Space Force has partnered with the most innovative minds in industry, academia, and research institutions to research state of the art technology and concepts related to debris mitigation and removal. This partnership will hopefully allow the U.S. Government to purchase debris mitigation services in the future. The U.S. Space Force continues to partner with the State Department to promote standards of responsible behavior in space. The success of this effort will create a broad coalition of actors committed to the responsible use of space now and in the future.

RAPID RESPONSE TO ELECTRONIC ATTACK

85. Senator COTTON. General Brown, Space-X recently fended off a Russian attempt to jam its Starlink Internet in Ukraine. Shortly after, the OSD Director of Electronic Warfare publicly said Space-X handled faster than the United States military could've if it wanted to. In 2021 you stood up the Spectrum Warfare Wing, theoretically to handle problems like this one and others. How long until we can expect to see a similarly capable response from the Air Force in the electronic warfare domain?

General BROWN. The answer for current Space Force anti-jam capabilities is classified. It will come under separate cover from Chief of Space Operations. Regarding the 350th Spectrum Warfare Wing, it will reach IOC this summer, focused on electronic warfare reprogramming for airborne platforms, with emphasis on F-35, and building cognitive infrastructure for future capability development. FOC capabilities will include cognitive EW improvements per our strategy document. Timeline for FOC capabilities is not determined.

OVER-CLASSIFICATION OF CAPABILITIES

86. Senator COTTON. Secretary Kendall, I heard that shortly after being sworn in you directed a review of the portfolio of Special Access Programs with the intent to reduce the number of them in the Air Force. What was the result of that review?

Secretary KENDALL. I reviewed all the DAF SAPs and concluded that the large number of compartments and subcompartments was a serious obstacle to collaboration. The Deputy Secretary of Defense reached a similar conclusion, and as a result, the DAF is conducting a review of our Special Access Programs and will provide results to the Deputy Secretary of Defense later this year.

87. Senator COTTON. Secretary Kendall, there is tension between the strategy of “integrated deterrence” and the security apparatus purposefully designed to prevent integration of exquisite capabilities. What is your plan to ensure the right people, outside of higher headquarters buildings, have access to the information they need to plan, test, and train with our high-end but classified capabilities?

Secretary KENDALL. The security apparatus is designed to manage necessary access to personnel who require it. The DAF Office of Primary Responsibility oversees the security construct and enables personnel access, but the ability for the DAF to enable planning, testing, and training is based on requirements established by the warfighter (examples of the selective use of key Special Access Programs, or SAPs, include support for Weapons School, WEPTAC, exercises, or simulated war games). The security apparatus across the SAP enterprise similarly follows an acquisitions-

like track for readiness to move from development to testing and ultimately operations capabilities towards apportionment under the Integrated Joint Special Technical Operations (IJSTO), led by AF/A3 and SF/COO. MAJCOMs and FIELDCOMs continue to identify gaps, where key personnel require access; improvements based on their feedback include the use of several access portfolios (including multi-domain and multi-Service capabilities) to support key MAJCOM and FIELDCOM staff, the Weapons and Tactics community and the United States Air Force Weapons School. In parallel with any acquisition effort, the T&E community and the warfighter community are kept well abreast of capability development (typically as members of the program office led Integrated Product Team) and the timelines and requirements involved to support testing and fielding. Accesses are continually updated based upon test community requirements to support a “test as we fight” concept to ensure integration across functional domains and integration with other Services. The lead MAJCOM or FIELDCOM is responsible to establish training pipelines in cooperation with the formal training command and to identify the operational units that provide the capability to the COCOMs. The DAF coordinates accesses through requirements established by the acquisition community, the T&E community and the warfighting community to enable planning, testing, and training of classified capabilities.

88. Senator COTTON. Secretary Kendall, I’ve heard horror stories of the huge amount of time and effort spent on an outdated security architecture regarding Special Access Programs. Specifically, despite the existence of an online database of accessed individuals, Airmen and Guardians must ask their security managers to email visit certificates for temporary duty assignments as if we’re still using secure fax machines. In the most egregious cases, Airmen within the same Wing or Delta that have secure facilities at the same base but managed by different subunits must send visit certs to go across a parking lot. What are you doing to address the wasted time and energy spent on this bureaucracy to allow our Airmen and Guardians to focus on warfighting?

Secretary KENDALL. The DAF is familiar with, and shares, the concerns regarding the time it takes to move clearances from office to office, while at the same time balancing the need to maintain the security of these programs. However, the DAF is required to follow the processes and use the systems, not owned by the DAF, that work across the entire defense enterprise, even if that is just to communicate on the same base. In order to address this latency, the DAF is pursuing an exception to policy for visits to facilities within the purview of the DAF; the DAF will coordinate with other DOD components, who are likely experiencing the same issue. This exception to policy will nullify the requirement for written correspondence, adding agility and speed to the process.

89. Senator COTTON. General Raymond, before he retired the last Vice Chairman of the Joint Chiefs of Staff announced an initiative to declassify or downgrade the classification level of the vast portfolio of Special Access Programs in the Space Force and Space-based. What is the status of that effort and when will see the results of that directive?

General RAYMOND. Through the ongoing Space Strategic Review (SSR) directed by the National Security Council, the Assistant Secretary of Defense for Space Policy is leading work that will inform a review of the Department’s space classification and related disclosure policy. I anticipate that work will yield policy guidance that should be taken into account in carrying out appropriate review of classified programs managed under the authority of the Space Force as to whether the level of classification of a given program could be changed to a lower level, or the program could be declassified. This will take time as it requires the review of hundreds of programs, as most programs contain some classified information.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

AWACS MODERNIZATION

90. Senator SULLIVAN. General Brown, this past Tuesday, the Air Force finally decided on the E-7 Wedgetail to replace the aging E-3 Sentry Airborne Warning and Control System (AWACS). The service’s proposed fiscal year 2023 budget calls for the retiring of 15 E-3s, or almost half of the service’s inventory, yet estimated delivery of the first E-7 platform isn’t expected until 2027. Given, this, will there be a gap in the service’s early warning and control capability?

General BROWN. There is a capability gap that exists in this mission area today, and it can never be filled by the E-3. We must move to a modern platform to close this capability gap. As for capacity, the E-3's availability rate has declined to an average of 40 percent and we routinely see lower rates on a day-to-day basis. Divesting the E-3 is crucial to the AF's intent to invest in the E-7A, a modern, more capable, and reliable airborne early warning platform. The DAF is exploring options to accelerate E-7 fielding.

91. Senator SULLIVAN. General Brown, if the E-3 retirement timeline will create a gap, how is the Air Force going to mitigate it?

General BROWN. There is a capability gap that exists in this mission area today because of the lack of capability of the existing E-3 fleet. We must move to a modern platform to close this capability gap. Retaining any number of E-3's will not help with the capability we need. During the transition to the E-7, the United States Air Force will leverage other assets including, but not limited to, Control and Reporting Centers and Over-the-Horizon radars, and other organic sensors.

92. Senator SULLIVAN. Secretary Kendall and General Brown, I understand one of the issues you face to fielding the E-7 sooner is that Boeing is building other 737-derived platforms and doesn't have excess capacity. Would more funding, sooner allow you to field E-7s faster?

Secretary KENDALL and General BROWN. The interdependency of the primary lines of effort to build a complete E-7 present a greater limitation than Boeing's 737 production capacity. The three primary lines of effort for building an E-7 are: 1) the "green aircraft" from Boeing; 2) radar integration components (Section 46 and radar); and 3) development of the United States mission system. All three lines of effort must be accelerated together to accelerate delivery of a complete E-7 aircraft. To aid in accelerating delivery, we would need new start authority to be granted in fiscal year 2022 and stable and predictable budgets for fiscal year 2023 and beyond. Continuing Resolutions (CR), regardless of length, drives uncertainty and inefficient execution, threatening the readiness of our force and our ability to keep pace with our adversaries.

AIR FORCE ARCTIC STRATEGY

93. Senator SULLIVAN. Secretary Kendall, during your confirmation process last year, I asked you for the record, "[i]f confirmed, can I get your commitment to ... fully resource the Department of the Air Force's Arctic strategy so that our Nation can successfully defend the Homeland along our northern approaches? To which you responded, "[y]es." Since releasing its Arctic Strategy in 2020, the Air Force's MILCON budget priorities in the Arctic have been: runway extension and living quarters repair JBER, and a new dormitory to house the additional LRDR personnel at Clear Space Force Station. Do you believe these MILCON budget priorities reflect the commitment you've made to fully resource your Department's Arctic Strategy?

Secretary KENDALL. I believe the Department's MILCON investment funding of Arctic priorities is consistent with objectives in our Arctic Strategy. The projects highlighted are best characterized as supporting Current Mission. The Department schedules New Mission MILCON projects to provide new facilities when they are needed, as identified by the Program Executive Office and our strategy. Currently, the DAF is also making significant MILCON investments at installations in the Northern Tier states for the Ground Based Strategic Deterrent and for the Weapons Generation programs. Importantly, our MILCON projects are not the only reflection of our commitment to resourcing the Arctic Strategy. Our planned investment also includes Over the Horizon Radar (OTHR) sites in Northern Tier States, JPARC enhancements, Cobra Dane, Enhanced Polar System Recapitalization, Evolved Strategic Satellite Communications RDT&E, and weather system follow on improvements. In all, the DAF has identified approximately \$1.2 billion in additional investments with Arctic relevance.

94. Senator SULLIVAN. Secretary Kendall, what additional Arctic MILCON budget priorities can we expect to see from the Air Force going forward?

Secretary KENDALL. The DAF is working closely with the Air Force Research Lab and Office on Naval Research on the programming and planning of land acquisition and facilities construction to support Over the Horizon Radar (OTHR) facilities.

JOINT RANGE OPERATIONS CENTER

95. Senator SULLIVAN. Secretary Kendall, while visiting the Joint Pacific Alaska Range Complex (JPARC) with ADM Aquilino early last year, we were briefed on the need for a new Joint Range Operations Center (JROC), which is necessary to inte-

grate the highly classified systems on 4th, 5th, and 6th generation aircraft and simulate combat against a peer adversary. JROC construction is critical to operating the JPARC with Threat Matrix Level 4 capability. Last year, in a question for the record, you said this capability “could be the difference between winning and losing a future fight.” Given this importance, when should we expect to see this as a priority in the Air Force’s budget?

Secretary KENDALL. The Air Force has developed requirements for the Joint Range Operations Center, though they are not currently in the fiscal year 2023 FYDP MILCON Budget Request; the Air Force is considering inclusion of this requirement in a future budget request.

HOMELAND DEFENSE INFRASTRUCTURE

96.Senator SULLIVAN. General Raymond, as you are aware, Alaska is home to most of our Nation’s ballistic missile defense and domain-awareness infrastructure, including the recently finished long-range discrimination radar at Clear Space Force Station. The Air Force’s fiscal year 2023 budget requested \$68 million for a dormitory required to house the additional radar operators necessary to operate this new radar, which is essential to executing that homeland defense mission. What other Space Force investments are necessary to ensure our Homeland defense infrastructure modernizes with the threats we are facing?

General RAYMOND. The dorm project at Clear SFS was one of our highest MILCON priorities as it supports the personnel for the new Long Range Discrimination Radar (LRDR) in Alaska. The LRDR radar is an important part of the United States’ ability to identify and track more advanced threats to the Homeland coming over the poles. Equally important to homeland defense is our pivot to a new resilient missile warning / missile tracking force design, which we initiated in the fiscal year 2023 President’s Budget. The new missile warning / missile tracking force design will enable the United States Space Force to detect and track ever advancing missile threats, and is more resilient to the growing list of PRC and Russian space threats. We also continue to invest in several other ground based radars in Alaska and around the world.

CLEAR SPACE FORCE STATION TOUR LENGTHS

97. Senator SULLIVAN. General Raymond, the community surrounding Clear Space Force Station is eager to host guardians and their families if Air Force policies permit accompanied tours. I understand that the Space Force has the authority to implement two or three year accompanied tours for guardians assigned to Clear SFS. Do you need any additional authorities to implement such a policy?

General RAYMOND. Unfortunately, Clear SFS will likely remain an unaccompanied tour for the near future due to the lack of quality of life/family-related programs and resources on station or in the surrounding area. Twelve Active Duty Guardians, 105 National Guard personnel, and 20 Airmen are currently assigned to Clear SFS.

1. Anderson is the closest town, population <200 per 2020 census (about 6 miles away) with very limited services available.

2. Nenana is the next closest town, population <400 per 2020 census (about 20 miles away) with very limited services available.

3. Fairbanks is the closest metro area, approximately a two hour drive away.

Exceptions to policy could be granted (with a waiver from DOD), but would require thorough vetting to ensure the member could find housing in Anderson or Nenana, while understanding the limited community and family support services within the normal commuting distance of 50 miles.

B-21 BASING

98. Senator SULLIVAN. Secretary Kendall and General Brown, is the Air Force considering any OCONUS basing options for the B-21 Raider?

Secretary KENDALL and General BROWN. The United States Air Force is not currently considering OCONUS basing options for the B-21.

99. Senator SULLIVAN. Secretary Kendall and General Brown, what is the process by which the Air Force is deciding where B-21 Raiders will be permanently and rotationally based?

Secretary KENDALL and General BROWN. The Department of the Air Force (DAF) is using its strategic basing process to determine the permanent locations of the three B-21 main operating bases. The final basing decision for the first main operating base, Ellsworth AFB, was announced on June 10, 2021. The preferred locations for the remaining two main operating bases are (in sequence)—Whiteman

AFB, and Dyess AFB. The DAF anticipates initiating the development of Environmental Impact Statements for main operating bases 2 & 3 in the 4th quarter fiscal year 2022. Additionally, the DAF may rotationally deploy the B-21 as part of a Theater Support Package in future years, if required.

ACQUISITION REFORM

100. Senator SULLIVAN. Secretary Kendall, General Brown and General Raymond, the GAO has identified “adequate pricing” as one of five key area vulnerabilities of the DOD. For example, the existing statutory language in 41 U.S.C. 103 continues to complicate the DOD’s ability to ensure that commercial goods and services are acquired based on competitive market pricing that represents the best value or the best price. This section discusses the definition of a commercial product which qualifies for defense acquisition as having been, “sold, leased, or licensed, or offered for sale, lease or license, to the general public,” but makes no mention of demonstrated scale. This leads to the DOD using commercial item procedures to procure items that are misclassified as commercial items and therefore not subject to the forces of a competitive marketplace. Would you support modifying regulations like this to ensure the DOD is getting the best acquisition pricing?

Secretary KENDALL, General BROWN, and General RAYMOND. The Department of the Air Force supports modifying the commercial items definitions and rules to ensure the DOD is getting the best acquisition pricing, by limiting commercial products and services to those that are subject to the forces of a competitive market. Although it is crucial to leverage commercial industry and commercial practices as much as possible, there are many instances where supplies or services are categorized as commercial but not sold to non-Government customers to any significant extent, or at all. In such circumstances, the Government is not gaining the benefit of the commercial market and is often unable to obtain sufficient cost or pricing data to evaluate the reasonableness of the proposed price. Addressing this concern would improve the Government’s ability to negotiate reasonable prices and could also expedite acquisition timelines by ensuring the Government can obtain the data it needs to evaluate proposed prices. We recognize that industry will strongly oppose broad statutory changes in this area of commercial item acquisition. The Department of the Air Force strongly supports DOD Legislative Proposal#427, Data Requirements for Commercial Item Pricing Not Based on Adequate Price Competition, which seeks modest change with a tailored approach to obtain data to support new commercial “of a type” determinations, particularly for sole source items that lack adequate price competition. The Air Force understands that the Office of the Under Secretary for Acquisition and Sustainment is in active discussion with the Armed Services Committee staff on this matter and is exploring ways to achieve this objective.

101. Senator SULLIVAN. Secretary Kendall, General Brown and General Raymond, while competition should lead to lower prices, in a sole-source environment buyers need more information to ensure they get a good deal. Government buyers are in the strongest negotiating position when they are able to review certified cost or pricing data to determine whether a contractor’s proposed prices are fair and reasonable. Over the years, “acquisition reform” has gutted requirements on companies to provide this data to government officials, including certified cost and pricing data for goods and services that have been designated commercial. Would you support removing or limiting pricing data exemptions for commercial goods and services if they are acquired via sole-source?

Secretary KENDALL, General BROWN and General RAYMOND. Yes, the Department of the Air Force supports removing or limiting pricing data exemptions for commercial goods and services if they are acquired via sole-source. The biggest challenge to the Department is that this be done for “commercial of-a-type” items. Under this regulatory regime, it can be difficult for Contracting Officers to determine if prices are fair and reasonable in sole-source situations because contractors can offer items for sale without actually selling them. Contractors can put an item in a catalog with no intention of selling it commercially in order for the item to meet the minimum of the definition of commercial item.

While it is crucial to leverage commercial industry and commercial practices to the greatest extent possible, there are many situations where pricing information for commercial products and services is not readily available to the Government. In these situations, the Government spends a lot of time and resources attempting to obtain data (often unsuccessfully) from the contractor or other sources in order to make a price reasonableness determination. Limiting or removing pricing data exemptions for commercial goods and services in such situations would expedite acqui-

sition timelines and improve the Government's ability to assess the proposed prices for reasonableness.

The Department of the Air Force recognizes that industry will strongly oppose limiting or removing pricing data exceptions for commercial goods and services. The Air Force supports DOD Legislative Proposal #427, Data Requirements for Commercial Item Pricing Not Based on Adequate Price Competition, which provides a reasoned set of circumstances for obtaining price and cost data in sole source, commercial "of a type" acquisitions.

QUESTIONS SUBMITTED BY SENATOR MARSHA BLACKBURN

TESTING

102. Senator BLACKBURN. General Brown, what is the current role of modeling and ground testing for hypersonics? How should that role be altered or expanded?

General BROWN. Both modeling and ground testing are valuable tools that reinforce each other and can have strong synergy with flight test. Both are being improved as our knowledge of hypersonics advances. The Air Force and Office of Secretary of Defense Test Resource Management Center (OSD/TRMC) are making critical investments to recapitalize the Nation's hypersonic infrastructure and to develop the new hypersonic ground test, flight test, modeling and simulation, and analysis capabilities needed to support hypersonic weapon system development. In partnership with OSD/TRMC, significant investments are being made in the areas of high temperature material test facilities, hypersonic high speed test track, hypersonic wind tunnels for hypersonic air breathing engines and modeling and simulation of weather effects on hypersonic weapons. The Air Force and OSD/TRMC will continue to evaluate current and planned hypersonic investments in the modeling and simulation and ground test capability improvements.

103. Senator BLACKBURN. Secretary Kendall, what are the immediate and enduring implications of starving critical infrastructure for testing hypersonics and other critical weapon systems?

Secretary KENDALL. The Air Force and DOD recognize the critical importance of investing in test infrastructure. In the area of hypersonics, the Office of the Secretary of Defense (OSD) Test Resource Management Center (TRMC) is making significant investments in hypersonic infrastructure to include open air range test capability (Edwards AFB), high-speed test track capabilities (Holloman AFB), and high-temperature test facilities (Arnold Engineering Development Complex). In addition to the OSD investment, the AF is investing \$336 million across the fiscal year 2023 FYDP for hypersonic test infrastructure, of which 100 percent will go to AEDC. Currently for test infrastructure, United States Air Force invests \$109 million (fiscal year 2023) in Facilities, Sustainment, Restoration, and Modernization (FSRM), of that historically 81 percent goes to AEDC. United States Air Force invests \$65 million (fiscal year 2023) in modernization improvements across the test enterprise, of which 25 percent goes to AEDC.

NUCLEAR ENTERPRISE

104. Senator BLACKBURN. General Brown, how does the budget balance the long-delayed strategic nuclear modernization program and aircraft procurement?

General BROWN. The Air Force must do both. In an environment of aggressive global competitors and technology development and diffusion, the Air Force must rapidly modernize to control and exploit the air domain, while also underwriting national security through nuclear deterrence to the standard the Nation expects and requires. Our budget fully funds our key nuclear modernization programs, makes targeted investments to best position the Nation for peer competition, while accepting risk in legacy capabilities not optimized for the future fight we envision.

105. Senator BLACKBURN. General Brown, how does the budget support the design and operational nuclear certification of systems, units, and tests at scale for current conditions?

General BROWN. Consistent with the 2022 Nuclear Posture Review, the fiscal year 2023 President's Budget request fully resources nuclear certification requirements needed to ensure on-time fielding of safe, secure, reliable, and effective nuclear weapons systems. If appropriated, the fiscal year 2023 budget request would increase funding for nuclear certification activities at the Air Force Nuclear Weapons Center by \$41.6 million to meet the oncoming "bow wave" of nuclear certification demands. These funds will support independent technical evaluations and testing

for new nuclear systems such as Sentinel, Long Range Standoff (LRSO), B-21, and Weapons Generation Facilities, as well as sustainment of currently fielded capabilities (E.G., B-2, F-35, MMIII, B-52). Stable and consistent funding for nuclear certification remains vital to the success of Triad modernization programs.

SPACE FORCE RESEARCH DEVELOPMENT, TEST, AND EVALUATION (RDT&E)

106. Senator BLACKBURN. General Raymond, how is the Space Force collaborating with commercial industries to develop resilient and defensible architecture and space capabilities?

General RAYMOND. Commercial applications enable diverse, distributed and resilient architectures and capabilities to be delivered quickly and economically. In our approach, we evaluate each mission area, assess risk, and look for opportunities to leverage capabilities for inclusion into the mission architecture. Space Force shared our force design with commercial industry early in the process and sought industry input. New force design must capitalize on commercial or we won't be able to afford the new design.

Additionally, we will work closely with the warfighter so that our commercial acquisition efforts support the USSPACECOM Commercial Integration Strategy vision to collaborate, integrate and partner with industry to mitigate gaps, and maintain a competitive advantage.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

107. Senator HAWLEY. Secretary Kendall, you committed during the hearing to provide any Pacific Air Forces unfunded requirements. Can you provide in the next 30 days a list of PACAF posture requirements that were identified during the fiscal year 2023 budget cycle but were not funded in the fiscal year 2023 budget request, along with an explanation for why each of those items was not funded?

Secretary KENDALL. Pacific Air Forces is the Air Force component supporting INDOPACOM. In fiscal year 2023, in accordance with DOD guidance, the Air Force requested \$86.8 million in Operations and maintenance funds to support the Pacific Deterrence Initiative (PDI). The INDOPACOM Commander's fiscal year 2023 unfunded priorities submitted to Congress listed four United States Air Force equities: Service Tactical Signal Intelligence (SIGINT); Upgrades, Joint Air-to-Surface Stand-off Missile (JASSM), Theater Campaigning, and Mission Partner Environment (MPE); Battlefield Information Collection & Exploitation System—Extended (BICES-X).

108. Senator HAWLEY. General Brown, I understand the Air Force's "palletized munitions" concept offers a promising way to expand U.S. strike capacity and deliver longer-range weapons at a lower cost. Do you think this concept is promising?

General BROWN. Yes, the concept is promising with respect to delivering massed effects over time. With more weapons needed, and less time to deliver them, we are forced to investigate non-traditional methods of delivering weapons. Palletized delivery, for any number of different weapons, allows us to dramatically increase the number of weapons we can deliver in a compressed period.

109. Senator HAWLEY. General Brown, has the Air Force considered using C-130Hs as delivery vehicles for palletized munitions?

General BROWN. Yes, the Air Force has considered this, and we have not precluded integration on the C-130H in the future. For now, we have prioritized the C-130J and C-17 due to their increased performance, including a larger combat radius, which we will need in Pacific scenarios.

110. Senator HAWLEY. General Brown, what progress has the Air Force made on operationalizing Agile Combat Employment over the last year, where have you met delays, and what are your priorities for ACE over the coming year?

General BROWN. We had done a lot of ACE experimentation in previous years to prove out this way of operating, and over the past year that emphasis has shifted to making the concept a reality across all aspects of airpower. Over the past year our focus has been on developing the enterprise concept to support the detailed training, team structures, tactics, partner nation relationships, supporting infrastructure, and enabling capabilities for ACE. ACE looks a bit different in the Indo-Pacific versus in Europe, or for fighter aircraft than it does for bombers or our mobility aircraft. We've challenged ourselves to understand those differences and develop a strategy for how we can organize, train, and equip the force to conduct ACE worldwide. The ACE exercises we've conducted over the past year have shown us

how to conduct dispersed operations effectively, and they've strengthened our interoperability with our allies and partners worldwide. Looking ahead, our focus is on solidifying and formalizing how we will conduct ACE, and in prioritizing the investments that will make it possible. We see no delays in meeting these objectives.

111. Senator HAWLEY. General Brown, when do you expect Agile Combat Employment to reach Initial Operational Capability and Full Operational Capability?

General BROWN. ACE is a way of operating that is made possible by a wide range of capabilities, procedures, and dispersed operating locations, so it's a bit challenging to use terms like initial operating capability or final operating capability as we would with a new weapon system. Each of our Major Commands has developed its own criteria for what it considers to be a baseline ability to conduct ACE that will effectively assure our allies and partners, deter aggression, or respond to crises. We can discuss those criteria in a different forum. We'll continually improve on that baseline as we learn through doing, integrate with our joint and combined partners, and bring new capabilities to bear to support this resilient way of generating airpower.

112. Senator HAWLEY. General Brown, the Guam cluster will play an important role in future air operations in the Pacific. This in mind, can you explain how the fiscal year 2023 budget request supports development of operational locations and related activities in the Guam cluster?

General BROWN. The Air Force is in continuous dialogue with INDOPACOM on the development of operational locations and forward posture. We are working together to identify requirements and what is needed to balance those requirements, considering global commitments. Simultaneously, we are taking a look at what is required to ensure our servicemen and women, across the Department of Defense, have the training required to handle all the threats we think we may face, not only in the Indo-Pacific, but in Europe as well.

113. Senator HAWLEY. General Brown, as you know, Whiteman Air Force Base is the home of the B-2 stealth bomber. Can you confirm that sustainment is on track to keep the B-2s mission ready until they're replaced by B-21s?

General BROWN. Yes, the Department values a well-funded B-2 Weapon System Sustainment program in the fiscal year 2023 President's Budget and the B-2 will continue to provide capacity until B-21 fields.

114. Senator HAWLEY. Secretary Kendall, the 509th Bomb Wing and the Missouri Air National Guard's 131st Bomb Wing both fly B-2s out of Whiteman. These units are fully integrated and a great example of how our Active Duty and Air National Guard forces can work to complement one another. Does the Air Force plan to maintain total integration between the 509th and 131st Bomb Wings when B-21s are fielded, or are you considering putting an end to that arrangement?

Secretary KENDALL. The Air Force supports the current association construct between the 509 BW and 131 BW and will strive to maintain it in all future actions and missions at Whiteman AFB.

115. Senator HAWLEY. Secretary Kendall, how does the Air Force plan to transition from B-2s to B-21s at Whiteman Air Force Base?

Secretary KENDALL. For each Main Operating Base, we will seek to expeditiously transition units away from the legacy bomber platforms, and to the B-21. Upon arrival of the B-21, we gain the greatest efficiencies for our Airmen and the mission, by shifting our training and employment focus as quickly as possible away from the legacy platform and to the B-21. Specific to the B-2, we will also be mindful to holistically maintain our nuclear requirements through the transition.

116. Senator HAWLEY. Secretary Kendall, how will "advanced collaborative platforms" improve the Air Force's ability to counter Chinese air forces and when do you expect these capabilities to reach Initial Operational Capability and Full Operational Capability? Please provide a classified response, if necessary.

Secretary KENDALL. The Air Force is currently exploring operational concepts and working with industry partners to evaluate technical maturity. Once these activities are complete we will be able to share more information in a classified response.

117. Senator HAWLEY. Secretary Kendall, Air Force Magazine reported on April 28, 2022 that the Air Force is accelerating the production timeline for the B-21 program by overlapping development and production. Given this development, what is

the current Initial Operational Capability and Full Operational Capability estimate for the B-21 program? Please provide a classified response, if necessary.

Secretary KENDALL. More complete program definition will be included in the fiscal year 2024 President's budget. IOC and FOC have not been finalized yet, but IOC can be expected later this decade.

118. Senator HAWLEY. Secretary Kendall and General Brown, you stated during the hearing that the Air Force has multiple anti-ship capabilities other than the Long-Range Anti-Ship Missile (LRASM). What are those capabilities, when will they become available (if they are not already), and how do they compare to LRASM in terms of their ability to sink or disable enemy ships in a contested environment?

Secretary KENDALL and General BROWN. More complete program definition will be included in the fiscal year 2024 President's budget. IOC and FOC have not been finalized yet, but IOC can be expected later this decade.

QUESTIONS SUBMITTED BY SENATOR TOMMY TUBERVILLE

FLIGHT HOURS

119. Senator TUBERVILLE. Secretary Kendall and General Brown, studies have shown that a pilot needs at least 200 flight hours per year or four sorties a week to remain combat ready. How many flight hours did United States Air Force pilots average in 2021 and what is your expectation for that number in 2022?

Secretary KENDALL and General BROWN. Overall, Air Force pilots flew an average of 135 hours in 2021 with Fighter Pilots averaging 103 hours. Factoring in planned force structure reductions and moderate inflation, we anticipate Air Force pilots will be able to fly 130 hours in 2022, with fighter pilots averaging approximately 101 hours.

120. Senator TUBERVILLE. Secretary Kendall and General Brown, at present, how many Air Force pilots are considered combat ready?

Secretary KENDALL and General BROWN. The number of pilots considered combat ready can fluctuate from day-to-day and month-to-month given pilots are continually moving through some level of initial, upgrade, or continuation training as part of the normal course of our pilot experiencing cycle. For operational security purposes, we will need to provide those numbers in a closed session. Generally speaking though, in order to have a healthy, sustainable, and properly sized mission ready crew force, the Air Force needs to maintain a balance of experienced and inexperienced pilots to include an appropriate number of instructors to support the continuum of training. Today, the Air Force is challenged to both produce and absorb the number of pilots it needs. Currently, the Air Force is 1,650 Total Force pilots short of its requirement and needs to produce 1,500 pilots annually. However, at the same time, our pilots are flying on average 30 percent below the required hours annually, which is impacting our ability to absorb and season the pilots we produce. By absorb, we mean train our pilots at the right pace to keep that proper balance of experienced and inexperienced pilots at the unit level. By season, we mean make inexperienced pilots combat ready and allow them to progress until they are experienced. If the current trend continues, we will have an overly inexperienced force in the future. Therefore, we must start flying more in order to properly experience the force and similarly train to the proficiency required to prevail against a peer adversary. Divesting our oldest, least operationally relevant systems may be one component that could free-up resources to supplement flying hours on our most needed platforms and help buttress combat readiness. While not a panacea in itself, it would be supplemental and a move in the right direction for combat readiness.

121. Senator TUBERVILLE. Secretary Kendall and General Brown, what resources do you need to ensure all U.S. Air Force pilots are combat ready?

Secretary KENDALL and General BROWN. While not all pilots are combat ready, because a portion are in initial or upgrade training, a properly resourced flying training program is needed to absorb, upgrade, and train our pilots. We now fly about 30 percent less hours than the training requirement, which impacts combat readiness. Improved combat readiness requires investment in manpower, the sustainment enterprise, and our operational training infrastructure. We need continued congressional support for tough choices to free up resources, including divestment of our oldest, least operationally relevant systems. Divesting legacy platforms particularly helps us with our maintenance manpower shortfall. 9 percent of our maintenance positions are currently unfunded and approximately 50 percent of our

aircraft maintenance personnel have less than six years of experience. Divesting a portion of the A-10 fleet alone would free up approximately 900 critical maintenance personnel. Additionally, sustainment requirements are exceeding our ability to keep pace. Maintenance workload has increased more than 50 percent in the past 25 years and legacy aircraft break 33 percent more often. We also forecast a 54 percent increase in depot workload over the next 20 years due to modernization requirements and structural life extension actions. New aircraft are expensive to procure, but old aircraft have accelerating costs simply to keep flying. These resourcing challenges limit the amount of flying hours we can generate and directly impact our combat readiness. Continued congressional support provides the resources needed to strike a balance between crucial modernization and current force readiness.

COMBAT AND SUPPORT WING EVALUATIONS

122. Senator TUBERVILLE. Secretary Kendall and General Brown, at present, Air Force combat and support wings are responsible for evaluating themselves. This used to be the job of the Inspector General. Is it true that since wings moved to evaluating themselves that their passing grades have increased dramatically?

Secretary KENDALL and General BROWN. Wings and wing-equivalent units across the Department are responsible for self-assessment processes, while they also receive external inspections, including those regularly conducted by MAJCOM or equivalent levels under the Air Force Inspection System. Since implementation of the current Air Force Inspection System in 2013, we've noticed no significant difference in wing-level pass rates. In comparing all wing-level Unit Effectiveness Inspections conducted during the most recent two-year period to the last two years of wing-level inspections conducted during the previous inspection system, the pass rate is actually slightly lower now:

Inspection Pass Rate Jun 2020 to May 2022:

163 inspections. 6 Marginally Effective or Ineffective (2). Pass Rate=96.3 percent

Inspection Pass Rate Jan 2011 to Dec 2013:

193 inspections. 3 Marginal or Unsatisfactory (2). Pass Rate=98.5 percent

While pass rates and grades are important in terms of overall assessments, it is important to note that a strong DAF-wide unit culture of critical self-assessment, along with the robust and rigorous processes of the Air Force Inspection System, have identified 6,486 deficiencies across the Department in the last two years alone. All of these deficiencies are tracked to resolution.

123. Senator TUBERVILLE. Secretary Kendall and General Brown, share your thoughts on transitioning wing evaluations to the Air Force I.G.

Secretary KENDALL and General BROWN. The Air Force Inspector General closely oversees policy, process, and trending for inspections of all units in the Department, from wing, delta, and garrison level, up to our headquarters staffs. For the entire Department, including the United States Space Force (USSF), the Air Force Inspection System (AFIS) is built upon the premise that Commanders at all levels have the responsibility to assess their units' effectiveness, efficiency, discipline, and readiness. Inspectors General (IGs) independently and objectively inspect readiness and compliance of a commander's subordinate units by carrying out inspection responsibilities and activities as required by United States Code, DOD policy, and DAF instructions. Each wing-level commander is required to conduct continuous internal self-inspection activities. By way of illustration, during a two-year command tour, a typical wing-level commander will experience more than 100 inspection events, either conducted or overseen by an organic team of IG personnel or by external IG teams from higher-headquarters level. All IG team members are trained by the Air Force Inspector General. Most wing-level commands are also inspected 2-3 times per year by a MAJCOM (or equivalent) level for mission readiness and compliance. Each MAJCOM-level IG independently reports the results of those inspections to the MAJCOM (or equivalent) Commander. Adding another layer of oversight on behalf of the Air Force Inspector General, the Air Force Inspection Agency conducts inspections of MAJCOM-level IG teams to guarantee planning, execution, quality, standardization, objectivity, and thoroughness of inspections across the Department of the Air Force. Finally, AFIS employs a continuous-evaluation process over multi-year inspection windows, rather than relying solely upon single-snapshot inspections. Under this construct, inspections accomplished on wings and garrisons that are orchestrated by wing-level IG personnel may be incorporated into a MAJCOM IG's assessment of each wing. In addition to validating local self-assessments, MAJCOM-level IG teams inspect the quality of the wing-level self-assessment program and incorporate a risk-based sampling system to assess the wing across the range of readiness and compliance areas.

NATIONAL SECURITY SPACE LAUNCH

124. Senator TUBERVILLE. Secretary Kendall, General Raymond, what are the most successful aspects of the U.S. launch program?

Secretary KENDALL and General RAYMOND. The most successful aspects of the National Security Space Launch program are its 100 percent mission success rate, robust competition from the industrial base, and significant reduction in launch cost. The NSSL Phase 2 contract, awarded to United Launch Alliance and SpaceX in August 2020, produced commercial-like prices for commercial-like missions and reduced launch costs for our more demanding missions by more than 50 percent, while providing assured access to space and stability to our launch providers.

125. Senator TUBERVILLE. Secretary Kendall, General Raymond, has the transition from single launch procurement awards to block buys reduced the price of space launch?

Secretary KENDALL and General RAYMOND. Yes, since 2013 the Space Force has reallocated \$7 billion from the launch budget to other warfighting capabilities. These reductions were achieved through block buys and competition. The future acquisition strategy is in work, and aims to continue providing affordable, reliable launch services, leveraging competition from the robust domestic launch industry, and providing flexibility to the warfighter.

126. Senator TUBERVILLE. Secretary Kendall, General Raymond, as the department considers the next launch procurement contract, what new requirements will be included to ensure the United States beats Chinese and Russian efforts to impact our space capabilities?

Secretary KENDALL and General RAYMOND. The National Security Space Launch (NSSL) program's current contract performance requirements are unchanged and will continue to drive the launch systems we need to retain space superiority. Affordable and highly reliable launch services are the most critical aspects to achieving this superiority. To achieve this end, NSSL's next contract will utilize full and open competition and continue leveraging the Nation's robust domestic launch industrial base, thus reducing the cost of launch, harnessing launch industry innovations such as reusable rockets, and providing a 100 percent mission success rate.

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

THURSDAY, MAY 5, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

ARMY POSTURE

The Committee met, pursuant to notice, at 9:30 a.m. in room SD-G50, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Gillibrand, Blumenthal, Hirono, Kaine, King, Warren, Peters, Duckworth, Rosen, Kelly, Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Cramer, Blackburn, and Hawley.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. I would like to call the hearing to order.

The Committee meets today to receive testimony on the President's Defense Budget Request for the Army for fiscal year 2023. Our witnesses this morning are Christine Wormuth, Secretary of the Army, and General James McConville, Chief of Staff of the Army. Thank you both for your service, and please convey the gratitude of this committee to the men and women serving under you.

President Biden's Defense Budget Request for fiscal year 2023 includes approximately \$178 billion in funding for the Army, an increase of \$2.8 billion from the fiscal year 2022 enacted budget. The Army's request appropriately focuses on taking care of its people, enhancing training and readiness, and modernizing equipment, but it does so against a largely flat budget. As such, the Army has prepared a tightly crafted budget that attempts to balance all its priorities. However, to maintain momentum on its signature modernization efforts, the Army has significantly slowed its procurement of enduring capabilities. This effort to hold onto every program has inevitably led to inefficiency and "spending more for less." To avoid triggering further increases in cost per unit, I would like to know how the Army can ensure it makes best use of its resources even as it reduces procurement quantities.

The military is shifting its focus and resources to the Indo-Pacific region, and the Army has a critical role to play in this theater, including contributions to Joint Force capabilities, enabling logistics

and prepositioned stocks, and strengthening relationships with our allies. With that in mind, I am interested in hearing about the Army's view of its mission globally, especially in the Indo-Pacific, as well as how the service is adjusting its operating concepts and force posture to support the National Defense Strategy.

The Army's most valuable asset has always been its people. I am pleased to see this budget request places a priority on taking care of our men and women in uniform and the civilians who serve alongside them, including an across-the-board pay raise for military and civilian personnel of 4.6 percent. At the same time, this budget would decrease the Army's end strength to just under one million soldiers, largely due to a difficult recruiting environment. I understand the Army is conducting a holistic review of its recruiting and retention practices, and I would ask for an update on how you plan to identify and attract a broader pool of potential recruits and grow back-end strength in the out years.

The Army must continue to improve its readiness in the context of long-term strategic competition. This budget increases flying hours and training miles to improve the readiness of the individual soldier. It also funds numerous rotations to Combined Training Centers to maintain unit-level readiness. Further, the Army's ongoing focus on large training exercises, including the Defender series in Europe and the Pacific, and its leadership in the Project Convergence series, demonstrate a commitment to regional preparedness. These large-scale events not only test system capabilities, exercise critical skills like deployment of the force, and demonstrate the value of prepositioned stocks, they also facilitate joint and coalition experimentation and training, reflecting how the United States would fight in future operations. We are seeing the importance of efforts like this right now in Ukraine.

The Army's budget request includes an overall decrease in research, development, test, and evaluation, RDT&E, but makes important increases in several cutting-edge technology areas. To remain competitive with China and Russia we must continue to invest in emerging technologies that will define future battlefields across all domains. The Army specifically has been pursuing modernization in the areas of long-range precision fires, air and missile defense, soldier lethality, next-generation combat vehicles, future vertical lift, and the communications network. These are ambitious and far-sighted objectives, but we must acknowledge that the Army has historically struggled to modernize effectively.

The establishment of Army Futures Command and the reorganization of associated commands injected tremendous energy into modernization efforts, and Congress has provided the Army with wide latitude to make programmatic and structural changes. The Army recently published a directive that refines and clarifies roles and responsibilities for Army Modernization. Secretary Wormuth, General McConville, I would ask that you update the committee on the Army's modernization efforts and what resources are necessary to effectively continue them.

Again, I thank the witnesses for their participation today and I look forward to their testimonies.

At this point let me now recognize the ranking member, Senator Inhofe.

STATEMENT OF SENATOR JAMES INHOFE

Senator INHOFE. Thank you, Chairman Reed. I join you in welcoming our witnesses. I had an opportunity, and have in the past, several times, of getting to know them quite well, and I appreciate the efforts and the challenges they are facing right now.

For 4 years this committee has used the 2018 National Defense Strategy and Commission report as the roadmap. We have gotten our money's worth out of this thing over the last couple of years.

Rightly, the Biden administration recently released a defense strategy underscoring the accelerating threat of the Chinese Communist Party and its unprecedented military modernization.

Unfortunately, the Administration has sent to Congress a budget request that does not provide the resources necessary to combat that threat or others that we are facing right now. Not only does it fail to provide the 3 to 5 percent real growth recommendation that is in the NDS report and that we have been following for a number of years, it does not even keep up with the record-high inflation we are facing.

The absence of real growth in the request, combined with record-high inflation, would leave our military under-resourced.

This is most evident in the budget request for the Army. Of course, those of us old Army guys always observe that Army gets the short end of this stuff when changes are made. Am I the only one who ever observes this, Mr. Chairman?

Chairman REED. No, sir.

Senator INHOFE. Okay. Anyway, the request cuts military construction by 39 percent, it cuts research and development by 6 percent, and cuts procurement by 7 percent. Notably, the procurement cut would substantially slow modernization of armored brigade combat teams which are essential to deter further Russian aggression.

Given the inadequate budget request, it is no surprise that the Army's unfunded priorities list, what I call the risk list, totals \$5.1 billion.

I look forward to understanding from our witnesses the risks associated with this budget request. Additionally, I look forward to hearing what will be done to overcome a significant recruiting challenge. This is one that I have not seen before, and I think it is more severe than any challenge that we have had in the past, and that is that we are now facing, just in this year, a request shortfall of 12,000.

So Mr. Chairman, clearly we have got a lot to do to ensure that our military has the resources that they need. Thank you.

Chairman REED. Thank you, Senator Inhofe.

Let me now recognize the Secretary of the Army, Christine Wormuth. Madam Secretary.

**STATEMENT OF THE HONORABLE CHRISTINE WORMUTH,
SECRETARY OF THE ARMY**

Secretary WORMUTH. Chairman Reed, Ranking Member Inhofe, and distinguished members of the committee, thank you for your ongoing support for the Army as we continue to work to significant transform to meet future threats. I am really pleased to appear before you today as I near the 1-year mark of being Secretary of the

Army. We have accomplished a lot this year but we have a lot of work ahead of us.

We remain focused on our three key priorities: people, readiness, and modernization. The fiscal year 2023 budget request enables us to support the National Defense Strategy, take care of our people, and meet operational demands at home and abroad. We will invest \$35 billion in modernization, almost \$2 billion in military housing and infrastructure, and fund 22 combat training center rotations in fiscal year 2023.

We are modestly reducing our end strength from 485,000 soldiers in the Active component to 476,000 soldiers this year and about 473,000 soldiers in fiscal year 2023. We are doing this because we are really focused on ensuring a high-quality force. We did not want to have to lower our recruiting standards. At the same time, we are working hard to adjust our recruiting efforts, given the challenging recruiting environment that we and the other services are facing.

We are also committed to maintain our momentum on our six major modernization portfolios. In fiscal year 2023 alone we will field four Long Range Precision Fire systems, the first Long-Range Hypersonic Weapon battery, our ship-sinking, midrange capability, the Precision Strike Missile, and the Extended Range Cannon Artillery platform. We are also modernizing our air and missile defense systems and adding another Patriot battalion to our force structure. We continue to fund both the develop of FLRAA [Future Long-Range Assault Aircraft] and FARA [Future Attack Reconnaissance Aircraft], which are scheduled to field in about 2030.

As important as it is to maintain momentum on modernization, people are the strength of our Army and our greatest asset. This budget increases soldier and Army civilian pay and funds a number of important quality-of-life improvements, including barracks family housing and childcare initiatives.

We remain focused on building positive command climates across the Army. Positive command climates begin with good leaders, and our new leader assessment programs are truly helping us to select the very best leaders for command.

To reduce harmful behaviors we are building out a prevention workforce that will help us with our efforts to build cohesive teams that are trained, disciplined, and fit. Our SHARP Fusion Directorate pilot brings together, in one place, all of the resources to assist victims of sexual harassment and assault and those pilots are up and running. We have also hired a new civilian director for our Criminal Investigative Division, and we will establish the Office of Special Trial Counsel later this summer.

We continue striving to prevent suicide in our ranks. We have started conducting 100 percent mental health wellness checks in some of our units, and we are surging behavioral health resources to where they are most needed, even as we confront a national shortage of providers.

As we focus on taking care of soldiers and their families and transforming to meet future threats, the Army also plays a key role in addressing threats in the here and now. Today we have over 45,000 soldiers in Europe to reassure our allies, deter aggression against NATO [North Atlantic Treaty Organization] territory, and

assist Ukraine in its fight to defend itself. The Army, as you all know, has provided a wide range of lethal assistance to Ukraine, including Javelins, Stingers, Howitzers, drones, ammunition, and even MI-17 helicopters.

While we are focused on Europe we have not taken our eye off the pacing challenge of China in Indo-Pacific. Through Operation Pacific Pathways, we deployed thousands of Army forces and equipment sets to the region for exercises that strengthen Joint Force integration, demonstrate combat capability, and promote interoperability. In just the last 2 years, our Fifth Security Force Assistance Brigade has deployed 40 advisory teams to 14 different nations.

The interoperability and relationships our Army forces are building with allies in the region increased the potential for additional access and combined action in the event of a future conflict. Our access presence and influence around the world are enduring advantages that contribute to integrated deterrence.

To continue building this enduring advantage relative to our adversaries we have to pursue cutting-edge experimentation and innovation. Much of our experimentation activity will culminate this fall at Project Convergence 2022, where our sister services will join us with operational units and new technologies to work together to solve key operational challenges.

America's Army is fit, trained, and ready when called upon to fight and win the nation's wars. We are transforming for the future, which we have to do, given the very dangerous security environment we face each day. I am proud of everything that our soldiers do to protect our country, and look forward to your questions this morning.

Chairman REED. Thank you very much, Madam Secretary. General McConville, please.

STATEMENT OF GENERAL JAMES McCONVILLE, CHIEF OF STAFF OF THE ARMY

General McCONVILLE. All right. Apache Pilot will get that thing straight. Okay.

Chairman Reed, Ranking Member Inhofe, distinguished members of the committee, thank you for the opportunity to be here today and for your continued support to the Army and our people, our soldiers of all components, our families, our civilians, and our Soldiers for Life, our veterans, and retirees. Speaking of Soldiers for Life, we would like to thank Senator Inhofe for your many years of service in support to the Army and the nation, from basic training at Fort Chaffee and all your years on Capitol Hill. We wish you all the best in a well-deserved retirement. So thank you, sir.

The men and women of the United States Army stand ready to fight and win our nation's wars, as a member of the Joint Force, and I could not be more proud of each and every one of them. The Army is well-aligned with the National Defense Strategy through our existing priorities of people, readiness, and modernization. We win through our people. They are our greatest strength, and they are our most important weapon system, and that is why people remain the Army's number one priority.

We are in a war for talent. That means recruiting our nation's best and modernizing our talent management systems. That means

retaining our best. We recruit soldiers but we retain families, so we are ensuring access to quality housing, health care, childcare, spouse employment and PCS moves. When our soldiers get the call that it is time to deploy, we want them laser-focused on their mission, knowing that their families will be well taken care of at home. Above all, putting our people first means building cohesive teams, where everyone is treated with dignity and respect, and everyone, in every unit, is highly trained, disciplined, and fit, and ready to fight and win.

But being ready today is not good enough. We must also be sure we are ready tomorrow, and that is what modernization is all about—future readiness. The Army continues to undergo the greatest transformation in over 40 years, and we remain committed to our six modernization priorities. We will have 24 signature modernization systems in the hands of our soldiers by fiscal year 2023, either for testing or fielding, and also in fiscal year 2023 we will stand up the third of our five multi-domain task forces.

The U.S. Army never fights alone, so we continue to invest in strengthening our relationships with allies and partners across the globe. We can see the return in those investment in our response to Russia's invasion of Ukraine. Never before have we asked so many to move so quickly, and we could not do it without the access and presence our allies and partners provide.

In less than a week, the 1st Armored Division of the 3rd Infantry Division was able to deploy from Fort Stewart, Georgia, and be on the ground in Germany, starting live-fire exercise with tanks drawn from the Army prepositioned stocks in Europe. That is a testament to our tactical and strategic readiness, to the quality of our incredible logisticians, and to the investments Congress has made over the last several years in setting the European theater.

When it is time to go, we go with the Army we have, and the Army we have is the world's greatest fighting force. We must ensure it stays that way, and with your continued support we will.

I look forward to your questions.

[The prepared statement of The Honorable Christine E. Wormuth and General James C. McConville follows:]

JOINT PREPARED STATEMENT BY THE HONORABLE CHRISTINE E. WORMUTH AND
GENERAL JAMES C. MCCONVILLE

PUTTING THE ARMY ON A SUSTAINABLE STRATEGIC PATH

America's Army remains prepared to fight and win our Nation's wars as a member of the Joint Force, and we continue to serve as the Nation's premier response force to protect Americans, our Allies, and our interests when unexpected crises arise at home and abroad. We thank Congress for providing the funding that allowed us to deliver highly-trained forces for a broad spectrum of challenges, including continued COVID-19 response efforts in local communities, unprecedented natural disasters, the largest non-combatant evacuation operation in U.S. military history, and now support to NATO in response to Russia's unprovoked invasion into Ukraine.

As the Army continues its most significant transformation in over 40 years, our priorities continue to be people, readiness, and modernization. Building upon those priorities, the Army further defined six objectives to guide the force towards a vision of the Army of 2030. First, we are ensuring the Army continues down a sustainable strategic path that allows us to transform to face new challenges without sacrificing our readiness to answer our Nation's call anytime, anywhere. Second, we must ensure the Army becomes more data-centric and capable of operating in contested environments in order to prevail on the modern battlefield. Third, we must continue

our efforts to be resilient in the face of climate change, adapting our installations, acquisitions programs, and training to remain ready to operate in a changing environment. Fourth, we are building positive command climates at scale across all Army formations. Fifth, we must reduce the harmful behaviors that hurt our soldiers and break trust with the American people, including sexual harassment and assault, racism and extremism, and domestic violence. Sixth, we must strategically adapt the way we recruit and retain our Nation's best talent to sustain the All-Volunteer Force.

This year's budget request supports these priorities and objectives, enables us to maintain momentum on our six modernization portfolios, and aligns the Army with the strategic ways of the 2022 National Defense Strategy (NDS): Integrated Deterrence, Campaigning, and Building Enduring Advantages.

ARMY SUPPORT TO INTEGRATED DETERRENCE

Integrated deterrence is a whole-of-government effort across multiple domains, theaters, and the spectrum of conflict to ensure that the Joint Force—in close coordination with the U.S. interagency, and our Allies and partners—makes the costs of aggression so clear to our adversaries that they refrain from hostile behavior altogether. The Army's role is to provide combatant commanders with combat-credible ground forces capable of fighting and winning in large scale combat operations. We are the backbone of the Joint Force in the Indo-Pacific, our priority theater for responding to China as our pacing challenge. In Europe, the Army remains the tip of the Joint-Force spear in responding to Russia as an acute threat and reassuring our NATO Allies.

Combat-credible ground forces for deterrence. To echo the Secretary of Defense, our support for Ukraine is unwavering, and our commitment to defend every inch of NATO territory is ironclad. In recent months, we have collectively witnessed a return on multiple investments that Congress and the Army have made over the past several years, especially the European Deterrence Initiative (EDI) and Army Prepositioned Stocks (APS). The U.S. Army has over 45,000 troops committed to reassuring our NATO Allies and supporting our Ukrainian partners, including those assigned to U.S. Army Europe-Africa, which we elevated to a four-star command in 2020. Our deployed forces now include two Corps—the XVIII Airborne Corps and our newly re-activated V Corps—two Divisions—the 82nd Airborne Division and 1st Infantry Division—six Brigade Combat Teams, and two Combat Aviation Brigades. Three of the six brigades we have committed in Europe are Armored Brigade Combat Teams (ABCTs): 1st ABCT, 1st Infantry Division; 1st ABCT, 3rd Infantry Division; and 3rd ABCT, 4th Infantry Division. In addition to the large-scale deployments to NATO's eastern flank, as of April 2022, U.S. Army Special Operations Command has hundreds of personnel supporting 38 missions with Allies and partners across 17 different European countries.

Never before has the U.S. Army moved so many forces so quickly. It took less than one week after receiving deployment orders for an armored brigade to deploy from Savannah, Georgia and be on the ground in Germany starting live-fire exercises with tanks drawn from APS in Europe. That is a testament to years spent investing in our alliances and partnerships, and to maintaining strong relationships that enabled the Army the access and presence needed to bolster NATO deterrence. This also demonstrates the importance of setting the European theater over the past several years to deter conflict, and responding quickly to fight and win should deterrence fail. It also speaks to the Army's collective readiness—not just the tactical readiness of our combat units, but the strategic readiness of our logisticians, mobilization force generation installations, and power projection platforms required to equip, transport, and project those units.

Rapid crisis response at scale across the globe. Rapid crisis response capabilities to defend our interests and protect our citizens across the globe is another component of integrated deterrence. Last year in Afghanistan, the Army deployed elements from the 82nd Airborne Division, 10th Mountain Division, Army Special Operations Forces, Minnesota and Vermont National Guard, the Army Reserve's 936th Forward Resuscitative Surgical Detachment, and multiple sustainment and military police enablers to Hamid Karzai International Airport (HKIA) to support an extraordinarily difficult and dangerous non-combatant evacuation operation. Working hand-in-hand with the Marine Corps and Air Force, Army soldiers helped to evacuate more than 124,000 American citizens, Allies, partners, and Afghans who fought for our values over the past 20 years. At the height of operations, 17,000 soldiers across the NORTHCOM, EUCOM, and CENTCOM areas of responsibility supported Afghan Special Immigrant Visa application and family relocation efforts. Working closely with interagency partners, more than 8,000 soldiers from all components

supported Operation Allies Welcome, relocating more than 76,000 Afghans to the continental United States.

Contributions to Homeland Defense. Integrated deterrence begins at home with domestic resilience against strategic attacks. By integrating the Army's Homeland Defense capabilities with the Joint Force and federal, state, and local partners, the Army enables the Nation's rapid response for disaster relief, as well as critical infrastructure attacks. Nowhere is that more apparent than in our Army Reserve and National Guard. Over the last year, the Army Reserve and National Guard have been the backbone for our Defense Support to Civil Authorities, responding to everything from hurricanes, tornadoes, and winter storms to wildfires, floods, and the Southwest Border. The National Guard has made an invaluable contribution to the Nation's COVID-19 response, deploying 16,670 soldiers across 44 states, 3 territories, and the District of Columbia. Their missions included everything from COVID screening, testing, and contact-tracing to vaccine storage, transport, and distribution. The National Guard also provided vital healthcare facility assistance for some of the country's most vulnerable populations.

MAINTAINING THE MODERNIZATION MOMENTUM TOWARD THE ARMY OF 2030

Modernization is future readiness, and we remain firmly committed to the six modernization portfolios we defined to Congress in 2018: Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, the Network, Integrated Air and Missile Defense, and Soldier Lethality. By the end of fiscal year 2023, we will deliver 24 of our signature modernization efforts into the hands of soldiers, either for experimentation, testing, or fielding. We could not achieve this rapid development without congressional support and authorities. Middle Tier Acquisition authorities and Other Transaction Authorities are helping the Army to reduce bureaucracy, streamline decision making, and accelerate the development of systems in order to field capabilities more quickly. The Army has also forged partnerships with non-traditional industries, academia, and others to accelerate innovative, game-changing materiel solutions. As we build the Army of 2030, we are laying the foundation for the Army of 2040 and beyond.

Long Range Precision Fires (LRPF). In fiscal year 2023 we will field the first batteries for hypersonic missiles and our ship-sinking Mid-Range Capability, in addition to fielding our Precision Strike Missile capability. Our Multi-Domain Task Forces (MDTFs) will provide Command and Control (C2) of long range precision fires and effects through intelligence, information, cyber, electronic warfare, and space capabilities. MDTFs will enable the Joint Force to penetrate enemy air defenses while establishing our own. We are standing up three new MDTFs in addition to the two currently supporting the Indo-Pacific and European theaters. Together, they will offer multiple options to combatant commanders and complicate decision-making for potential adversaries.

Next Generation Combat Vehicles (NGCV). We have begun fielding the Armored Multi-Purpose Vehicle (AMPV) as an adaptable and more survivable multi-variant vehicle. The AMPV replaces the M113 family of vehicles to provide ABCT combat support and enabler elements the capability to move at the pace of attack formations, as well as incorporate anticipated future technologies. We are testing prototypes of Mobile Protected Firepower, a lighter, more deployable armored combat vehicle that will provide large-caliber, long-range direct fires in support of Infantry BCTs. Robotic Combat Vehicles (RCVs) will provide unmanned platforms that will augment the mobility, lethality, survivability, and situational awareness of our formations. The RCVs will undergo increasingly rigorous experiments and capability demonstrations with a decision to procure by the end of fiscal year 2024. Finally, the Army remains committed to developing the Optionally Manned Fighting Vehicle as the primary replacement for the Bradley Fighting Vehicle. We are currently in the initial design phase and plan to award up to three contracts for prototyping in fiscal year 2023.

Future Vertical Lift (FVL). The Army remains committed to developing our Future Long Range Assault Aircraft (FLRAA) and Future Attack Reconnaissance Aircraft (FARA). We are scheduled to down select FLRAA to a single vendor in the coming months and are on track to have both systems begin fielding by fiscal year 2030. The Army starts fielding its family of Unmanned Aircraft Systems (UAS) in fiscal year 2024 to provide air-launched effects with an array of payloads and networks. This will provide the next generation of UAS platforms for multiple echelons: front-line troops, operational formations, and theater commands.

The Network. Data is as important as ammunition on the future battlefield. That is why the network is the key to maintaining overmatch as a combined, joint force through decision dominance, the ability to make better decisions faster than our ad-

versaries. It is not enough to develop new interoperable systems with open systems architecture. We must also develop a data fabric that facilitates information sharing more seamlessly across the Army, Joint Force, and our Allies and partners. Project Convergence is the Army's campaign of learning and annual series of experiments to inform development of Joint All-Domain Command and Control capabilities, Multi-Domain Operations (MDO), and the Joint Warfighting Concept. Last fall, our second iteration of Project Convergence (PC21) expanded to nearly 1,500 participants from the Army, Marine Corps, Navy, Air Force, and Space Force, becoming the largest Joint Force experiment in 15 years. This year's PC22 will incorporate key Allies—during the main experiment or for testing in our Joint Systems Integration Lab at Aberdeen Proving Ground—to address the challenges of operating as a combined, joint force across vast distances in the Indo-Pacific and Europe.

The Army is building a more resilient network by modernizing Global Position System receivers to meet current and emerging threats with the help of advanced Assured Position, Navigation, and Timing systems. Our implementation of cloud and Artificial Intelligence (AI)-supported data analytics aims to ensure that data is shared and acted upon by those who need it. XVIII Airborne Corps, I Corps, U.S. Army Pacific (USARPAC), and U.S. Army Europe-Africa (USAREUR-AF) have already trained in cloud and data-enabled, mission-command exercises. Future experimentation and pilot exercises will incorporate commercial satellite services into cloud-enabled, command-post exercises.

Integrated Air and Missile Defense (IAMD). IAMD capabilities will protect combined, joint forces from adversary aircraft, missiles, and drones. The Army is fielding the IAMD Battle Command System while developing new radars to expand coverage and streamline sensor-to-shooter linkages that will enable us to more efficiently target incoming threats. We are increasing Patriot Missile Segment Enhancement interceptor capacity and growing an additional Patriot battalion by fiscal year 2029 to enhance our defenses of theater base clusters. We are developing an Indirect Fire Protection Capability (IFPC) to protect forward C2 and logistics nodes. There are six IFPC battalions programmed to begin fielding to our MDTFs in fiscal year 2025. New formations like the Maneuver-Short Range Air Defense (M-SHORAD) battalions provide mobile air defense for tactical maneuver formations. Fielding began for four divisional M-SHORAD battalions in fiscal year 2020.

The growing threat posed by UAS is emerging as the next big challenge for IAMD, with both defense and homeland security implications. We established the Joint C-sUAS Office (JCO) as the executive agent for Counter small Unmanned Aircraft Systems (C-sUAS) in February 2020. The JCO leads Department of Defense development of integrated plans, technologies, training concepts, and doctrine to focus resources and minimize redundancies across the department and interagency. Operationally, our combat training centers are preparing our combat formations to counter and defeat ubiquitous sUAS threats, and our budget includes funding to field C-sUAS sets for multiple divisions.

Soldier Lethality. The Army seeks continued congressional support for the rapid prototyping, development, and procurement of the Next Generation Squad Weapon (NGSW), Integrated Visual Augmentation System (IVAS), and the Synthetic Training Environment (STE), among others. In fiscal year 2023, the Army will equip the first unit with the NGSW, as well as its higher-caliber ammunition. Thanks to iterative soldier-to-industry feedback, we will equip the first unit with initial IVAS prototypes by 4th Quarter, fiscal year 2022. The STE—which uses a combination of hardware and software to enable soldiers, units, and commands to train in virtual or constructive environments—is due to reach Initial Operational Capability in the 4th Quarter, fiscal year 2023. An example of the payoff to the soldiers comes from the 82nd Airborne Division, which last August used One World Terrain to create a three-dimensional representation of HKIA that gave commanders on the ground the ability to identify massing crowds and emerging vulnerabilities.

Organic Industrial Base (OIB) and Supply Chain Risk Management (SCRM). As the Army undergoes its greatest transformation in more than 40 years, we have an opportunity to simultaneously review the entire OIB for modernization. This includes addressing facilities, equipment, people, information technology, cybersecurity, and energy requirements. Our support to Ukraine has reinforced that we need an OIB that can successfully meet current Army demands, while providing the capabilities and capacities to surge and sustain large scale combat operations. Our OIB modernization effort also has a resilience component, which seeks to reduce single points of failure in the supply system and decrease reliance on foreign supply chains and resources. In close consultation with and support from Congress, the Army is using a 15-year phased approach to modernize the OIB for the 21st century through collaboration across the entire Army enterprise, coupled with industry engagements, while ensuring projects are tied directly to the Army's signature modernization ef-

forts. The Army will also modernize facilities to upgrade the infrastructure to support the workload in our depots, arsenals, and ammunition plants.

Managing supply chain risk requires a whole-of-government approach, and SCRM is integral to the Army's acquisition and sustainment processes. Managing supply chain risk early in a weapon system's life cycle is critical to ensuring affordability and mitigating risk before a weapon system is fielded. The Army has already begun using commercially available tools to assess and identify risk in our supply chains. The Army also recognizes and uses the authority granted by the President in the Defense Production Act. The Army will publish an SCRM policy in the 3rd Quarter of fiscal year 2022 and conduct a series of tests in December 2022 to apply the best supply chain risk tools and assess the skills, knowledge, and abilities needed to empower our logisticians and other personnel supporting supply chain activities.

Modernizing the unit lifecycle model. Last October, the Army adopted its new unit lifecycle model, the Regionally Aligned Readiness and Modernization Model (ReARMM), and it is projected for Full Operational Capability by January 2023. This new model aims to harmonize historically conflicting Army priorities. ReARMM facilitates modernization by giving units dedicated windows to integrate new equipment, reorganize formations, and train on new doctrine. Adopting this model is transitioning the Army from small, incremental, evolutionary modernization of platoons to large-step modernization of our formations across the Total Force. Regional alignment enables units to develop additional knowledge of the terrain, culture, and people where they are most likely to operate. Joint Force commanders also gain by leveraging habitual, trusted relationships between Army formations and Allies and partners. It takes care of people by reducing operational tempo and maximizing predictability and stability to commanders, soldiers, and families. Finally, units aligned to ReARMM recently validated the model by successfully participating in Operation Allies Welcome both in the United States and abroad without excess loss to readiness or the need for major process realignments.

ARMY CAMPAIGNING IN SUPPORT OF THE JOINT FORCE

A key dimension of the Army's transformation is the need to strengthen and expand—where possible—our work with Allies and partners to actively campaign against coercive and revisionist Chinese and Russian activities. The Army's access, presence, and influence around the world supports dynamic, day-to-day military activities that bolster Allies and partners while frustrating our competitors. The Army's security assistance enterprise annually executes more than 6,100 foreign military sales cases with 135 countries to build and strengthen Allied and partner capacity.

Security Force Assistance Brigades – the leading edge of campaigning. Our six new Security Force Assistance Brigades (SFABs), the last of which activated in 2020, are aligned with each geographic combatant command and are strengthening relationships with Allies and partners through training, advising, and assistance. In AFRICOM over the past year, 2nd SFAB deployed 38 advisory teams to nine African countries, including Djibouti, Ghana, Kenya, Morocco, Niger, Senegal, Somalia, Tunisia, and Uganda, in addition to partnering with Senegalese units for a rotation at the Joint Readiness Training Center. In CENTCOM, 3rd SFAB has supported Operation Inherent Resolve, Operation Freedom's Sentinel, and the entire CENTCOM area of responsibility. After supporting the Afghan advise-and-assist program, 3rd SFAB was instrumental in coordinating the planned withdrawal from Afghanistan. In fiscal year 2022, up to 10 teams will deploy to the United Arab Emirates, Jordan, Kuwait, and Iraq to advise partner land forces on interoperability through persistent presence. In EUCOM during fiscal year 2021 and fiscal year 2022, 4th SFAB deployed advisory teams to 10 nations in support of field exercises: Albania, Bosnia, Georgia, Germany, Hungary, Kosovo, Latvia, North Macedonia, Poland, and Romania. Additionally, 4th SFAB advisory teams are currently training with several multinational partners to assess and enhance their integration into forward-deployed NATO battlegroups. In INDOPACOM during fiscal year 2021 and fiscal year 2022, 5th SFAB has deployed 40 advisory teams to 14 nations, including: Bangladesh, Fiji, India, Indonesia, Japan, Malaysia, the Maldives, Mongolia, Nepal, Papua-New Guinea, Philippines, Republic of Korea, Singapore, and Thailand.

USARPAC: Backbone of the Joint Force in the Indo-Pacific. The Army in the Indo-Pacific provides the Joint Force with decisive, integrated land power required to succeed in competition, rapidly transition and respond during crisis, and prevail in low-intensity and large-scale conflict. Exercising regularly with our Allies leads to enhanced capacity and greater interoperability in the event of a contingency. USARPAC's Operation PATHWAYS (OP) annually projects thousands of Army forces and equipment sets into the region to execute a series of international exer-

cises that strengthen Joint Force integration and promote interoperability with Allies and partners. It also allows USARPAC, as the Theater Army, to prepare, rehearse, and validate training for strategic movement, operational maneuver, and tactical employment of land forces across extended distances west of the International Date Line.

The Army continues to signal its deep commitment to the Indo-Pacific through the Pacific Deterrence Initiative (PDI). For fiscal year 2023, the Army has committed \$1.4 billion of investments and activities that support the tenets of PDI. The Army is leveraging PDI to improve forward posture inside the first and second island chains, increase conventional deterrence, and support and enable the Joint Force. The Army is also developing the intellectual, conceptual, and technical tools necessary to guide our transition to an MDO-capable force with an emphasis on the Indo-Pacific.

USAREUR-AF: Tip of the spear in Europe. USAREUR-AF's role in the midst of Europe's most significant military crisis in a generation demonstrates how European Deterrence Initiative (EDI) investments built U.S. Army muscles to rapidly flow forces into Europe and coordinate NATO's defense. Thanks to the support of Congress, the initiative supports five lines of effort: Increased Presence; Exercises and Training; Enhanced Prepositioning; Improved Infrastructure; and Building Partnership Capacity. Total Army EDI funding in fiscal year 2022 was \$2.4 billion.

The Army supports increased presence to EUCOM through the rotation of a Division Headquarters Forward, an ABCT, and other enablers. This force package ensures a U.S. presence across Eastern Europe, including the Baltic States, Poland, Romania and Bulgaria. USAREUR-AF's premier exercise series in Europe—DEFENDER—continues to enhance the capacity and interoperability of Allies and partners to deter adversaries, transform operational mission commands, build readiness, and strengthen the NATO Alliance. In 2021, DEFENDER integrated approximately 28,000 multinational forces from 26 nations to conduct near-simultaneous operations across more than 30 training areas in 12 countries.

Through EDI, the Army continues building a division-sized set of prepositioned equipment, with corps-level enablers, that will contain two ABCTs, two fires brigades, and air defense, engineer, movement control, sustainment, and medical units. Additionally, EDI funding diversifies capabilities by providing access to Army National Guard and Army Reserve units for NATO training objectives. The fiscal year 2022 EDI budget supports an average strength of 9,450 Army Compo 1, 2, and 3 personnel deployed in the EUCOM theater. The Army also funds facility improvements for Joint Reception, Staging, Onward-movement and Integration, as well as Mission Partner Environment network enclaves, including in the Baltics and Eastern Europe.

BUILDING ENDURING ADVANTAGES BY INVESTING IN PEOPLE AND RESILIENCE

People are our greatest strength and most important weapon system, including soldiers across the Active Army, Guard, and Reserve, their families, our Army civilians, and our soldiers for life—our veterans and retirees. We ask much of our people, and taking care of them is both a sacred obligation and essential to sustaining the All-Volunteer Force. Prioritizing people means modernizing our talent management systems, taking care of families through our quality of life initiatives, and most importantly, building cohesive teams that are highly trained, disciplined, and fit, where everyone is treated with dignity and respect, and that are ready to fight and win.

Recruiting high-quality talent. The All-Volunteer Force is in a competition for talent, and the Army is strategically adapting the way it recruits and retains talent to reflect the Nation. We have established an Army Recruiting Tiger Team to holistically assess the Army's recruiting and accessions enterprise. COVID-19 impacted recruiting operations at all levels and across all Services, with a high percentage of high schools and colleges limiting in-person access from March 2020 through March 2022. As pandemic conditions improve, the Army is getting its recruiters back into America's high schools, colleges, and communities. As of April 2022, the Army has 1,721 Junior Reserve Officer Training Corps (JROTC) programs across the country, whose purpose is to instill in high school students the value of citizenship, service to country, personal responsibility, and a sense of accomplishment. Thanks to congressional support, the Army is strategically growing this powerful youth program to reach new communities and better connect America to its Army. In fiscal year 2022, the Army expanded JROTC to 25 new schools in New Jersey, Pennsylvania, New York, Kansas, Illinois, Missouri, District of Columbia, Ohio, Nevada, California, Washington, Alabama, Georgia, and Texas.

The Army is using improved analytics to more precisely tailor incentives and place recruiters. The Army appreciates congressional efforts to sustain military service as a competitive choice by ensuring their earnings are at the top of the 80th-percentile with comparable civilians, and higher percentiles for junior soldiers and junior officers. The Army is strategically deploying recruiters to communities across the country based on demographics, ethnicity, race, and gender. The Army is working with the Office of the Under Secretary of Defense for Personnel & Readiness to improve how it tailors career options and incentives to increase new-recruit job satisfaction. The Army is also allowing recruits to choose from select installations as their duty station of choice. Over 2,000 enlistees have taken advantage of this benefit in fiscal year 2022. The Army is also on track to meet its directed level of 5,800 officer commissions while increasing diversity representation within the combat arms branches (25 percent in fiscal year 2021 to 27 percent in fiscal year 2022). While these immediate efforts are having a positive impact on current accessions, we continue to adapt our recruiting strategy to posture for emerging societal, demographic, and geographical shifts.

Developing tech talent in the ranks. The Army knows that it must develop new talents within its ranks so soldiers can thrive in a Science, Technology, Engineering, and Mathematics-saturated operating environment. The Army has implemented eight of the nine authorities (§501–506, 513, 518) granted in the fiscal year 2019 National Defense Authorization Act (NDAA). These authorities allow expansion of opportunities to increase the talent pool and fill critical shortages in technical fields based on unit demand signals. The Army's Cyber branch is a dynamic effort that is having success attracting highly-talented soldiers (their average vocational test scores are top-tier and 25 percent have a bachelor's degree) and officers from top-rated universities. The Army is also using direct commissions for specific technical talents, as well as incentive pay and bonuses to retain high-value talent. In fiscal year 2020–2021, Army Futures Command (AFC) began piloting AI and Agile Software Development Workforce initiatives within the AI Integration Center and Army Software Factory, where cohorts develop software and data science-enabled solutions to address problems sourced from across the Army. The Army Reserve's 75th Innovation Command is AFC's link to unique expertise in the private sector, facilitating a diverse tech-talent pipeline that is instrumental to the Army Software Factory's success.

Modern talent management systems to satisfy and retain talent. The Army has several initiatives underway to give soldiers and officers enhanced flexibility to shape their careers. With the Assignment Interactive Module (AIM) for officers, and now Assignments Satisfaction Key-Enlisted Module (ASK-EM) for Non-Commissioned Officers (NCOs), the Army has created an assignment process and marketplace which empowers officers and NCOs to make informed preferences. From a talent management perspective, AIM and ASK-EM help the Army get the right people in the right places through algorithmic matching and market clearing for greater assignment satisfaction. Additionally, the Army is creating more options for Regular Army warrant officers and officers to continue service in the Army Reserve. The Army is also exercising officer options for brevet promotions to fill critical requirements, as well as options to compete for promotion and command.

Data system modernization is as critical for effective talent management as it is for successful combat operations. The Integrated Personnel and Pay System–Army (IPPS-A) is the Army's flagship Human Resources (HR) modernization effort, and will be implemented across the Active Duty, Army Reserve, and National Guard by the end of 2022. IPPS-A delivers a secure, comprehensive, and data-rich HR talent management system that consolidates the systems previously required by separate components, as well as giving transparency to soldiers right from their mobile device.

Quality Infrastructure for taking care of our soldiers. Providing quality housing, barracks, childcare, and services for our soldiers and their families is a key factor for retaining talent. The Army is committed to sustaining quality housing conditions. Residential Community Initiative (RCI) companies are planning to invest \$3 billion in housing over the next 10 years. Seventy-five percent of RCI housing are new builds, major, or medium renovations. Seventy-two percent of government-owned Army Family Housing (94 percent of which is overseas) is rated Q1 (good) or Q2 (adequate), while the Army has programmed \$1.5 billion in family housing construction and maintenance over the fiscal year 2023–2027 period to improve its inventory. Seventy-five percent of Army barracks are rated in good or adequate condition as well, with \$4.2 billion programmed for fiscal year 2023 to 2027 to improve conditions for unaccompanied soldiers.

Taking care of our families—and taking care of our children, especially—increases the readiness of our force. The Army is addressing access to childcare by

increasing and sustaining childcare infrastructure, recruiting and retaining quality childcare staff, incentivizing Family Child Care, providing Army Fee Assistance, and exploring new initiatives and partnerships. Childcare staffing continues to be a challenge across the country. In June 2021, the Army increased compensation for direct care staff and we continue to monitor the childcare labor market accordingly.

Positive command climates—an essential component of cohesive teams. Positive command climates at scale are the foundation of a combat-effective Army, and positive command climates begin with good leadership. Selection for battalion and brigade command are two of the most important personnel decisions the Army makes, and the Army continues to expand its generational change to the way it selects these leaders. The Army started its Battalion Command Assessment Program in January 2020, which is designed to assess a candidate's cognitive, psychometric, physical, and communication attributes, culminating in a double-blind interview with a panel of senior Army leaders. Over the last two years, the Army has expanded its Colonel Command Assessment Program to assess potential leaders for O-6/GS-15 commands as well. Since 2020, the two command assessment programs have assessed over 3,400 candidates. Now the Army is expanding the program to the NCO corps, launching a Sergeant Major Assessment Program to assess the readiness of brigade command sergeant major candidates to lead and coach the junior NCOs and soldiers in their formations.

Positive command climates are also built on infusing professional development across the ranks. In the last few years, the Army has instituted Project Athena at resident professional military education courses for officers, warrant officers, NCOs, and civilians. Project Athena provides rising leaders with assessments, feedback, and development resources to turn insights into action. To date, these rising leaders have completed over 161,000 assessments. Expansion to Army Reserve and National Guard resident courses is slated for fiscal year 2023 to 2024. The Army has also fielded a standardized Individual Development Plan for people to map their personal and professional goals, supported by an Interactive Leader Development Guide to aid an individual's self-assessment and development. To improve our company commanders' doctrinal fluency, technical knowledge, and leadership skills for MDO, the Army has undertaken the most significant redesign of its Captains Career Course since 2005.

The Army is also exploring ways to better assess command climates. The Army tested a comprehensive organizational climate assessment through the deployment of a Cohesion Assessment Team (CAT) and, based on the results, will institutionalize the capability no later than January 2023. CATs use survey results, focus groups, leader interviews, and observations to provide commanders better knowledge of the organizational climate of their units. In FY 2021, CATs supported five brigades. Future assessments will be based on institutional metrics to identify units that could benefit from expert input on soldier programs and unit climate. The Army is also using a new Counseling Enhancement Tool (CET) for developmental counseling sessions. The CET assists junior leaders and soldiers by requiring them to reflect on past performance before a formal dialogue, and providing guidance for interactive, collaborative, and meaningful discussions.

Reducing harmful behaviors to cultivate healthier soldiers. The Army is placing greater emphasis on finding ways to prevent harmful behaviors and generate healthier, more resilient soldiers. Prevention begins with equipping leaders with better visibility tools to monitor and shape soldier health and resilience. The Army is developing individual and unit assessment tools such as Azimuth Check, Behavioral Health Pulse surveys, and Commander's Risk Reduction Toolkit to provide a more holistic and comprehensive picture of both individual soldier and unit-risk history.

From prevention to response, the Army is fully committed to implementing the Independent Review Commission on Sexual Assault in the Military's recommendations, as directed by the Secretary of Defense. Building on existing expertise, the Army is developing a full-time prevention workforce to enable a holistic approach to preventing harmful behaviors. As part of a year-long pilot program, the Army launched Sexual Harassment/Assault Response Prevention Fusion Directorates across six installations and an Army Reserve command to integrate existing response functions and empower survivors with a multitude of resources. All reports of sexual assault and harassment will be thoroughly investigated and offenders will be held appropriately accountable based on the unique circumstances of each allegation. With support from experienced Sexual Assault Response Coordinators and Victim Advocates, all survivors of sexual assault and domestic violence will be fully supported through compassionate, quality care.

Part of improving our response is augmenting our investigative and prosecutorial functions. In fiscal year 2022, the Criminal Investigative Division (CID) is adding

investigative specialists at all field offices and aggressively exercising direct-hire authorities to add another 99 experienced criminal investigators. CID has realigned itself into geographic field offices, akin to the standard federal law enforcement model. Three highly-experienced civilian special agents-in-charge have been selected to run the field offices at Fort Hood, Fort Carson, and Fort Bragg. The fiscal year 2022 NDAA instituted the most significant change to the Uniform Code of Military Justice in over 70 years by requiring trained, experienced prosecutors, outside of the chain of command, to make prosecutorial decisions in cases of sexual misconduct, domestic violence, child abuse, and homicide. In accordance with these reforms, the Army is creating regional circuit Offices of the Special Trial Counsel, staffed by experienced criminal litigators, to integrate prosecution with victim services and provide legal expertise, longevity, transparency, and consistency across the force.

Climate Resilience for a changing operational environment. In addition to investing in people, the Army is taking important steps in alignment with the NDS to build enduring advantage through climate resilience. The Army's core mission of fighting and winning our Nation's wars remains unchanged. Climate change, however, makes this mission more challenging not only for the Army, but the entire Joint Force. The Army must proactively adapt to climate change impacts and respond to climate risks to maintain its strategic edge in a climate change-impacted world. The Army Climate Strategy (ACS), which was released earlier this year, and the ACS Implementation Plan, scheduled to be released this summer, will synchronize our efforts to: increase capability; enhance installation resiliency; prepare for new hazards and operating environments; and modernize processes, standards, and infrastructure while reducing operational energy demands and greenhouse gas emissions.

The Army requires resilient, efficient, and affordable installation energy and water infrastructure to support the Army's ability to deploy, fight, and win. Army installations provide secure and sustainable facilities and infrastructure that support commander priorities, enable missions, and maintain soldier and unit readiness. The Army must increase installation energy and water resilience to anticipate and withstand future threats, including climate change-driven increases in extreme weather, and man-made kinetic and cyber threats that increase the risk of extended power and water disruptions.

The ACS has set a goal to achieve a 50 percent reduction in Army net greenhouse gas pollution by 2030, shift to carbon pollution free electricity by 2030, and attain net-zero Army greenhouse gas emissions by 2050 in order to build a resilient and sustainable Army that can operate in all domains. The ACS drives increased resiliency and capabilities of the force. The Army is moving out to install a micro-grid on every installation by 2035 to ensure installation resiliency as we face a contested homeland and an environment of increasingly severe weather. By 2040, we aim to achieve enough renewable energy generation and battery storage capacity to self-sustain critical missions across the Army. We are also on schedule to field an all-electric, light-duty, non-tactical vehicle fleet by 2027 and an all-electric, non-tactical vehicle fleet by 2035, reaping cost and resource efficiency, and adding to the resilience of Army transportation in spite of climate and energy challenges.

The Army takes pride in stewardship of our lands and resources for the American people. The Army is reducing its greenhouse gas emissions to mitigate its contributions to climate change and act as good environmental stewards to further protect the American people. We are including climate change threat mitigation into all land management decisions and incorporating the latest climate and environmental science into stationing, construction, and fielding decisions.

CLOSING

"This We'll Defend" has been the proud motto of the U.S. Army since 1775. It captures the resolve, resilience, and readiness of generations of American soldiers and citizens who have answered the Nation's call and picked up arms in her defense. Today is no different. When the Nation calls, we send the Army we have—and the Army we have is the world's greatest fighting force. With timely, adequate, predictable, and sustained funding, we will remain ready to fight and win our Nation's wars as a member of the Joint Force, reassure our Allies and partners, take care of our people, and pursue our greatest transformation in over 40 years.

Chairman REED. Thank you very much, General McConville.

Secretary Wormuth, could you elaborate on the specific investments and capabilities in this budget that supports the 2022 National Defense Strategy?

Secretary WORMUTH. Certainly, Chairman. As I said, we have about \$35 billion for modernization in this budget, and that is really focused on each of our six major modernization portfolios, whether it is Long Range Precision Fires, air and missile defenses, next-generation combat vehicles, Future Vertical Lift. All of those new systems will contribute to us being able to continue to field combat-credible forces, which are core to integrated deterrence, which is one of the major lines of effort in the National Defense Strategy.

We also have considerable, billions of dollars associated, obviously, with operations and maintenance, and that supports our ability to campaign day-to-day to be able to compete against Russia and China. So for example, the budget supports the operations that are underway right now. You know, again, as General McConville and I mentioned, the tens of thousands of Army soldiers who are in Europe right now, for example, or our forces that are operating in the Indo-Pacific through the Operation Pacific Pathways series of exercises.

Chairman REED. Thank you, Madam Secretary, and General McConville, in producing these capabilities I know you have got an eye on the Joint Force because the battles of the future, as in mostly in the past, will be fought not just by the Army but by the Joint Force. Can you tell us how you are developing capabilities that benefit the Joint Force?

General MCCONVILLE. Yes, Senator. I think it starts with a concept that we are all developing, a joint warfighting concept. The enabler of that is what we call the Joint All Command and Control System. I add a C to it because I think are going to find combined, and what that allows us to do is to move data and communications very, very quickly between every sensor and shooter on the battlefield. By being able to do that we provide a much more lethal force on the joint side, and then as the Secretary mentioned, the Army does logistics. We do that very, very well. We are providing long-range precision fires. We are providing air and missile defense. All these capabilities work to support the Joint Force in whatever theater that we end up fighting.

Chairman REED. You indicated in your response that the first sort of major objective would be fully integrated and fully secure communications. What is your sense in terms of how far we are away from that objective?

General MCCONVILLE. Well I think we are making a lot of progress, Senator. We have conducted a thing we call Project Convergence, and we have been doing it over the last 3 years. The first time we did it we brought the Army out there and we worked our systems back and forth. We just finished one with the Joint Force and have had success, and this year coming up we will bring out some of our allies and partners to do that.

But we also stood up a Joint Systems Integration Laboratory up at Aberdeen, and what that is, we bring in all the different systems that we use to communicate and make sure they could communicate before we take them out in the desert in some extreme conditions, and we have found that to be very successful.

Chairman REED. Very good, and Secretary Wormuth, I have a short bit of time left, but we had an opportunity to discuss, and I think Senator Inhofe was also interested in the issue of recruiting

in a very complicated world. The number of qualified individuals continues to shrink. But what else is happening is that it is becoming somewhat insular. I think General McConville indicated that somewhere close to 80 percent of recruits come from military families, and if you look at the geographic distribution it is moving away from a more national focus, certainly as it was under the draft, to more regional, the South and West.

So could you comment briefly on that? I think my colleague will probably pursue it also.

Secretary WORMUTH. Yes, Senator. It is absolutely true that a large number of young Americans that come into the Army today come from families that have served in the military. So I think one of the things we have got to do is find a way to help all young Americans understand all of the great opportunities that they can have in the Army and all of the things that the Army will enable them to do.

So we are working hard, for example, on our marketing efforts, to really try to reach out to as many Americans as possible and to help them understand what the Army is about. We are also looking at things like our Junior ROTC programs, for example, which also expose young kids to the Army, and we may look at expanding those programs, for example.

Chairman REED. Thank you very much, and thank you both again for your service, and please give our congratulations to those who serve with you.

Senator Inhofe, please.

Senator INHOFE. Thank you, Mr. Chairman. I always like to start off when we have General McConville here with an update on his three kids. I can remember when they were all three captains. Now they are moving up but still very active. What is going on there?

General MCCONVILLE. Well, they are very proud to serve. They are serving around the world in Special Operations Forces and I am very, very proud of what they are doing. I also have a son-in-law that is serving too. So we are trying to get this recruiting effort going.

Senator INHOFE. Yes. That is good. I know how proud you are.

Chairman REED. Ask him about Patton.

Senator INHOFE. Oh yeah, and Patton. Do not forget.

General MCCONVILLE. Well, I am very proud to have our first grandson. His name is Patton James Nancer, and he is 6 months old, and we are real proud of him. He has already got a hall named after him over at Fort Myer, Patton Hall.

[Laughter.]

Senator INHOFE. Okay. That is great. Well, as noted in my opening remarks the Army unfunded priorities total \$5.1 billion, and I guess the first question I would ask you would be is everything on your list executable at this time?

General MCCONVILLE. Yes it is, Senator.

Senator INHOFE. As I highlighted in my opening statement it is my understanding that the Army's reduced end strength of the 473, that was talked about by both of you before, but it is driven by recruiting challenges. I know that you have already talked about that a little bit, but it is something that is more serious than any re-

cruiting challenges that I have experienced in the years that I have been here.

In 2018, and General Milley testified before this committee that we are shooting to get north of 500,000, which was recommended in this document. That is in the regular Army, and last year you said, and this is a quote from you, you said, "I think the regular Army should be somewhere around 540,000 to 550,000." Despite the difficulty we are having right now, the biggest problem we are having, I think, is recruiting at this time. We talked about that a couple of days in my office, and this is still, I believe, the most serious problem.

In spite of the difficulty in recruiting the Army is facing right now, that we discussed just a couple of days ago, is it still your best military judgment that we require an army greater than 500,000?

General McCONVILLE. Senator, I think we need a bigger Army. I stand by the comments I made before.

Senator INHOFE. I say that knowing full well the recruiting problem. Everything that you are trying and the efforts there, I understand that. But where does that leave us?

General McCONVILLE. Well, I also think that quality is more important than quantity, and what we have to do to get after this is, as the Senator said, right now 83 percent of the young men and women that are coming into the Army are coming from military family members. It is nice that is a military family business. We need this to be an American family business. We need to attract others. We need to expose others to the benefits of serving their country, and, you know, again, what we are finding right now is 23 percent of Americans are qualified to serve in the military.

So we have got to do some work in our high schools and we have to do some work in preparing young men and women to come, because I do not think there is any better way to serve, and I think we need to have a call to service.

Senator INHOFE. Okay, and I agree with that.

Madam Secretary, I know my time is expiring but the conflict in Ukraine has revealed serious munitions production challenges that we have at this time, and I know that there is another member that is going to ask you about that. But just as an overview, what should be done to fix what I consider to be the second most urgent problem that we are dealing with right now?

Secretary WORMUTH. Well, Senator, I think what we need to do is work closely with the defense industry to look at how we can help them address some of the supply chain challenges that they are having, for example. The money that Congress, that you all providing through the supplemental will help us do that, in terms of accelerating some of those production lines. The Army has actually invested considerably more in ammunition in its budgets in the last couple of years, recognizing the criticality of the munitions issue.

Senator INHOFE. Okay. Well you are going to have an opportunity to expand more on this urgent problem.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Inhofe.

Senator Shaheen, please.

Senator SHAHEEN. Thank you. Thank you Secretary Wormuth and General McConville for your service to the country and for being here this morning.

I want to begin with a real concern I have, because looking at the 2023 budget request I noted that it does not include any funding, zero funding, to continue procurement of the Enhanced Night Vision Goggle-Binocular, or ENVG-B. I am concerned that this decision not only harms our soldiers by limiting access to more advanced night vision systems but also affects our nation's already limited night vision manufacturing industrial base. In fact, the Army's own unfunded priority list notes that, and I quote, "A lack of funding decreases soldiers' survivability" and, quote, "places the manufacturer at risk of closing the production line," end quote.

So can you talk about how you justify that decision to cut a program that the Army's own unfunded priority list says will affect soldiers' survivability? I think that is probably for you, Madam Secretary.

Secretary WORMUTH. Senator, we had made the judgment, I believe, and I think General McConville can speak to this as well because it is on his UPL, that we had procured the quantities of night vision goggles that we thought would meet our requirements. Again, a lot of what we are trying to do with the resources that we have is balance between making sure that we continue to have resources to invest in the new modernization programs as well as continue to invest in some of the enduring systems that we have. So that is always a bit of a tightrope for us, and those dials are ones that we may be able to adjust through things like items that are on the unfunded priorities list.

Senator SHAHEEN. But just last month an audit by the DOD inspector general found that the Army is at risk of wasting up to \$21.88 billion in taxpayer funds to field a system that soldiers may not want to use or use as intended. I understand the need to continue development, and the IVAS [Internet Value-Added Service] system is what appears to be the future, but I also understood that the RDT&E for that had not been adequately completed. So we are investing in a system that we are not sure is going to work, and we are not sure we have enough of the old system or the current system to address the soldiers' needs. So I am not convinced on your argument.

Secretary WORMUTH. Senator, on IVAS [Internet Value-Added Service], we have worked very closely with our soldiers through the soldier-centered design process to get their feedback all along the way, and, we did not fully agree with some of the GAO [Government Accountability Office] findings. We have a major operational test with IVAS that is starting this month and that will continue through June, and we will be looking carefully at those results to inform ultimately where we go with IVAS.

But I feel pretty comfortable with where that program is. We have been working very closely with Microsoft, and I think that program is on track and that we have actually gotten quite a bit of good feedback from soldiers as we have worked to develop IVAS.

Senator SHAHEEN. So you do not agree with the inspector general's report?

Secretary WORMUTH. We did not particularly agree with the characterization that soldiers were not going to use IVAS ultimately. I mean, again, I think one of the things the Army has done very well is to try to have a more soldier-centered design process across the board and to allow us to get that kind of feedback. So I think it was just a bit of an over-characterization by the inspector general on that particular point.

Senator SHAHEEN. Well, I look forward to hearing how that RDT&E goes because I am very concerned that we are going to lose our manufacturing base for the ENVG-B and that is going to put soldiers at risk.

I want to switch to childcare because Secretary Hicks and General McConville, you both talked about the importance of taking care of our troops. And as we think about the recruitment and retention challenges that we have in the Army it reminds me of an effort that I spearheaded when I was governor in New Hampshire in the 1990s to try and expand access to early childhood education and childcare. One of the models that we looked at was the Department of Defense and what our military was doing, for the very reason that you talked about, that so many of our soldiers come from military families, and investing in childcare is a way to invest in those soldiers from the earliest years.

So can you talk about why that is so important? I raise it because we are pursuing an interesting approach in New Hampshire, where the Portsmouth Naval Shipyard is partnering with the New Hampshire National Guard to use funding to construct a new child development center.

General McCONVILLE. Yes, Senator. You know, as I mentioned, we recruit soldiers but we retain families, and when we take a look at, I think, what makes our Army the greatest Army in the world it is our noncommissioned officers, and 89 percent of our leaders, basically sergeant and above, have families, and if we want to compete for the best we have got to take care of their families.

As you know, right now our child development centers are really, standard-wise, the best in the country as far as standards, but we do not have enough. We are trying to get more. We are trying to build more. We are trying to take care of the ones we have. We are also putting a lot of bonuses in place to get the right caretakers, because in order for us to either provide fee assistance or help with the child development centers, the people we are going to hire have to meet the standards. Again, we want quality people taking care of our kids, and to me it is extremely important.

Senator SHAHEEN. Thank you. I appreciate the emphasis. Thank you.

Chairman REED. Thank you very much, Senator Shaheen.

Senator Fischer, please.

Senator FISCHER. Thank you, Mr. Chairman. Secretary and General, welcome.

Madam Secretary, the new National Defense Strategy clearly states that China is the pacing threat. How is the Army using this budget to develop and employ capabilities towards the Joint Force effort in INDOPACOM [United States Indo-Pacific Command]?

Secretary WORMUTH. Senator Fischer, I would first highlight our Long Range Precision Fires investment, particularly the Long-

Range Hypersonic Missile, which we will have our first battery in fiscal year 2023. You know, given the long distances in INDOPACOM I think that system will be particularly relevant. But the midrange capability that we are developing with the Navy I think is also very relevant for potential conflict in INDOPACOM.

We are also investing quite a bit in upgrading our air and missile defense systems, making sure that we are with our systems such as the IFPC , which is designed to try to counter cruise missiles as well as other air threats. You know, given the missile numbers that China has, for example, air and missile defenses are going to be very important if there were a conflict in the Indo-Pacific, and that is another area where I think the Army is very relevant.

Senator FISCHER. Do you believe that that should also include more capable helicopters and vehicles as well, as part of that long list?

Secretary WORMUTH. Yes, exactly. I mean, both FARA [Future Attack Reconnaissance Aircraft] and FLRAA will be significant upgrades in terms of speed, range, survivability, and we are going to need, I think, to continue to be able to transport our forces, to be able to have airborne assault forces. So we continue to fully fund both of those efforts.

Senator FISCHER. Thank you. General, how will the Army adjust the way it trains and equips soldiers to better prepare for conflict in a contested environment where the adversary has advanced ISR [intelligence, surveillance, and reconnaissance] and other high-end capabilities?

General McCONVILLE. Senator, we realize that we are at an inflection point right now. The last 20 years we have been doing what we call counter-insurgency, irregular warfare, counterterrorism. So we have taken our combat training centers, and our soldiers are going through very aggressive and rigorous training that fights what we would call a high-end enemy that has unmanned aerial systems, that has the ability to jam their weapon systems and their navigation systems, and has the ability to attack their command post, and has the ability to attack their logistics.

So we are giving them a scrimmage, if you will, that will have them ready for that type of combat in the future.

Senator FISCHER. Do you also conduct those exercises where communications are denied or GPS is denied? Do you conduct those with allies or with other services, or do you believe it is important just to focus entirely on the Army at this point?

General McCONVILLE. No, I think it is important we work. We are going to fight as a Joint Force, we train as a Joint Force, and we often bring our allies and partners to the combat training center, which is really the gold standard of how we train in a high-intensity environment. Everyone is very, very aware of that, and we are learning a lot of lessons from Ukraine.

Senator FISCHER. The National Defense Strategy highlights both the importance of fortifying our network with our allies and our partners and using that campaigning to strengthen deterrence. Can you discuss some of the insights that you have gained from those recent exercises and how the military-to-military exercises are going to be, I think, more important in the Pacific, just because of the geographic expanse and being able to cover the region.

General McCONVILLE. Yes, Senator. What we are believers in is you never want to be what I would call a one-option commander. If you only have one radio net, they can jam that and take that away from you. So as we start to look at what we are trying to do, we are looking at like data fabrics where there are multiple ways of moving communications. There are multiple ways of getting navigation information. So if your adversary shuts down one capability you have another option that you can quickly move to. We use a term we call PACE. We have a Primary Alternate Contingency and Emergency type communications ability. We train our troops on that so if something goes wrong they can immediately move to another course of action.

Senator FISCHER. Thank you very much. Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Fischer.

Let me recognize Senator King, please.

Senator KING. Thank you, Mr. Chairman. First I want to compliment, General, you and the Secretary, but also the thousands of people that work with and for you for the logistics work that has gone on with Ukraine. It has been an absolute marvel of logistics in terms of time, speed, accuracy. What has been accomplished, people will be writing books about this, and I want to please convey the thanks of this committee for that work.

Following up, you mentioned one phrase I just picked up in your answer to Senator Fischer, "lessons from Ukraine." Could you expand on that? What have we learned so far, both about the failures and the weaknesses of the Russian Army but also about the successes of the Ukrainians, and which systems have been most important, which have worked best? Tell me what we are learning thus far from what is going on.

General McCONVILLE. I think a couple of things. You know, the plan that initially the Russians had was very complex, which takes highly trained disciplined and fit soldiers in unison to execute, and as we saw they did not have that capability. So when we talk about having quality soldiers we think that is really important. They do not have the noncommissioned officer corps, the junior leaders that are used to taking mission command-type orders and operating in a contested environment.

You mentioned logistics. The old adage is that professionals study logistics and amateurs study tactics because if you are going to prosecute a very complex mission like that you have to have logistics. If you are going to do complex operations, like airborne operations, air assault operations, or amphibious operations, those are very, very complex to undertake, and we can look at other parts of the world where they may be required.

You can take a look at some of the systems, the appropriate air and missile defense systems that the Secretary mentioned, and one of the other systems we are developing, which is midrange capability that allows you to sink ships. We saw that happen with the Ukrainians. All those tools come together to give you some of the things you need.

I would just add, on the Ukrainian side, leadership matter. You see it at the top. The prime minister stayed there and led his troops, if you will. All the able-bodied people stayed to defend their country. They have the capability, probably not as much. They

have the capacity, probably not as much as Russia, but they have got this thing called will, and I talk about building cohesive teams. That is what it is about. That is the difference that is happening in Ukraine, which different than some of the other places we have seen.

Senator KING. I think that is a good list and I am sure that list will grow as time goes on. It is an extraordinary opportunity to see what is actually occurring.

I think you are right. I remember asking several months before the invasion, was Zelenskyy, Ghani or Churchill, and he certainly has turned out to be closer to Churchill, and I think that has made an enormous difference.

Secretary Wormuth, on an entirely separate issue, I work with a lot of veterans in Maine, and one of the problems that keeps coming up is the weakness of the transition from Active Duty to veteran status, the handoff from the Defense Department to the VA. I believe, and I do not have the data in front of me, but that many of the veteran suicides take place in that relatively short period of time between Active Duty and civilian status.

I believe that you should put as many resources, time, effort, and people into transition out as you do into recruiting in. Can you address that problem, because from everything I have learned on the ground in Maine this is a serious issue?

Secretary WORMUTH. Certainly, Senator, and yes, I think there is data that shows that that transition out of the service back into the civilian community can be a critical time. We do try to work very closely with the Department of Veterans Affairs to ensure that there is a warm handoff, and with the transition programs that we have for folks getting out of the Army we try to make sure that they have the resources to know what to expect, to be able to sort of link them to employment resources, and things like that.

But I think that is something that we can continue to work on, and frankly, I have heard some folks say, "The transition programs helped me learn how to tie a tie and to do a resume," but psychologically, making the adjustment to sort of going back into the civilian world is not something that I have heard sometimes people say that they get as much emphasis on. So I think that is an area we could work on.

Senator KING. I hope you will, and I hope you will not only commit to working on it but work on it in a systematic way, perhaps appoint a task force or some group whose responsibility it is to talk about and think about and work on this problem. Because, as you know, we have an epidemic of veteran suicide and suicide in the military. This is one place where I think we could make a difference. So thank you very much, and I hope you will follow up in an urgent way on this problem.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator King.

Senator Cotton, please.

Senator COTTON. I am disappointed and borderline appalled at the fiasco that the Army Combat Fitness Test has become. For years the Army said that you were going to have gender-neutral standards. You both sat at that table less than a year ago and testified that you would have gender-neutral standards. Yet, Ms.

Wormuth, just few weeks ago you issued a new directive saying there would not, in fact, be gender-neutral standards. Has something changed about the nature of combat in the last 10 months I am unaware of?

Secretary WORMUTH. Senator, I think when I was here for my confirmation hearing I said that I wanted to look at the data that the Army was developing.

Senator COTTON. No, no, no, no, no. When you were here on June 15, 2021, I asked if you would have gender-neutral standards, and you said, "We are continuing to look at how to finalize the design for the ACFT. We are continuing to have gender-neutral standards." I asked General McConville, "Are you committed as well to maintaining gender neutrality on the test?" General McConville said, "I am."

What happened in the last 10 months?

Secretary WORMUTH. Senator Cotton, we looked at over 630,000 diagnostic test scores. We looked at the results of the congressionally directed RAND study that was to give us recommendations and findings about what we should be looking for in designing a new fitness test. What we found was we wanted to make sure that we had a fitness test that was a general fitness test that would make sure that it would raise our overall level of fitness, be something that would help us develop a higher level of fitness, and we wanted to make sure that we did not unfairly have standards for a particular subgroup that people could not perform. We did not want to disadvantage any subgroups.

When we looked at that data, what we found was there were subgroups that were disadvantaged. We looked at the recommendations from RAND, we looked at the data, and we found that the way to have a test that meets our objectives was to have age- and gender-normed tests.

Senator COTTON. So that is exactly what the old Army Physical Fitness Test had, as well, and you have abandoned also any MOS-specific tests. An earlier version of this had heavy physical activity, significant physical activity, and moderate physical activity MOSs that had separate standards. Have you abandoned those as well?

Secretary WORMUTH. The Army moved away from the MOS-connected standards I think a couple of years ago, before I became Secretary. But, I would say that the new Army Combat Fitness Test is much more challenging than the Army Physical Fitness Test.

Senator COTTON. No, it is not. It is not. The new standards are pathetic. They are absolutely pathetic. Here is what a female, age 17 to 21, has to do to qualify for any job, to include infantry and special forces—10 pushups, run two miles—let me put "run" in scare quotes as well. Make sure the record reflects I am doing air quotes around "run"—in 23 minutes and 22 seconds. The standards for men, age 17 to 21 are equally pathetic—10 pushups and a 22-minute run, in scare quotes again, "run" in 22 minutes. Under the old test, a female age 17 to 21 had to do 13 pushups. A man had to do 35 pushups. A female had to run a two-mile run in 19 minutes and 42 seconds. A man had to do it in 16 minutes and 36 seconds.

Do you really think these new standards are adequate for the infantry and the special forces and artillery?

Secretary WORMUTH. Senator, one of the reasons the numbers you just quoted are the case is because the new test is a six-event test as opposed to a three-event test.

Senator COTTON. I am well aware of how many events there are. The standards for the other events are equally pathetic. They are equally pathetic.

So it is a well-known fact that in certain MOSs, in the infantry, every unit I served in, every school I went to, a 60-point minimum was not acceptable. If you wanted to be promoted or get awards or go to schools you had to get 90 points. Are you going to let subordinate commanders establish higher standards for their units?

Secretary WORMUTH. For things like the special forces there are absolutely additional physical fitness requirements.

Senator COTTON. No. Are you going to let them say you have to have 90 points, not 60 points, to be in this unit?

Secretary WORMUTH. the ACFT [Army Combat Fitness Test] is our general fitness test.

Senator COTTON. The answer is no. Your own frequently asked question says, "Commanders cannot set physical standards for acceptance into or retention in a combat unit."

This is going to get people killed. What you need to do is have gender-specific and age-specific tests and MOS-specific tests. You do not need cyber specialists and cooks and nurses to meet the same standards as infantry and special forces, but in those units you need men and women alike to meet the same standards.

Let me just read one quote here to you to finish up. "While it may be difficult for a 120-pound woman to lift or drag 250 pounds, the Army cannot artificially absolve women of that responsibility. It may still exist on the battlefield." The entire purpose of creating a gender-neutral test was to acknowledge the reality that each job has objective physical standards, to which all soldiers should be held, regardless of gender. The intent was not to ensure that women and men will have an equal likelihood of meeting those standards." Do you know who said that?

Secretary WORMUTH. No, I do not believe that I do.

Senator COTTON. Captain Kristen Griest, the Army's first female infantry officer and one of its first Ranger School grads. She also said, "It is wholly unethical to allow the standards of the nation's premier fighting units to degrade so badly." I agree. I am not going to let it stand.

Chairman REED. Thank you, Senator Cotton.

Senator Gillibrand, please.

Senator GILLIBRAND. Thank you, Mr. Chairman.

General McConville, the conclusion of the conflict in Afghanistan demonstrated that we did not accurately assess the Afghan military's capabilities. The Army now has Security Force Assistance Brigades designed to train partner forces and accurately report their progress. Can you describe how the SFABs assess foreign forces and how are their assessments checked for accuracy by the DOD? More to the point, we understood, in Afghanistan, that there was a question about will to fight. They were very well trained but there was not necessarily a high regard for the Ghani government

because of corruption. The question that should have been asked is will these Afghan forces, who are well trained, die for this particular government or would they rather hand over their weapons to the Taliban because they would rather not die and be under new leadership.

So do we ask the type of political questions that that analysis would require to assess will to fight? With regard to Senator King's line of questioning, we learned in Ukraine that the Ukrainians did very much have a will to fight because their leader inspired that will by determination to stand his ground.

So when we are making these assessments I understand our training is excellent and I understand you can train anyone to have full capability, but the will to fight is about much more. So have you changed how you make this assessment?

General McCONVILLE. Well, Senator, we are certainly taking a look at that. You know, we had a better idea. First of all, having spent a lot of time in Afghanistan, when we were with the Afghans and we were accompanying and we were shohna ba shohna, shoulder to shoulder, fighting with the Afghans, the Afghans fought, and that is what tends to happen when you have cohesive units working together. As we brought down our forces and we were less and less with those who were on the leading edge, people will say they will fight and then you take a look at them, and we have given them the best equipment, much, much better than the Taliban had, we gave them the capacity, and really a much greater capacity than Taliban had.

But there is something inside soldiers when they go to combat, and that is where leadership really matters, and it matters all the way up, because when people look up and they say, "Am I willing to die for my country?" that is hard to measure at times, and obviously in Afghanistan we did not measure that correctly. I am very, very impressed with what the Ukrainians are doing as far as the will to fight. As we talk to other allies and partners we hold up the example of what the Ukrainians have done as an example of what we should expect for those who are going to support.

Senator GILLIBRAND. In November of 2021, the Army enacted Cyber Military Intelligence Group, which is designed to provide intelligence support to Army Cyber Command. Can you describe the mission, function, and personnel of this newly formed unit, and how would this unit operate in a large-scale conflict like the war in Ukraine?

General McCONVILLE. I think, and as you know, the importance of our Cyber Command, I think we have the best in the world and the appropriate support. I was just down there for the change of command. What they are doing in support of Ukraine, their mission is extremely important. Not only protecting but also a defensive, offensive, and working in the intelligence community getting the information that we need to provide to our partners has been very, very helpful.

Senator GILLIBRAND. Secretary Wormuth, the committee was briefed that services will be implementing the DOD's Independent Review Commission recommendations on sexual assault. Can you provide more detail on when you expect these recommendations to be implemented in the Army and how you will roll these rec-

ommendations out to your force to ensure servicemembers are sufficiently informed?

Secretary WORMUTH. Sure, Senator Gillibrand. We have been trying to, frankly, move out on those recommendations as quickly as we can. So for example, right now we are focused on developing a prevention workforce. That was one of the Independent Review Commission recommendations. So we are looking at exactly what that means in terms of the kind of people that we need to have, how many people we need to have, and where we can best use them; to what extent do we already have folks who work for the Army who perform duties that are related to preventing harmful behavior. So we are working on finalizing that plan.

As I mentioned in my opening statement, we will be standing up the Office of Special Trial Counsel, which will report directly to me, in July. We have a promotion or a selection board to pick the individual who will be that special trial counsel. Then we have also started doing things like the Fusion Directorates for our SHARP program, that puts all of the resources for survivors in one place. I actually was able to visit one of the Fusion Directorates at Fort Sill in Oklahoma recently and was very impressed with what they are doing.

So we are trying to move quickly and would be happy to come and talk with you and your staff in more detail, if you would like.

Senator GILLIBRAND. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you very much. Let me now recognize Senator Cramer, please.

Senator ERNST. Yes. Thank you, Secretary Wormuth and General McConville, for appearing in front of our committee today.

Chairman REED. Excuse me, Senator Ernst.

Senator ERNST. Oh, I am sorry.

Chairman REED. Senator Cramer.

Senator ERNST. Oh, Cramer. Oh, excuse me. So sorry.

Chairman REED. That is my Rhode Island accent. I apologize.

Senator CRAMER. I was happy to yield and listen.

Thank you, Mr. Chairman. Thanks, both of you, for being here and for your service.

I have been struck by how many times you stated what I suppose is the obvious and yet it is inspirational to hear you say it many times. Both of you referencing the most important part of the Army force are the people, and you speak with great affection, passion, sincerity about it.

Secretary Wormuth, you and I got to know each other a little bit earlier on, working with your team to fix this pay problem.

Secretary WORMUTH. Major Cimock [phonetic]. I remember it well.

Senator CRAMER. Yes, and General, you were very helpful as well. It highlighted a broken system.

The new Integrated Personnel Pay System, which I became familiar with through that process, was supposed to fix this last year, but I am told it is still struggling to rollout properly. Can you just maybe give me an updated on that and tell us if there is anything we can do to help? When I look at the big employers in the world today, and obviously the military is one of those, and the

Army specifically is one of those, but there are much bigger ones that do not seem to have these same sorts of problems.

So maybe just give me an update on how it is rolling out and what we can expect.

Secretary WORMUTH. Sure, Senator Cramer. You know, we are working very hard on IPPS-A, which the National Guard is already able to use some of the features of that personnel system. We are working very hard to be able to roll out the next increment of IPPS-A, Release 3, hopefully later this fall. We feel like we will be on schedule for that, although frankly we are working very aggressively with the contractor to make sure that they are able to meet what we have asked them to do. That next release will bring out some of the talent management features, it will enable people to look at what assignments are available, and then it will be the next increment, as I understand it, that will really provide the pay transparency across all components.

I know this is a system that is very important to the chief, so you may want to add something there.

General McCONVILLE. Yes, Senator. Right now we have what we call an industrial age personnel management system. We treat everybody as interchangeable parts. We have three different personnel systems for our regular Army, our National Guard, and Reserve, and, quite frankly, it is no way to run a railroad. We need to have everyone on the same system. We need to be able to manage individuals so we do not manage everyone the same. We have tremendous talent in the Army that is masked by a person's grade and their MOS. Probably one of the best examples I could give you is we have a specialist, a medic specialist, an E-4 in the United States Army, that is at a software factory that codes at the PhD level. We would never know that unless we did a workaround.

So we have got a lot of work to do in this, and as we manage the future and compete for talent we are going to have to manage soldiers' talents to get the best in the Army.

Senator CRAMER. You just outlined, I think, a great illustration of why it is so important. As we talk about modernization, and you are both very fluent on the importance of modernization, the priorities of modernization, it seems that this would be a really high priority, not as sexy looking, but when we are talking about challenges in recruitment, retention, getting the best, all of that, yes, this would be a part of that.

So I just want to tell you, I encourage you to stay at it. You have every incentive in the world to do that, but stay at it. Keep us informed. If there is anything we need to do from a policy standpoint, oversight standpoint, anything that helps you with the contractor or anyone else, please reach out. We want to keep the main thing the main thing, the first thing the first thing.

Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Cramer.

Let me recognize Senator Kelly, please.

Senator KELLY. Thank you, Mr. Chairman, and thank you, Secretary Wormuth, General McConville, for testifying today.

Secretary Wormuth, our military test ranges are the key to the Army's modernization, and Arizona test ranges such as Yuma Proving Ground provide foundational support for long-range fires, pro-

vides the ability for us to test counter unmanned aerial systems and Future Vertical Lift and cyber operations, to name just a few.

Unfortunately, budget briefs often start with major weapon systems and go through a priority order with facilities often at the tail end. In order to maintain our competitive edge, particularly as we pivot to an era of great power competition, we need to continue investing in and prioritizing our military test ranges.

So how does the fiscal year 2023 budget request address the importance of funding our test infrastructure and the workforce that supports it?

Secretary WORMUTH. Senator, as we pursue our six major modernization portfolios we are, at the same time, making sure that we look at things like what kinds of test ranges do we need for those new systems, from an RDT&E perspective. What are the implications of fielding those new systems for our maintenance facilities, for example, and motor pools? So we are trying to be very deliberate and comprehensive looking at making sure that we have the test ranges to support those new systems, and more broadly, we also have a 15-year organic industrial base plan that is looking at making sure that the Army's organic industrial base is also able to support those new systems.

So we are trying to factor that in as we pursue our new weapon systems. I can just say, having been to Yuma Proving Group last fall, that is where Project Convergence 2021 culminated. It underscored to me the importance of those kinds of test ranges.

Senator KELLY. Yes, I was there as well—

Secretary WORMUTH. That is right. We sat right next to each other.

Senator KELLY.—yep, for Project Convergence. I mean, that exercise, I think it particularly highlights the importance of the work that happens in test ranges across the country. I used to spend a lot of time on the test range not far from here, off of Naval Air Station Patuxent River. But like I said in my question, it is often like the end of the line as a priority for new systems, whether it is Theodolite radar systems control centers, it is often down the line. But it is so important for us to have the most modern fighting force in the world.

Another question here about Fort Huachuca. You know, Fort Huachuca, in Southern Arizona, hosts one of the largest unmanned aerial vehicle training facilities in the world and supports operations for not only the Army but the Air Force, Marine Corps, and Customs and Border Protection. I understand that they are working to expand airspace in Southern Arizona to facilitate unmanned aerial systems and electronic warfare testing done at the Army's Electronic Proving Ground.

In the past, my office has heard concerns that the Army is not adequately funding the overall budget for testing across the range complex, and specifically at EPG, the Electronic Proving Ground. Are you aware of efforts to expand the airspace at Fort Huachuca in order to support a greater range of testing, and if so, are you supportive of these efforts?

Secretary WORMUTH. Senator, I think we are supportive of those efforts, and certainly if there are issues that your staff has heard of we can look into those, because we are very concerned about

UAS [Unmanned Aircraft System] threats are a major issue, and we need to also be able to build up our EW capabilities. So think generally those are areas that we support.

Senator KELLY. Yes. Whether it is electronic warfare or artillery or air-to-air missile systems, you know, in the case of airplanes they get faster, our electronic warfare systems get more powerful. The stick gets longer on air-to-air missile systems. What that means is, whether it is the test pilot or the guys in the Army running these tests, is that, in essence, the range just feels like it is getting smaller all the time, as these systems get more capable. So we have to look for opportunities to expand ranges, not only for testing but also for operations as well.

Thank you, and, Mr. Chairman, I yield back.

Chairman REED. Thank you, Senator Kelly.

Let me recognize Senator Tuberville, please.

Senator TUBERVILLE. Good morning. General, Stryker vehicles are on your unfunded priority list. Can you take a moment and explain why you prioritized these tanks?

General McCONVILLE. What I am trying to do, Senator, right now is produce the Army with the resources we get, and that is what is in the budget request. But also I have a requirement to list, if there was additional funding, what they would be, and those are the priorities that were unfunded and that is why they are on the list. If you take a look at some of the things on the list, there are some people things we want to do. You know, we are very concerned about where our soldiers are living and housing.

On this budget particularly there is cost to complete. I think there are 25 projects on that UPL list that we need addition money because costs have risen, to finish those projects that are authorized and appropriated for.

Then some of the things are things that changed. As we go through, we are looking at Stingers right now are on the UPL because we did not anticipate giving a whole bunch of those away like we have, and we also want to, if they are going to be used in the future, rather than building old stuff we would rather upgrade the systems we have if we are going to replenish them.

Senator TUBERVILLE. Yes. A few weeks ago President Biden pledged that we would spend billions of dollars to make every military vehicle climate friendly. I find this ironic considering the President's 2023 Budget requests only 102 Strykers, 67 below the Army's established baseline for funding half a brigade. Do you have any comments on that?

General McCONVILLE. Well, Senator, it gets back to the tradeoffs that we make when we are producing the budget. You know, we want to fund modernization, and when we look at the Strykers and we look at the Abrams and we look at the Bradleys, and we look at the Paladin PIM Howitzers, we are trying to modernize the enduring force. They are going to be around for a while. But at the same time we want to make sure we keep the momentum going on our future systems, which I absolutely believe we must have if we are going to be the Army we need to be in the future.

So that is the tradeoff, and then, the way the system works is I come back as the chief and provide those unfunded priorities list,

and that is what ends up here, and then it is up to you all to decide what you want to do with it.

Senator TUBERVILLE. Yes. Secretary, do you believe that with the shortcomings now that we will be able to reach our maximum that we need in terms of Strykers by 2030? With the shortcomings do you think that we will be able to catch up with that in the next 8 or 9 years?

Secretary WORMUTH. Senator, I think that is hard to predict without knowing what the top line is going to be for the Army in the future years. I think, frankly, what we will probably do, and what future secretaries and future chiefs will do is each year, as we put forward the budget request, look at how to balance, as General McConville said, between investing in those new systems and also continuing to modernize those enduring systems.

Senator TUBERVILLE. Yes. We are going to have a lot of catching up to do if we continue to cut like that. Obviously it is going to put us way behind, but I understand what you are saying.

General, in 2020 you testified, "Seventy-four percent of the Active component brigade combat teams have been at the highest level of tactical readiness." For the Army, who is responsible for assessing the readiness of our brigade combat teams, who is responsible for assessing the teams, in your mind?

General MCCONVILLE. Well, when we talk about the readiness it is actually the commanders. The commanders have certain criteria, what their personnel status is, what their readiness status is, have they gone through a combat training center and achieved the level of training? So those all come together to give us an assessment.

Senator TUBERVILLE. Has it always been that way or has there been a third party involved?

General MCCONVILLE. Well, there are people that check what the commanders are saying, and then we have this thing called combat, which is a really good check, and so when we call up a commander and say, "You are going to Eastern Europe. You have got 7 days to go there," and they are able to do that, we think that a pretty good check.

Senator TUBERVILLE. Do you feel like a third party, but not the brigade chain of command, such as an IG, would give a very positive feedback from what we are doing now, in terms of our readiness?

General MCCONVILLE. Well, I do not know what the IG would say, but what I do is talk to our combat training centers that run them through a very rigorous 2- to 3-week period. I talk to commanders who are responsible and accountable for that. Then, really, the proof is in the execution. How well do they do when it comes to accomplishing—

Senator TUBERVILLE. Your experience in the past, are combat commanders tougher or is the IG tougher in terms of assessing readiness, in your experience?

General MCCONVILLE. My experience is I trust my commanders.

Senator TUBERVILLE. Okay. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Tuberville.

Senator Kaine, please.

Senator KAINE. Thank you, Mr. Chairman. Thanks to our witnesses.

Russia had a plan to dominate Ukraine, quickly topple the government, depose Zelenskyy. Their plans failed. I want to follow up on a line of questioning from Senator Kaine, who complimented our logistics. There are a whole series of factors, Ukrainian resolve chief among them, but I share Senator King's belief that the superior logistics of the U.S. and our allies in providing support to Ukraine has been a real factor in being able to dramatically shrink the success of Russian war aims.

If you could maybe each talk about whether you agree with me on that and compare it with logistical failures on the Russian side.

Secretary WORMUTH. Yes, Senator. I mean, I fully believe that logistics has been an Achilles heel for the Russians, and I think we have demonstrated, by how quickly we have been able to get our own forces over to Europe but also in terms of the speed and volume of lethal assistance that we are providing to Ukraine, we are showing the incredible competency of the U.S. Army in the area of logistics.

This is something, frankly, that the Army has been focused on like a laser in terms of looking ahead to future conflicts. I mean, we have a whole joint contested logistics concept that we have been working on because there is a recognition, particularly in the Indo-Pacific, that given the distances, it is that old saying of amateurs study strategy and professionals study logistics. I think watching the experience of the Russians has underscored how important that is and has just reinforced our commitment to focusing on that going forward.

Senator KAINE. General McConville, do you want to add anything to that?

General MCCONVILLE. Yes, I would. I think this shows the importance of our allies and partners, the fact that we have access over there, the fact that we have presence, you know, airfields and ports and having put in what we call pre-positioned stocks, and having orchestrated this and actually rehearsed it. You know, it is one thing to have equipment over there, but the equipment actually has to be ready to go. You all have helped with that. When we come in and say, hey, we need to pre-position tanks, and we need to make sure these tanks are ready to go, and we have maintainers over there that are making that happen, and we have troops over there that work very closely with our allies and partners.

When you have a crisis we are able to quickly get there. We have got a lot of relationships, very strong relationships with our allies and partners over there, and it is kind of a model for the rest of the world.

Senator KAINE. I think that your two answers really put the logistics question together, because it is one thing to have great logistics within the U.S. Army or within DOD-wide, but what about the logistics of the DOD and all of our forces together with our allied forces. This kind of integrated logistics with allies is extremely unique and really has set us apart from what we are seeing with Russia.

Well, I am a strong believer in this and I just have to point out, Senator Cotton talked earlier about something that he might worry would lead to deaths or challenges on the battlefield and the physical standards. I have not served in the way he has so I listen carefully.

Here is something I am worried about. Since November there has been a nominee that has gotten through this committee to be Assistant Secretary of Defense for Sustainment. This is the chief logistics civilian at the Department of Defense, Christopher Lowman. He is a Virginian.

Now he is not just a political appointee. This was a guy who was a Marine officer from 1984 to 1989, and then when he retired from Active Duty he joined the Army as a civilian, and he has been a civilian with the Army for 33 years, including the chief logistics official for the Army. He has been nominated and through this committee without any controversy to be the chief logistics officer within the Pentagon.

We cannot get him a vote. I have made unanimous consent motions twice in the last two weeks that have been objected to by the minority, without citing a single reason that Christopher Lowman is not the right person to do this. Why would we not be having a logistics leader at the Pentagon in the middle of a war in Europe? Why would we hobble ourselves? If we are going to talk about something that could lead to challenges on the battlefield, not confirming the Pentagon's chief logistics official at a time when this is the strategic edge that is helping us shrink Russian war aims, I just cannot fathom it. I have been asking my colleagues on the other side whether Christopher Lowman—and I admit to a bias. He is a Virginian. He lives in Fredericksburg—whether you might allow this person, who has already served the nation's military mission for about 40 years, just allow him to take the position and help us in an area that is desperately needed.

I yield, Mr. Chair.

Chairman REED. Thank you, Senator Kaine.

Senator Tillis, please.

Senator TILLIS. Thank you, Mr. Chair. Thank you both for being here. I have got a question I do not think has been covered yet, and it relates to Finland and Sweden. I am the co-chair of the Senate NATO Observer Group, and Senator Shaheen and I were in Brussels 2 weeks ago, and we were talking about accession, and I met with Swedish officials yesterday. By all indications by the time we get to the NATO summit at the end of June we were going to have formal request for accession. Then we are going to go into a gray area. We are going to do everything we can here to expedite the process, and I think it will receive broad bipartisan support. But they are going to be in a gray area between the time they apply and the time that they are ultimately approved by the NATO members.

So two questions. One, can you all describe the current military-to-military relationships with both Finland and Sweden? General McConville or Secretary Wormuth.

Secretary WORMUTH. Senator, while Finland and Sweden are not NATO allies yet they have worked very closely with the alliance over the years, as you know, and we have very strong military-to-

military relationships with both countries. They will both, I believe, joining NATO, be security providers, not consumers, and I look forward to them becoming members.

Senator TILLIS. General McConville?

General McCONVILLE. Same thing. We have a very strong relationship with their chief, chiefs of staff, at least from an Army standpoint. We routinely run exercises, and they are very good partners.

Senator TILLIS. With Finland sharing, I think, somewhere around 1,340-kilometer border with Russia there is clearly some concern about that gray zone, that gray period between application and accession. Are there any current military exercises, any other activities that are already planned that we could potential consider to move up to provide some assurances to them as they go through the application process or accession process?

Secretary WORMUTH. Senator, I am not aware of the detailed schedule of exercises right now. We can certainly look into that. You know, I think in the gray area, I do not think from a conventional military standpoint Russia is going to be in much of a position to move its ground forces, for example. They are pretty tied down in Ukraine right now. I think the area that I would have concerns about is in the cyber domain, you know, what might Russia be tempted to do there potentially, and I think that is something that we would want to talk to the Finns and the Swedes about.

Senator TILLIS. Yes. Speaking with Swedish officials yesterday I think one thing—I tend to agree. Intellectually, they are not doing a very good job in Ukraine, and I think it is unlikely. But if you are a policymaker in Finland or Sweden and you have got relatively strong public support for accession, I am sure that there is a real concern, because they are seeing what is going on in Ukraine.

So I think that we have to do other things, just as an assurance, and to continue to maintain what appears to be broad support in both Finland and Sweden. So looking at that, I think, is very important.

I want to move to Abrams tanks. I know we have got unfunded priority from the Army on I think another full brigade, and that is particularly interesting to me because some of that would go down to the 30th Armored Brigade combat team in our National Guard. I think it also touches South Carolina and West Virginia.

Do you all agree that that is a priority and you support it?

General McCONVILLE. Yes. I mean, again—

Senator TILLIS. No equivocation. That is good. The next question is with what we are seeing we have got stockpiles in Germany. We have had Russian tanks move into Ukraine. We are moving Abrams tanks around Europe, which is a good thing. But we also have an industrial base. We are working on the modernization of the Abrams platform. We have an industrial base. Can you speak to the importance of making sure that we continue investment in that modernization program so that we can get efficiencies as we turn out more of these platforms?

Secretary WORMUTH. Yes, Senator. We are very focused on modernizing our organic industrial base, and as I said, we have a 15-year plan that General Ed Daly, down at Army Material Com-

mand, has really worked hard on. Because we want to make sure that we continue to get what we need out of the industrial base that we have but also to upskill some of the workforce that we have there and some of the facilities so that they are able to eventually be able to repair and maintain the new systems that are coming online.

Senator TILLIS. Great, and I have run out of time so I will submit a question for the record on modernization plan for military housing. We have got challenges down at Fort Bragg, and it is not limited to that installation, and I look forward to hearing your feedback on it.

Thank you, Mr. Chair.

Chairman REED. Thank you, Senator Tillis.

Senator Rosen, please.

Senator ROSEN. Thank you, Mr. Chairman. I appreciate this hearing. I really appreciate the work and the service that both of you are doing and the vast knowledge you have, and I am so grateful for the logistics planning that has gone on for so many years, that has allowed us to protect men and women in our military and, of course, all of us. So thank you for all those spreadsheets and logistics that nobody ever thinks, like was said, are very sexy but the most important thing.

But I want to talk about small arms range for Nevada for training in Nevada. Secretary Wormuth, Nevada does not have an approved small arms qualification range. In order for soldiers to annually qualify on an approved range Nevada's units must transport soldiers somewhere between 200 and 600 miles out of state to meet this requirement. The average cost for a unit to attend the out-of-states weapons qualification is \$500,000, half a million dollars, a year, per unit. Some units mitigate this by sacrificing training days in order to travel, using vehicles assigned to the unit. It takes an additional 2 to 3 days of travel time, which is not often an option.

So the National Guard Bureau has justified the requirement for one multipurpose range complex for Nevada, and the Nevada Army National Guard has acquired a 25-year lease at Hawthorne Army Depot, which is in the center of our state. However, the current timeline for MilCom funding to be approved is 2030, at its earliest.

So given that financial cost to transport soldiers out of state far exceeds the cost of building a range, can I have your commitment to incorporate a small arms range at Hawthorne Army Depot into future years defense planning or unfunded priority list so that our soldiers can meet their annual requirements at greater convenience, and actually at a cost savings to the taxpayer?

Secretary WORMUTH. Senator Rosen, I will absolutely look into that, and again, work with, it sounds like, General Jensen, the Director of the Army Guard, and General Daly, to see if there is something that we can do there.

Senator ROSEN. Yes, the cost savings, I think, you get better training, save money. It makes sense.

On that same note, the Reserve components and their new army fitness test. So General McConville, our Reserve components, they face their own challenges, as citizen soldiers without access to day-to-day services available to our Active Duty troops on military installations. So one such challenge will be the transition to the

Army Combat Fitness Test, ACFT. While Active Duty soldiers will have ACFT equipment at their everyday place of work, Reserve component soldiers will not, no matter how much equipment is fielded to their units. These soldiers are not at their units 28 days out of the month to train on the equipment they are going to be tested on, and many just do not live nearby.

This is going require Reserve component soldiers to pay for specialized gym equipment in order to train, whereas every soldier, Active Duty soldier, can train for Army Physical Fitness Test from their own home.

General McConville, how do you plan to address this disparity as you implement ACFT?

General McCONVILLE. Well, first of all we put a lot of equipment, probably the biggest buy of ACFT equipment, but we have also put out ways to train if you do not have access to the equipment. So we have exercises. If you think about a plank, one of the exercises. You do not need equipment to do that. The hand-release pushups, you do not need any type of equipment to do that. The ball throw, you know, if you do not have a ball we can get something that looks like that, and you can take some weights and just use some of the things that you have, you know, a water can to replicate that.

So most of the things we can replicate without the equipment, and we have exercises that they can do to give them the opportunity. But we will not be able to put a full set of equipment in every home, but every organization, within limits, should have that.

Going back to—I was not aware of that arms requirement. We will take that on—

Senator ROSEN. Oh, thank you.

General McCONVILLE.—okay, for that marksmanship. Our soldiers need to be able to shoot. We should not have to go all over the state to do that. I just was not aware of that one. I will take that one on personally.

Senator ROSEN. Yes, at Hawthorne Army Depot. It is easy to get to from northern and southern Nevada.

General McCONVILLE. It seems like it should be really easy, Senator, but we owe it, like the Senator said, let us take a look at it.

Senator ROSEN. Thank you.

General McCONVILLE. This is the first I have heard of it, and I have been in the Army for 41 years. But we will take a look at that and we will get on it.

Senator ROSEN. I appreciate it, and I see my time is just about up, so I will submit a question for the record about our Russian threat assessment and how you think we are going to have to adjust now, based on what we have learned over the last few months, going on in Ukraine, how we need to surge up, where we need to resupply, and logistics again, how they might have to change, considering the threats we have now, and what we have learned in Ukraine.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rosen.

Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman. Thanks to you both for being here. Let us talk a little bit, if we could, about housing at Fort Leonard Wood, and Secretary Wormuth, if I could just start with you. I understand that there are discussions underway about raising the basic allowance for housing at Fort Leonard Wood, which I think is essential, both to combat the rising inflation but also support future investments in housing. Will the Army support raising the BAH for Fort Leonard Wood?

Secretary WORMUTH. Senator, we will absolutely look into that. As you probably know, we, the Department, raised BAH in I think over 50 locations where there were rising costs, so if there is evidence that the costs around Fort Leonard Wood are rising in a disproportionate way we would want to look at that.

Senator HAWLEY. Can I have your commitment, your personal commitment, to prioritize this issue, BAH at Fort Leonard Wood, in your discussions with OSD?

Secretary WORMUTH. Yes, I would be happy to prioritize it.

Senator HAWLEY. Great. Thank you. Along similar lines I asked you and General McConville both last year, at this hearing, about the Army's plans to replace aging homes at Fort Leonard Wood, and you both assured me that that would be a priority. Army Material Command followed up with my office afterwards and said that the Army would be earmarking funds for this. However, as of this week I am not aware that the Army has allocated any funds toward replacing housing at Fort Leonard Wood. Zero.

So my question is, why has the Army not put together a plan to replacing the aging housing at Fort Leonard Wood, despite agreeing that they need to be replaced?

Secretary WORMUTH. Senator, we have a 10-year infrastructure plan that looks at housing as well as power projection infrastructure. It would surprise me if in that 10-year plan there was not investments set aside for Fort Leonard Wood. So let me take that and get back to you and find out exactly where, in our plan, what year we are looking at trying to deal with the housing there.

Senator HAWLEY. Well, let me tell you what I was told. I was told last year there was \$341 million that were going to be allocated towards replacing housing. Then I was told later only \$50 million would be available to Fort Leonard Wood, and then I was told after that it would be zero. So you can imagine I am not very happy about it.

I am also not very happy about the fact that the Army does not include any funding to replace housing at Fort Leonard Wood in the budget request or in the unfunded requirements list for fiscal year 2023. So why not?

Secretary WORMUTH. Well, Senator, again, I will go and look. We have a 10-year plan. It may well be that there is not money in fiscal year 2023, but there may be money in future years. So what I would like to do is go back and look into exactly where you are in the schedule.

You know, the Army, as I have come to understand in a whole new way, we have huge footprint with housing at installations all across the country. We cannot, in a single year, take care of all of the housing issues that we have. So we try to look where the need is most pressing and sort of develop a schedule. But I would be

happy to look into it, and I understand that you are frustrated hearing different things at different times.

Senator HAWLEY. Well, here is the deal. I realize that you have got issues you have got to address all over the nation, and bases all over the nation, but in Missouri it is a pressing issue. When I am told there are going to be funds available for housing in Missouri and then there are not, I am not happy about it, and I am not happy about getting the run-around about what it is going to be and what it is not going to be. Frankly, what I want to hear is that Fort Leonard Wood is going to be a priority, and that it is going to get done. So 10-year, 20-year, 50-year, 500-year plans, I want it done.

So if you could follow up with me and give me some hard facts about what actually is happening and when it is going to get done, I would appreciate it.

Secretary WORMUTH. I will do that.

Senator HAWLEY. Can I have your commitment on that?

Secretary WORMUTH. You absolutely may, Senator.

Senator HAWLEY. Okay. Let me shift topics. You gave a speech, Madam Secretary, last year, about the Army's role in the Indo-Pacific, and during that speech you said, and I am going to quote you now, "If required, the Army can counterattack using its maneuver forces, for example, infantry, Stryker elements, and combat aviation brigades to restore the territorial integrity of our allies and partners."

My question is, given that DOD has designed China as the pacing threat and the Taiwan scenario as the pacing scenario, what role do you see army maneuver forces playing in helping us deter a potential Chinese invasion of Taiwan?

Secretary WORMUTH. Well, I think, Senator, that combat-credible forces are very important in terms of deterring China. So I do not want to speculate too much on hypotheticals but I can envision that we would have ground forces in countries in Southeast Asia, for example, that might be willing, in a future conflict, to give us access.

You know, we exercise regularly with the Philippines, for example. We have a very close relationship with Australia. So I can envision situations where ground forces could be very helpful.

Senator HAWLEY. Good. That is helpful.

General, can I just ask you, in my last question here, do you think that we should maintain the ability to put Army forces on Taiwan in the event of a crisis, so the President has an option, if necessary, to deter or defeat a fait accompli?

General McCONVILLE. I believe we should provide multiple options to the chain of command, and we should not be a one-option commander. We have got great sea forces. We have got great air forces. We have got great ground forces. What we want to do is provide multiple options, and I think our modernization priorities do that. With Long Range Precision Fire we can sink ships. But at the end of the day, you know, someone on the ground is going to have to be there, whether it is our allies and partners.

But the thing we also found out with Ukraine is we put soldiers into the Baltics and we put soldiers in place. Having American soldiers on the ground reinforced our allies and partners, and quite

frankly, it reinforces their will to defend their country, and I think we should have that option for the National Command Authority.

Senator HAWLEY. Thank you both and thank you, especially, Madam Secretary, for your help on the housing issue. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Hawley.

Senator Hirono, please.

Senator HIRONO. Thank you, Mr. Chairman.

The Army is negotiating renewals of several training area leases in Hawaii that are set to expire in 2029, including the Pohakuloa Training Area, PTA. Secretary Wormuth, as you know, PTA is critical to ensure Army ground forces and Marine forces in Hawaii are adequately trained. However, these lands hold cultural significance to the Native Hawaiian community, and it is imperative that the Army conduct a respectful engagement with local community leaders, especially the Native Hawaiian population, to listen to their concerns.

Secretary Wormuth, these training area leases are critical, as I just mentioned, as was and is the case with the massive Red Hill fuel tank installation. The training lease issue is one that will require senior-level involvement to ensure the community's concerns as well as the national security concerns are addressed. So as we have previously discussed, I would ask you and General McConville to personally place attention on this issue.

Secretary WORMUTH. Yes, Senator Hirono. I appreciate you raising that and I will be getting out to the region this summer, and I have already talked with General Flynn and intend to engage with community leaders the next time I am there, on the training range issues.

Senator HIRONO. Thank you very much. I cannot begin to express how important Pohakuloa Training Area is going to be for our military.

Secretary WORMUTH. We agree.

Senator HIRONO. Secretary Wormuth and General McConville, last year Congress made historic changes to how the military handles sexual assault, and while those changes are a step in the right direction, implementation in a timely manner will be important. I also remain concerned about how sexual harassment is being investigated and prosecuted because there is no question that sexual harassment is also a scourge on the military, which is why I introduced the Sexual Harassment Independent Investigations and Prosecutions Act to solve this outside of the chain of command.

Do you think, Secretary Wormuth, that moving sexual harassment investigation outside the decisions on prosecuting sexual harassments outside of the chain of command would be another step in the right direction to restore trust in the system?

Secretary WORMUTH. Senator Hirono, I certainly think we need to restore trust in the system, and I think the changes that Congress has legislated already will help us with that. I would be certainly open to looking at what you are putting forward in your legislation.

You know, we have made a number of changes. I think it would be useful to see what are the results of the changes that we are now undertaking. But it is very important to me to restore trust

with our soldiers, and frankly, with the American public. So I am open to looking at what more we might do.

Senator HIRONO. Just as we removed sexual assault from the chain of command I do see sexual trauma, military sexual trauma, as a continuum, and I believe that a huge part of what happens in sexual trauma in the military is the issue of harassment.

So for both of you, last Congress—I am sorry. This is for General McConville. The Army's Multi-Domain Task Force, MDTF, is focused on defeating an enemy's anti-access and aerial denial capabilities, and I believe the Army is planning to stand up additional MDTFs beyond the one at Joint Base Lewis-McChord in Washington State. Is the Army still planning to stand up additional MDTFs, and if so, where?

General McCONVILLE. Yes, Senator, we are. We plan right now to stand up five of those. The next one that we are standing up, initially, is in Hawaii. The command has been selected, and that Multi-Domain Task Force will provide what we call long-range precision effects, which is through intelligence, through information operations, cyber, electronic warfare, and space, and it also, depending, will be tailored to provide Long-Range Precision Fires that can penetrate anti-access air-denial capabilities, sink ships, and provide fires in a precision way for our ground and joint commanders.

Senator HIRONO. What specific steps is the Army taking to ensure that the MDTFs can work closely with our allies and partners, because that will be an important aspect of what these task forces do?

General McCONVILLE. Well, they are very much in high demand, just like our Security Force Assistance Brigades. Under General Flynn's leadership he has then working very closely with our allies and partners, providing those capabilities, and we will continue to do that so they are an integral part of both the joint and the combined force.

Senator HIRONO. Mr. Chairman, I have some additional questions but I will submit them for the record. Thank you.

Chairman REED. Thank you very much, Senator Hirono.

Senator Sullivan, please.

Senator SULLIVAN. Thank you, Mr. Chairman, and General, Madam Secretary, thank you for your service. I appreciated our phone call yesterday, and I kind of want to dive into some of the topics we talked about.

As you know, we have this very kind of dual challenge and opportunity in Alaska. The challenge is the very high rates of suicide, which nobody wants, and I really appreciate the Army focusing on this. I think you have put all your best minds to it. It is a complex problem but I want to thank all of you. Madam Secretary, you were in Alaska recently. The vice chief was in. General, you are up there a lot.

So we talked about some of what you are thinking through, both from a surge capacity on professionals that can provide help but also, as part of the Arctic Strategy that you have been focused on for quite some time, new capabilities in Alaska. I was wondering if you both would not mind touching on both of those topics right now. Again, I appreciate your full attention to this issue, which I

know concerns you as much as it concerns me and the people I represent.

Secretary WORMUTH. Certainly, Senator Sullivan. You know, I think really there are two big things that we are trying to do in Alaska right now under the umbrella of the Arctic Strategy for the Army. First, as we talked about yesterday, we are really trying to surge a significant quantity of behavioral health providers to help deal with the mental health issues. So we have behavioral health folks going up, we are sending military family life counselors, we are sending chaplains, and that will be a 6-month surge, and we will be doing 100 percent mental health check of every U.S. Army Alaska soldier.

Senator SULLIVAN. Thank you.

Secretary WORMUTH. One of the things we have found, in addition, that we think is contributing, potentially, to some of what we are seeing in Alaska is that some of the soldiers there do not feel like they have a sense of identity or purpose around why they are stationed there. So we are looking at, as we talked about yesterday, reflagging the U.S. Army Alaska headquarters as the 11th Airborne Division, which is a division that was disestablished but has a very storied lineage. We are thinking of essentially renaming U.S. Army Alaska the 11th Airborne Division.

Senator SULLIVAN. So that would be an operational—

Secretary WORMUTH. Yes. It would become an operational headquarters, the two brigades that are there. We are not adding or subtracting force structure. It is really sort of more of a new sense of common identity for the soldiers up there.

Senator SULLIVAN. Great. General, do you have any thoughts on that?

General MCCONVILLE. As the Secretary said, as we give them the identity, you know, having had a chance to serve in an Airborne Division, the 101st Airborne Division, the 11th has a great history and heritage and that means a lot to soldiers. and tabs on their badges and things like that matter.

But we are looking at the Arctic very differently. We have put out a strategy. We think it is very different. We have got to be able to operate in that environment. We have got to make sure the units have the capabilities, and that gives them the confidence to be somewhat special—you are the ones that can operate with the right equipment—and even transform some of those units so they have the right vehicles to operate in the coldest time, they have the right equipment and the right clothing.

All those things come together to give them a sense of identity, and that is who we send there. We have a lot of people that want to go to Alaska. They go up there and they thrive. We have some that do not. They just have a tough time, and I think COVID has exacerbated a lot of the challenges we have because of isolation. That is something we recognize. When we talk about building these cohesive teams, you build a cohesive team around a mission, and you give them focus and you give them identity, and that is what brings them together, and that is what we want to try to do.

Senator SULLIVAN. Thank you. Madam Secretary, we talked yesterday about the civilian behavioral health support, and it is difficult to fill in a lot of places in the country, and particularly dif-

difficult to fill in Alaska. Do you think changing the ratio of uniformed-to-civilian behavioral health providers, in remote locations—I am not just talking about Alaska; this happened in other places in the Army globally, not just in the U.S.—can that help alleviate the challenge and the shortage problem? It is something we are looking at here in the committee.

Secretary WORMUTH. Senator, I do think it is something that we need to look at. That was something I talked about with General Eifler in Alaska. I talked to his hospital director. We want to look at that. I mean, we of course need to look at what are the second- and third-order effects for changing those ratios because we have to make sure we have got enough military medical providers for the whole Army, but it is something we want to look at certainly.

Senator SULLIVAN. Let me ask a final question, kind of two parts. Is part of the 11th Airborne we were just talking about the Multi-Domain Task Force? I know that is something you were looking at in Alaska as well, and then the recent USARC large-scale exercises and JPARC [Joint Pacific Alaskan Range Complex] in March. Can you provide a readout, just briefly, on some of the takeaways from that? I know it was very significant, hard, hard training, joint training, in very cold weather. Any thoughts and takeaways on lessons learned from that as it relates to what you are planning on in Alaska, and they beyond, Multi-Domain Task Force and others?

General MCCONVILLE. Yes, I can talk about that. Senator, you know, we kind of want to train where we are going to fight, and historically Alaska has been more of a basing place. We took them out of there and we needed to send them to the National Training Center or to Fort Polk. You know, Fort Polk in the summer is not the equivalent of the Arctic in the winter.

What we learned was conducting exercises in the winter, in a combat training center-like environment is extremely important, so our soldiers develop the confidence in how to work in that environment. As you know very well, better than I do—I have been up there in the winter but not for a long period of time—it takes a special type of training. It takes a special soldier that can operate and thrive in that environment, and that is why we want to give them a high-visibility or high-intensity type training event up in that environment. General Flynn was very high on it.

Senator SULLIVAN. Great. Thank you both.

Chairman REED. Thank you, Senator Sullivan.

Senator Warren, please.

Senator WARREN. Thank you, Mr. Chairman, and thank you to our two witnesses for being here today.

At the end of the day, budgets are a statement of our values. I do not like the statement being made by the Army budget request. We have all heard the horror stories of substandard, on-base housing. Military families across the country live with black mold and collapsed ceilings and electrical and fire hazards and a lot of other substandard conditions. After this scandal was exposed, then-Acting Secretary of Army Ryan McCarthy said, before this committee, military housing was, “our top quality-of-life priority, and we are aligning resources against it.”

Secretary Wormuth, do you agree that safe and healthy housing conditions for military families should be a top Army priority?

Secretary WORMUTH. I do, Senator Warren.

Senator WARREN. Good. I agree with you on this.

Secretary Wormuth, the Army's base budget just submitted to Congress requests for \$1.9 billion in funds for military construction and family housing. Is that correct?

Secretary WORMUTH. Yes, I believe so, Senator.

Senator WARREN. Okay. The reason I wanted to clarify on how committed the Army is to addressing the military housing problems is because that \$1.9 billion in the Army's base budget represents a cut to military housing and construction funding by nearly 40 percent compared with last year.

Now another big chunk of the money needed to address the problem—evidently you think there is still work to be done—another \$330 million is on a separate list typically referred to as the unfunded priorities list. This so-called unfunded priorities list is the way for the Pentagon to pad spending over and above the official budget. It is not just a few extras. The Army's list this year adds up to \$5.1 billion.

Typically, the Pentagon takes some of the most popular items that it wants funded, excludes them from the base budget, puts them on the unfunded priorities list, and then dares Congress not to jack up its budget above the Pentagon's initial submission.

So, Secretary Wormuth, during your confirmation hearing you agreed that substandard military housing was both readiness and a retention problem. You just told us it should be a top Army priority. So why did you not include the whole request in your base budget?

Secretary WORMUTH. Senator, thanks for that question, and as I was just saying to Senator Hawley, we have a very large footprint with a large number of bases. All of them have housing. I would love nothing more than to be able to renovate all of the housing around the country that needs to be renovated in a single year, but we are not able to do that at the same time that we are trying to transform ourselves in terms of modernization in a way that we have not done for 40 years, and also maintain the readiness that we need to be able to respond quickly, as we have, to the situation in Ukraine.

So we are trying to balance a number of competing demands. We put almost \$2 billion in for family housing and barracks, and we are required by law, the chief is, to submit an unfunded priorities list. I will let him speak to the—

Senator WARREN. The question is not whether or not you have an unfunded priorities list. I understand that. My question is why housing ended up on it and why your base budget is a 40 percent cut on housing? It is a 40 percent cut over just the year before.

Look, I just look at it this way. Military families need this funding and they should get it. We need to fix our shameful military housing problem, and we need to do it as quickly as possible. These wish lists distort the budget process, and we should end this game. It is not worthy of our military. Either have the courage to ask for more money up front or, better yet, cut something else from your budget so that you have got enough room to be able to keep the promises that you have made to military families. If taking care of military families is truly a priority then you should be including

their needs in the base budget request, not using military families as pawns to gain the budget system for more dollars.

So I just feel really frustrated about this process.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Warren.

Senator Peters, please.

Senator PETERS. Thank you, Mr. Chairman, and thank you to our witnesses here today. Thank you for your service.

Secretary Wormuth, the U.S. and our allies have shipped tens of thousands of Javelins and other anti-tank guided missile systems to Ukraine where we have seen they have been used for just absolutely devastating impact against Russian tanks and other armed vehicles. It has been encouraging to see, and the skill by which the Ukrainians have deployed them has been outstanding.

The proliferation, though, of affordable, easy-to-operate ATGMs [Anti-Tank Guided MissileS] has certainly changed the calculus of armor on the battlefield. We do know though, however, that active protection systems can be used to defend armored vehicles from these kinds of threats. Other countries around the world, some of our allies, have embraced the solution, have been putting it on their armored vehicles in a pretty aggressive way. The U.S. seems to be somewhat reluctant. With the exception of a small amount of our Abrams tanks that have these systems, the Army does not seem to have a plan to test and field anti-protection systems for the entire fleet of Strykers, for example, or other armored vehicles.

So my question for you, ma'am, is does the Army have any plans to equip its Stryker with active protection systems, and if so, what is the timeline for testing and training? What does that look like?

Secretary WORMUTH. Senator, I think you know we are certainly very concerned about threats to our tanks, and we have watched what drones can do, for example, to Russian tanks. So we, at this point in time, I think, think that the protection systems that we have on our Abrams, on our Strykers, are quite good. I certainly would be willing to look in more detail if there are additional systems that have proved to be effective.

We are also looking, as I said, you know, there is a balance between how quickly we can modernize some of our enduring platforms like Stryker while also modernizing. But I will certainly commit to you to look into that in a little more detail.

Senator PETERS. Well, as you mentioned, the threat is evolving pretty rapidly with relatively inexpensive weapons that do devastating damage, so I would hope that we are thinking this through, and lessons learned from conflicts are usually incredibly valuable.

Secretary WORMUTH. Yes. We are taking active note of the lessons coming out of Ukraine.

Senator PETERS. I appreciate that.

General McConville, the Army's Multi-Domain Task Forces represent, as you know, the centerpiece in operationalizing the Army's multi-domain operations (MDO) concept, and this vision of MDO is critical to understanding how the Army plans to fight and win wars in the future.

The Army has already activated two Multi-Domain Task Forces and plans, I understand, to stand up three more. My question for

you is, in the Army, where the Active component is less than 50 percent of the force structure, how does the Army National Guard fit into this vision for both MDTFs as well as MDO?

General McCONVILLE. Well, you know, the Army National Guard is absolutely critical. I cannot speak enough for what they are doing for the country. The Army Reserves, as you said, they are more than 52 percent. What we have asked them to do in the United States and also overseas is just miraculous. I keep saying this is the year of the Guard, and every year it seems like it is the same year after year, and we have asked them to do so much.

The Secretary and I have committed to the Guard that they will get the modern equipment. It will not be the first 31 in the regular Army. We have made a promise to the Guard that they will be fielded with this type of equipment up front. I have talked to General Hokanson. He wants the National Guard, in coordination with the governors, to reflect where the regular Army is going. They want to have the same capabilities, and we are doing that with them as we work through those problem sets.

Senator PETERS. Thank you.

Secretary Wormuth, as Chair of Homeland Security and Government Affairs Committee I am concerned about the impacts of the increased domestic activation of our Guard forces for national disaster recovery, civil unrest, pandemic response. They have been called on for a variety of missions. We absolutely need these brave men and women to answer the calls to service, but it also has increased operational tempo, and that certainly takes its toll.

Data compiled by my staff indicates that the quantity of Army guardsmen that fall short of earning a retirement-credible year has increased from less than 1 percent to nearly 4.5 percent over the last decade. While this is a small percentage of the total force, and certainly many factors are at play, I do not think it is any coincidence that the number is growing amid increased calls for non-Federal duty.

So my question for you is, while the state and Federal management of our National Guard is an essential framework, is your department considering the inadvertent side effects of state activations while you are undertaking your duty status reforms?

Secretary WORMUTH. Senator, you know, as General McConville said, we are very aware of how heavily used the National Guard is in many parts of our country, and we want to make sure that they are compensated and provided the benefits that they should get when they are activated in Title 10 status. We try to look very carefully at the second- and third-order effects of their support to civil authorities. So we will look into what you are raising and get back to you with more detail.

Senator PETERS. Well, I appreciate it. We will follow up with you and look forward to having a chance to work through this and make sure people are treated fairly and equitably. So thank you very much.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Peters.

Senator Duckworth, please.

Senator DUCKWORTH. Wow. Good timing. Thank you, Mr. Chairman.

Chairman REED. Impeccable timing.

Senator DUCKWORTH. Impeccable. Just got to land your aircraft plus or minus 10 seconds.

Thank you, Mr. Chairman. Secretary Wormuth and General McConville, thank you for your service to our Army and thank you for your discussion with me earlier this week.

I am truly encouraged by the challenging work you both are doing to lead the modernization of our Army, particularly in the Future Vertical Lift program. On Tuesday I chaired a classified Air-Land Subcommittee briefing on the status of the Future Vertical Lift program, and despite the love I will always have for my UH-60 I am excited for the future of Army aviation. It is clear that the Army has applied lessons learned from acquisition programs across the DOD as this program remains on schedule and on budget while bringing cutting-edge, vital combat capability to our forces. I want this trend to continue for all lines of efforts under the Future Vertical Lift program and for all phases of each system's lifecycle.

Secretary Wormuth, given the need for modernization across the force, what work is the Army doing to ensure continued affordability of these systems, not just during procurement but also through sustainment?

Secretary WORMUTH. A primary thing we are doing, Senator Duckworth, is really trying to look very early on in the development process at affordability costs, at sustainability costs, and about maintainability costs, because as you undoubtedly know, it is often the sustainment and maintenance costs that can really kind of balloon and cause the overall cost of the platform to increase. So we are trying to really factor that in early and pay a lot of close attention to it as we go through the development and acquisition process with FLRAA and FARA.

Senator DUCKWORTH. Thank you. What portions of this year's budget request are fundamental to maintaining on-time delivery of all aspects of FVL [Future Vertical Lift]?

Secretary WORMUTH. I am sorry. Could you say that again, Senator?

Senator DUCKWORTH. What portions of this year's budget request are fundamental to maintaining on-time delivery of all aspects of the Future Vertical Lift program?

Secretary WORMUTH. I would say, Senator, you know, the portion of our modernization, \$35 billion investment, that is associated with Future Vertical Lift is critical to making sure that the program stays on schedule. You know, we are in the process of—we will be having prototypes for FARA flying in fiscal year 2023, we already have some experimental demonstrators with FLRAA [Future Long-Range Assault Aircraft], and we have the money built into our modernization budget to try to keep those programs on schedule.

Senator DUCKWORTH. Thank you, and I look forward to working with you both to take every opportunity to maintain the success of this program.

I want to switch gears a little bit and talk about contested logistics. Our military must be prepared for the tough logistical challenges they could face in an Indo-Pacific theater of conflict. To do

so, we must invest in innovative technologies that allow us to provide critical supplies at the point of use. Advanced manufacturing programs are already producing promising results for the warfighter. For example, the Army's Joint Manufacturing and Technology Center at Rock Island Army Arsenal in Illinois is leading the way in building a robust, additive manufacturing capability with state-of-the-art 3D printers.

Deploying this technology would allow us to rapidly produce parts needed for maintenance in theater, among other important uses, yet there is a lack of overall guidance on how to operationalize these technologies and coordinate their development across the Department.

Yesterday I introduced the Bioindustrial Additive Manufacturing For America Act. This legislation directs the Department of Defense to build on the success of these existing efforts and create an implementation strategy that allows the DOD to realize the full benefit of additive and bioindustrial engineering and manufacturing.

General McConville, what role do you see additive manufacturing playing in supporting the Army's logistics efforts in a contested environment, and what barriers do you see to successful operationalization of these innovative technologies across the Army?

General MCCONVILLE. I think, Senator, it is extremely important. If you look at how we have done logistics over the years, we used to call it the Iron Mountain. We brought a whole bunch of parts with us, and that was very excessive. We tried to get more efficient and we went to more just-in-time logistics, and that becomes very challenging.

I think what additive manufacturing does for us is gives us the capability to make those parts at the critical time when we need them. As you know very well, our helicopters do not fly, our tanks do not drive, our trucks do not work without having those parts.

So I think we need to get very aggressive after this capability. I think we need to have it on the forward edge of the battlefield so we can make the parts that are critical in case we cannot get the resupplies, and again, I am a firm supporter of it.

Senator DUCKWORTH. Thank you. I think we also stop this tendency, sometimes, also to start cannibalizing parts out of one piece of equipment, because what happens is you borrow one part, so now it is down for that one part, and then another aircraft needs something so let's go take it from that one. Before you know it you have got a Hangar Queen, whether it is an aircraft or a ground vehicle.

General McConville, given the increased funding in the Pacific Pathways program in your budget request this year, how do you plan to grow these types of exercises, and what can Congress do to help support you in these efforts, like the Pacific Pathways program and these exercises?

General MCCONVILLE. Well, we have been talking about this, Senator, and talking with General Flynn and talking to Admiral Aquilino. It is really important that we set the theater with our allies and partners, that we have forward presence, that we have access and presence, that we have equipment forward, very similar

to what we have in Europe. You know, if we want to be in a position to reinforce allies and partners and be a deterrence we have got to have forward presence, and we need to work on that.

Senator DUCKWORTH. What can we do to help you with that?

General MCCONVILLE. Well, some of it is the resourcing and also it is a policy decision. For a lot of this I defer to the policymakers, of what type of relationship do we have with these countries? Do they allow us to have a status of force agreement so our troops can come there, so our troops can exercise, and so our troops can stay there?

Senator DUCKWORTH. I know you certainly have done your part in developing these relationships, the mil-to-mil relationships, and thank you for your efforts in that.

I am out of time, Mr. Chairman.

Chairman REED. Thank you, Senator Duckworth.

I will at this point recess the open hearing and at 11:50 we will reconvene in SVC-217 so that the Secretary and the Chief can elaborate in a classified setting if they feel so, and my colleagues can pose questions that may be requiring classified answers.

With that I will adjourn the open hearing, and at 1150 hours we will see you in SVC-217. Thank you.

[Whereupon, at 11:35 a.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR ANGUS S. KING

ARMY TRANSITION ASSISTANCE PROGRAM

As we discussed during the hearing I am deeply concerned with the quality of information and mentorship that is being provided to transitioning servicemembers. We have invested a tremendous amount of time and resources into training these professional soldier and they have served with distinction. I believe we owe it to the servicemembers, their families, and the American people to ensure they are postured to rejoin the civilian workforce.

1. Senator KING. Secretary Wormuth, as the DOD's largest force, how is the Department of the Army working to provide the transition resources servicemembers need and what innovative opportunities are available to soldiers?

Secretary WORMUTH. The Army Transition Assistance Program utilizes multiple programs and tools to facilitate the connection between transitioning soldiers and employers. The six primary connection pillars are:

1. Army Career Skills Program and DOD support websites like MilGears,
2. an employment website provided at no cost by Recruit Military,
3. Private Public Partnership,
4. in person and virtual hiring events,
5. American Job Centers, and
6. Partnership for Youth Success (PaYS).

During the second quarter of fiscal year 2022, the Army saw the lowest unemployment compensation invoice total in the last 22 years. Hopefully, this is an indication that these programs and tools are helping transitioning soldiers bridge the gap between military and civilian life.

2. Senator KING. Secretary Wormuth, what are the metrics for suicides among transitioning soldiers in terms of previous MOS, deployments, transition time, etc?

Secretary WORMUTH. The Army tracks several factors, both risk and protective, that can potentially increase suicidal tendencies in soldiers. This information is visible at multiple echelons in an attempt to see risk and be proactive in intervening prior to harmful events. Most of this information is provided by authoritative data sources and tracked within the Commander's Risk Reduction Toolkit (CRRT):

- Soldier risk factors include, but not limited to: deployments, criminality/legal issues (courts-martial, nonjudicial punishment), substance abuse issues (alcohol and drugs), medical profiles / duty limiting issues, limited behavioral health issues (due to legal limitations), adverse personnel actions (Flags, bars to reenlistment, etc.), safety/accidents; sexual assault information (of perpetrators only), and domestic violence data.
- Soldier protective factors include, but not limited to: resilience skills training, suicide prevention training to include the warning signs and indicators, financial education and self-sufficiency, and education on the effects of substance abuse on mental health.
- Personnel data that Army collects to provide general demographics for study include, but not limited to: gender, rank, age, MOS, deployments, promotions/demotions, and physical fitness testing. This data provides the general demographics for study.

Army Regulation 600–8–101 (Personal Readiness Processing) states that all soldiers within 60 days of transitioning out of the military are required to complete a periodic health assessment (PHA). In accordance with medical regulations, the PHA includes a mental health assessment consisting of evidence-based questions for depression, PTSD, substance abuse, domestic violence, and suicide. These responses are reviewed and assessed in a face-to-face encounter with a primary care provider. Referrals to specialty behavioral health care are made after consultation, as needed. In addition, soldiers being considered for separation for disciplinary reasons are required to have a mental status examination performed by a mental health provider.

3. Senator KING. Secretary Wormuth, how can the DOD and VA work to better integrate their healthcare system to prevent record loss or delays in critical care?

Secretary WORMUTH. Integration of systems to facilitate transferring health information of transitioning soldiers is a key priority. DOD and VA are working together to better integrate their healthcare systems through the Federal Electronic Healthcare Record Modernization (FEHRM) Office. In particular, the FEHRM allows the DOD and VA to effectively and efficiently implement an integrated, state of the market, electronic health record that can be shared between the VA and the DOD in real time. The new electronic health record also supports data sharing with private and community partners via the Health Information Exchange (HIE), as well as review of servicemembers' records within legacy electronic records through the Joint Longitudinal Viewer (JLV). JLV is a centrally hosted, browser-based web application, used in both the DOD and VA environments.

SUICIDE PREVENTION

4. Senator KING. Secretary Wormuth, I continue to read the horrific stories of suicide across the joint force and I want some done to protect our greatest assets in the United States military, the servicemembers. I believe it is time to allocate the resources to leaders to address the problems and stop conducting inconclusive studies on the topic. Leaders at all levels should have the authorities and resources to address lift threatening situations and cut the red tape slowing care or innovative remedies.

Secretary Wormuth, what are the metrics by which you measure success in the war against soldier suicide?

Secretary WORMUTH. The Army measures progress in the reduction of suicides across the force by tracking both the protective factors and the risk factors that affect suicidality, to include, but not limited to: 1) increased knowledge and understanding through education of stressors; 2) increased individual resilience skills, such as emotional regulation; improved quality of life (such as housing and community activities); increased financial education and self-sufficiency; increased usage of both non-clinical and clinical assistance (e.g., behavioral health, chaplains, and Military and Family Life Counselors (MFLCC)) as required to reduce stress. Ultimately, though, the truest measure of success is the sustained reduction, as evidenced over multiple years, in deaths by suicide across the force. This is a long-term goal that requires long-term solutions. With that in mind, the Army is developing a prevention strategy and building a more robust integrated violence prevention workforce to enable a holistic approach to prevent suicide and other harmful behaviors. The Army is hiring the prevention workforce (PWF) in phased implementation beginning this fiscal year through fiscal year 2027. The PWF will be responsible for implementing and evaluating evidence-based primary prevention activities

5. Senator KING. Secretary Wormuth, what is your assessment of the Department's efforts in preventing soldier suicide?

Secretary WORMUTH. The Army has made great strides in establishing the foundations of a prevention-focused suicide prevention program. We are implementing a public health approach, focused on engaged leadership, as well as new, comprehensive and integrated, policies designed to prevent and respond to suicide at the individual and community levels. This new approach is informed by science, specifically the risk and protective factors identified by the Center for Disease Control and Prevention and it is closely aligned with the White House's suicide prevention strategy. The Army will continue collaborating with academia to conduct research to refine future policy and program approaches.

The Army has been conducting multiple studies, pilots, and initiatives over the last three years attempting to expand behavioral health resources, identify specific factors, increase prevention efforts, destigmatize seeking help, and emphasize limiting access to lethal means in order to reduce deaths by suicide within our Service.

Some of the initiatives include:

- Updating and publishing policies and procedures that emphasize suicide prevention, to include a major revision to the Suicide Prevention Policy; publishing two commander "how to" handbooks to facilitate program execution; and a implementing a total force chain teaching program initiated by the Vice Chief of Staff of the Army to emphasize suicide prevention as a priority.
- The Army is also emphasizing down to the lowest level that servicemembers must demonstrate engaged leadership which includes implementing preventative measures, such as mandating 100 percent wellness checks at select locations. These locations include the 11th Airborne in Alaska, Fort Bliss, Fort Drum, and Fort Stewart. A wellness check can be 1) a soldier meets with a Military Family Life Counselor (MFLC); 2) a Periodic Health Assessment (PHA)-based review of behavioral health records for incoming soldiers; or 3) a barracks or home check by leadership.
- Developing and fielding the Behavioral Health Readiness and Suicide Risk Reduction Review (R4) tool as an instrument that assists first line leaders (company-level and below) with risk identification and suicide prevention related conversations.
- Effectuating new suicide prevention training that challenges the stigma against seeking help, identifies time-sensitive warning signs and risk factors, and outlines steps servicemembers can take to address the risk. This also includes briefings to all brigade and battalion Pre-Command Courses held since August 2021.
- Refining and fielding the Behavioral Health Pulse (BH Pulse) tool to provide commanders with an assessment of behavioral health across their formations. BH Pulse is a key visibility tool to help prevent harmful behaviors and enhance unit well-being.
- Bolstering BH support in USARAK by adding two Active Duty and three reserve providers. This additional staff will provide 186 appointments a week—a 33 percent increase in mental health services.
- In March, Secretary Austin announced a Suicide Prevention & Response Independent Review Committee (SPRIRC) to review relevant suicide prevention and response activities. The Army will support the review and implement the findings and recommendations of the report in the future. OSD announced the group's charter and membership, and they will start visiting our installations this August. The final report will be provided to the SECDEF in late December.

6. Senator KING. Secretary Wormuth, in remote locations (i.e. Alaska) are the mental health resources adequate to handle the combined stressors of isolation, harsh environment, OPTEMPO, and potential first term duty issues?

Secretary WORMUTH. The most impactful mental health resource in the United States Army is the first line leader, who interacts with the soldier on a regular basis, provides mentorship, and is responsible for taking care of their subordinates. Leaders are always present, even at the most austere locations. Mental and spiritual health services comprise the next level of support. The Army is constantly re-evaluating the distribution of our Nation's limited specialty mental health resources within our force. The Army can do "more with less" by employing these resources wisely. The Army, in collaboration with the Defense Health Agency, will continue to update personnel distribution documents to better support austere locations. It will also broaden the impact of its existing mental health services through innovations such as virtual health.

7. Senator KING. Secretary Wormuth, how is the Army assessing if soldiers are fit to serve in remote locations or high-stress units?

Secretary WORMUTH. Several programs are already in place to identify soldiers, noncommissioned officers, and officers who are well-suited for Alaska assignments.

- a. The “Option 20” initiative allows initial entry soldiers, based on their preference, to enlist for assignments in Alaska. Due to unit type and composition, Skill Level 1 Soldiers constitute a significant percentage (over 56 percent) of the assigned strength of the two Brigade Combat Teams (BCTs) in Alaska. Therefore, excluding first-term soldiers from cold weather locales may negatively impact unit readiness.
- b. NCOs and Officers leverage the Assignment Satisfaction Key – Enlisted Module (ASK-EM), and Assignment Interactive Module 2 (AIM2) marketplaces, directly to interact with units to ensure suitable candidates are assigned to Alaska-based units.

Of note, HIPAA prevents Human Resources Command from screening soldiers for past or ongoing behavioral health treatment prior to assigning them to an Alaska-based unit. The law protects disclosure of individually identifiable health information, such as an individual’s past or current physical or mental health condition, in most circumstances. Soldiers with ongoing mental health treatment or other medical conditions should consult their medical health provider to ensure that they can receive the appropriate treatment at their new duty station. Soldier fitness for a particular duty station should be determined on a case-by-case basis.

RESEARCH AND DEVELOPMENT

8. Senator KING. Secretary Wormuth, General McConville, what is the expected timeframe for the United States to match and surpass China and Russia’s capabilities in hypersonic missile technology and directed energy weaponization?

Secretary WORMUTH and General MCCONVILLE. The Army is on track to deliver a road mobile, air transportable Long Range Hypersonic Weapon (LRHW) that will provide residual combat capability to soldiers by the end of fiscal year 2023. The Army, in collaboration with the Navy and its industrial partners, continue to make great strides in advancing this critical hypersonic capability.

The Army is currently executing three Directed Energy programs. First, the Directed Energy Maneuver-Short Range Air Defense (DE M-SHORAD) is on track to deliver its first combat-capable platoon of directed energy weapon systems in the 4th quarter of fiscal year 2022 and will continue delivering prototypes in fiscal year 2023 and fiscal year 2024. DE M-SHORAD is a 50kW-class laser prototype weapon system—integrated onto a Stryker platform—that protects divisions and brigade combat teams from Group 1–3 Unmanned Aircraft Systems (UAS), rotary-wing aircraft, and indirect fire threats. These directed energy weapons are paired with kinetic weapons to form an integrated and layered defense.

Second, the Army will also deliver 300kW-class High Energy Laser (HEL) and High Power Microwave (HPM) prototype weapon systems in fiscal year 2024 as part of the Indirect Fires Protection Capability (IFPC) battery to support multi-domain operations. As part of tiered and layered defense for fixed and semi-fixed sites, IFPC-HEL and -HPM are designed to counter threats by Group 1–3 UASs, rotary- and fixed-wing aircraft, indirect fire, and Group 1–2 UAS swarms.

Third, in support of the Joint Force and as part of the Army’s role as Executive Agent for Counter small-Unmanned Aircraft Systems (C-sUAS), the Army fielded a 10kW capability in June 2022 for deployment OCONUS. This capability is focused on countering threats by Group 1–3 UASs, rotary- and fixed-wing aircraft, and enemy indirect fire capabilities. This 10kW capability will be followed by a 20kW capability by the end of this year.

UNCLOS

9. Senator KING. General McConville, do you support the ratification of the United Nations Convention on the Law of the Sea (UNCLOS)?

General MCCONVILLE. National security depends on the global mobility of U.S. forces, which in turn depends on the navigational freedoms protected by the Law of the Sea. The Army will continue to operate within the international legal parameters set by existing law and treaties approved by Congress.

DRUG INTERDICTION

10. Senator KING. Secretary Wormuth, what coordination is currently underway by the HQDA with the ONDCP to stem the flow of illegal drugs into the United States?

Secretary WORMUTH. The Department of the Army Headquarters does not directly coordinate with the Office of National Drug Control Policy (ONDCP). The coordination between the Department of Defense and ONDCP is conducted at the Office of the Secretary of Defense-Policy level or at the geographic combatant command level.

11. Senator KING. Secretary Wormuth, General McConville, what operations, exercises, capabilities acquisitions, or other efforts are planned this year in the Western Hemisphere to secure the homeland and build partner capacity to help with the war on drugs?

Secretary WORMUTH and General McCONVILLE. The U.S. Army currently employs Security Force Assistance (SFA) teams in Central and South America that train and advise partner nation security forces. Operating under title 10, section 321 authorities, the SFA teams assist their counterparts in command and control, training management, leader development, intelligence analysis, logistics, and communications. The partner nations utilize this training to assist in their efforts at countering narcotics trafficking (CNT) and Transnational Criminal Organizations (TCOs). Section 321 requires all training conducted by U.S. forces be in the national security interest of the U.S., as well as the primary purpose being to train U.S. forces.

The U.S. Army supported several exercises in fiscal year 2022 focused on building partner nation interoperability, readiness, and confidence across the region. The recent Central America (CENTAM) GUARDIAN 22 Command Post Exercise (CPX) focused on the tri-border area of El Salvador, Guatemala, and Honduras. The CPX built capability, capacity, and effectiveness for combating common threats, to include cross-border smuggling and illicit drug trafficking.

To assist partner nation efforts at countering TCO activities, the U.S. Army intelligence enterprise gathers and processes information, which is then passed to U.S. embassies. Army theater intelligence collection assets, forward deployed analysts, and protection detachments all support these efforts. Additionally, the U.S. Army conducts several subject matter expert exchanges and border security tabletop exercises which foster collaboration, assist in improving the management of intelligence tasks, and increase the professionalism of partner nation intelligence capabilities.

CHINA COMMISSION

12. Senator KING. I believe we must establish an unbiased and non-partisan commission to examine a grand strategy for our approach to China, similar in intent to President Eisenhower's Solarium Project. We need to think of a holistic approach to create a stable international order in which China (or Russia) cannot dictate regional developments.

Secretary Wormuth, General McConville, in order to avoid the United States trying to "spend our way out of conflict," how can we specifically counter China's major activities in your area of responsibility?

Secretary WORMUTH and General McCONVILLE. The Army can and is investing in low to moderate cost capabilities and activities that are integrated with allies and partners and which generate high returns on investment in support of the Joint Force to counter the People's Republic of China's (PRC) aggression in the Indo-Pacific. These investments focus on exercises and activities in support of OPERATION PATHWAYS, which allows the Army to deepen our integration with our allies and partners to help them secure their own interests, grow and mature our bilateral and multilateral interoperability, and improve our logistics and sustainment capabilities west of the international date line.

There are also modernization efforts underway to significantly expand integrated air and missile defense capabilities in the AOR. Using our Long-range hypersonic weapons, mid-range capability and Precision Strike Missile – all of which we will begin fielding in fiscal year 2023, the Army has the ability to interdict fires across sea lines of communication, suppress enemy air defenses, and provide counter fires against mobile targets.

These moderate investments position joint enabling capabilities closer to the point of need to counter China's major activities inside the first and second island chains. In addition, the Army has completed classified assessments on these investments and activities.

13. Senator KING. Secretary Wormuth, General McConville, what would be the greatest benefit this commission could deliver?

Secretary WORMUTH and General McCONVILLE. The Department does not currently have a position on the creation of a commission, but DOD works with various partners across the U.S. Government to achieve national security priorities.

14. Senator KING. Secretary Wormuth, General McConville, what would put us in the best position to avoid the U.S. and China from escalating conflict and careening into a war with China?

Secretary WORMUTH and General McCONVILLE. China, specifically Xi Jinping, must believe that the risks of going to war with the U.S. outweigh the benefits. The U.S. can avoid war with China by credibly proving that we, with and through our allies and partners, can and will position and employ key military capabilities west of the international date line that deter the PRC from risking aggressive behavior that elevates the potential of conflict and war. Clearly demonstrating the ability and willingness to position and employ credible military power in concert with our allies and partners will influence the PRC's assessment of the folly of entering a war and escalating conflict. This approach should also be taken in tandem with appropriate diplomatic, economic and informational efforts made by our interagency partners, diplomats, and their counterparts in ally and partner nations.

15. Senator KING. Secretary Wormuth, General McConville, what are the 'toughest problems' OUTSIDE of military imbalances?

Secretary WORMUTH and General McCONVILLE. There are three difficult, non-military problems with potential long-term impacts involving the Army's preparations to support and enable the Joint Force in the Indo-Pacific for a war with China.

1. The overall American ability and societal willingness to increase our wartime industrial capacity/production (organic industrial base) for a protracted conflict with China.
2. American supply chain security and resiliency, ranging from key industrial components and to basic daily staples for the American public.
3. Cybersecurity capacity and capability outside of the Department of Defense information technology systems and networks that assures Army force projection capabilities.

ARCTIC

16. Senator KING. I supported Senator Sullivan's Arctic Security Initiative amendment last year, and helped get it into law with the Chairman.

Secretary Wormuth, General McConville, what specific resource shortfalls do our armed forces currently possess that would limit its ability to conduct exercises/operations in the High North? Please be specific to include operations and sustainment funding for exercises, equipment shortfalls such as weather gear for soldiers or unique platforms.

Secretary WORMUTH and General McCONVILLE. As part of implementing the 2021 Army Arctic Strategy, the Army is continuing to refocus and prioritize our efforts to improve Arctic capability. The Army's fiscal year 2023 Budget requested \$102 million in support of the Arctic Strategy: \$24 million for Cold Weather All-Terrain Vehicle (CATV), \$25 million for winterization of equipment, \$13 million for exportable combat training center (CTC) support, and \$40 million for organizational clothing and individual equipment (OCIE). With this funding we will be able to continue execution of our exportable CTC capability, field CATVs to units beginning in fiscal year 2023, and mitigate some shortfalls in clothing and individual equipment. If not funded, the Arctic Strategy will be hindered by the lack of proper equipment and will impact overall readiness.

Additionally, it will be unable to outfit all soldiers assigned to train in or deploy to arctic environments elevating risk to soldier safety. The Army will continue to assess readiness for Arctic operations through the winter training program for its newest division, the 11th Airborne Division. Future development of this division and its supporting brigade combat teams will inform modernization efforts to build Arctic capability to meet future threats.

SMALL BUSINESS CHALLENGES

17. Senator KING. Secretary Wormuth, the current strain on supply chain and effects of COVID have had an adverse impact on small businesses, especially those that negotiated fixed price contracts in the last 2 years. Inflation rates in those contracts were in many cases negotiated at 2 percent. The current cost of raw material (and labor) has increased drastically since 2020. On average the material prices have increased 31 percent but key materials like steel, resin and fiberglass that our Maine composites industries have increased at a much higher rate. What is the Army doing to help acquisition officials including providing program managers greater flexibility in cost adjustments?

Secretary Wormuth, what is the Army doing to help small businesses navigate this challenging environment?

Secretary WORMUTH. The Army is closely monitoring any impacts due to the current inflationary environment. Inflationary impacts will vary based on the size and health of the contractor, the types of supplies and services and the type of contract. Small businesses are most affected and may not be able to deliver at all due to the increased costs of materials and labor. We are reviewing each impacted contract and determining appropriate remedies based on the specific facts of that case and challenges presented to small businesses. For example, the extension of required delivery dates and the reduction of required quantities.

18. Senator KING. Secretary Wormuth, what authorities does the Army require to provide options to program managers and contracting officers with better flexibility to address these challenges, especially in the case of small businesses?

Secretary WORMUTH. At this time, the Army can manage the inflationary impacts with its current authorities. When executing new contracts, program managers and contracting officers will consider different contract types, shorter periods of performance, and the use of economic price adjustment clauses to mitigate the impacts of inflation, including those to small businesses.

SEXUAL ASSAULT PREVENTION

19. Senator KING. Secretary Wormuth, the Air National Guard Director, recently spoke to me about the "Prevention Workforce Program" in order to better address sexual assault and harassment cases in the Air National Guard. Is the Department of the Army implementing a similar program for the Army National Guard? If not, is there a similar program in place?

Secretary WORMUTH. The National Guard Bureau is implementing a joint Prevention Workforce Program to serve both Army National Guard (ARNG) and Air National Guard (ANG) servicemembers. The program is being implemented in two phases, with 28 states and territories starting in fiscal year 2022 and fiscal year 2023, and the remaining 26 in fiscal year 2024.

QUESTIONS SUBMITTED BY SENATOR JAMES M. INHOFE

ARMY MEDICAL RESEARCH

20. Senator INHOFE. The National Defense Authorization Acts for fiscal years 2019 and 2020 included provisions to transition the United States Army Medical Research and Materiel Command to the Defense Health Agency no later than September 30, 2022.

General McConville, is the Army committed to completing the transition in accordance with the requirements and timeline set forth in the National Defense Authorization Act?

General McCONVILLE. Yes, the Army remains committed to continued partnership and collaboration during this transition. However, on 21 April 2022, the Army submitted a legislative proposal to Congress for the Army to retain elements of the U.S. Army Medical Research and Development (MRDC) that closely support the Army's Title 10 authorities. MRDC and the leadership of the Defense Health Agency are engaged in multiple transition meetings to comply with existing law and to meet the statutory timelines and will comply with any potential statutory changes. The Army is committed to the success of DHA and fulfilling title 10 authorities.

21. Senator INHOFE. General McConville, is the Army committed to providing continued leadership with the necessary subject matter expertise at the General Officer level to the Defense Health Agency Research and Engineering Directorate to complete the transition of the United States Army Medical Research and Materiel Command as required by law?

General McCONVILLE. Yes.

GROUND VEHICLES

22. Senator INHOFE. The overall fiscal year 2023 defense budget makes important investments into autonomous platforms including in the next generation fighting vehicles, the optionally manned fighting vehicle, and unmanned surface vehicles.

General McConville, what role do you see autonomous weapon systems playing in future ground combat?

General McCONVILLE. I believe autonomous systems will be increasingly employed to reduce risk to soldiers or to accomplish the same tasks with fewer soldiers

in harm's way. For example, autonomous reconnaissance platforms (both air and ground) can be employed to scout in front of maneuvering forces, to identify where the enemy is or is not, or to conduct economy of force operations where the threat of enemy action is reduced. Autonomous capabilities may also be able to conduct dangerous and complex operations, such as mine clearing or the breaching of obstacles to optimize maneuver force operations and reduce risks to the force.

23. Senator INHOFE. General McConville, how do we ensure these systems are operations ready to fight a near-peer conflict and our forces fully training to execute combat operations in that scenario?

General McCONVILLE. Experimentation and training are key to ensuring autonomous capabilities can perform assigned tasks and that soldiers and leaders know how to best employ and sustain them.

24. Senator INHOFE. General McConville, what steps are being taken to develop trust in these autonomous systems with both the warfighter and the American public?

General McCONVILLE. Developing trust in autonomous systems is a matter of experimentation and training. Soldiers and leaders will develop confidence in autonomous capabilities with the more first-hand experience they have. If soldiers and leaders trust the autonomous capabilities of these systems, I believe the American public will too.

25. Senator INHOFE. General McConville, according to the GAO, close to 4,000 warfighters died due accidents in legacy ground systems between fiscal year 2010 and fiscal year 2019. What are we doing to increase both the safety and combat survivability and capability of these legacy systems to include autonomous upgrades?

General McCONVILLE. Soldier health and safety is a top priority, and the Army is committed to improving soldier safety and enhancing force protection through multiple programs. Recognizing that the majority of these tragic incidents involve the Army's light tactical vehicle (LTV) fleet, the Army is prioritizing modernization of its High Mobility Multipurpose Wheeled Vehicles (HMMWVs), through the Joint Light Tactical Vehicle (JLTV) program. Every JLTV—unlike their predecessors—will come equipped with an anti-lock braking system and electronic vehicle control (ABS/ESC), integrated front and rear cameras to increase driver awareness, and a crew compartment that enables increased survivability in the event of an accident. The competitive contract for the JLTV is purposely intended to incentivize industry and bring additional driver enhancement technologies into the enduring solution. Concerning the legacy HMMWV, important efforts underway include retrofitting the field with ABS/ESC kits which became standard after 2018. This technology, also commercially available, directly mitigates rollover accidents and their corresponding risk of fatal or serious injury to crew members. The Army is also piloting an effort to integrate autonomous capabilities on the Palletized Load System (a different section of the Army's wheeled vehicle fleet) in order to reduce risk to personnel during logistics missions.

UKRAINE

26. Senator INHOFE. As the world has watched what was considered a superior conventional fighting force, the Russian military, struggle to execute offensive operations against a smaller and technologically inferior Ukraine military, many experts are looking to see if there are lessons the United States can learn from this war. We know Russian logistics was a complete failure and the Ukrainian people's will to fight has imposed a heavy cost on Russian forces.

General McConville, from a technology viewpoint, what lessons have you learned from this war – command and control, platform vs network-centric warfare, use of artificial intelligence and autonomy and modern vs legacy systems?

General McCONVILLE. Command and Control: Events continue to confirm the importance of interoperability between joint and partner networks and systems, and the impact that a lack of interoperability can have on all warfighting functions. Observation of Russian command and control challenges reinforces the Army's need to create a modernized, integrated network that will enable our commanders and forces to achieve a holistic picture of the modern battlefield and enable a united joint and multi-national force to cut through the fog of war and make informed decisions, quickly. The Army remains on a path to create a unified network, which will converge and secure separate networks into a modern, integrated global NIPR, SIPR, and MPE environment.

Platforms v. Network-centric: The Army has also observed the importance of operationalizing data, including the value of hybrid solutions for data and application hosting, where operational elements must have access to both local and off-site computing and data storage capabilities. The military, federal government and our partners will benefit from a dedicated focus on achieving an informational advantage built on resilient “zero trust” unified networks and data platforms with analytics for decision making, command and control, and reliable strategic reach-back. A combined capability set hosted locally will also provide higher analytic processing power, granting a tactical advantage through its use of faster network-centric solutions and enabling commanders to make decisions more rapidly than adversaries.

Artificial Intelligence (AI) & Autonomous: The Army and the Joint force have observed some basic uses of artificial intelligence (AI) and autonomous-enabled systems by the Russian military, similar to observations made in Syria and other conflicts over the past decade. These observations include Russian use of autonomous drones to enable more accurate targeting and the use of AI-enabled internet technologies to enhance Russian dis- and mis-information campaigns. Our Army continues to dedicate efforts to observe, orient, and react to these systems, including through our counter unmanned aircraft systems (C-UAS) capabilities, information advantage efforts, and in cyberspace.

Modern v. Legacy Systems: We have watched the Ukrainians leverage commercial technology, innovate with their legacy systems, and quickly adapt to use modern technology and services. Likewise, the U.S. Army and our allies are integrating legacy programs with new technology and commercial services to enhance intelligence, surveillance and reconnaissance (ISR) and situational awareness, shorten the speed and range of military effects, and enable quick reaction capabilities. The Ukrainian forces are adapting fast, and our Army is moving quickly to apply those lessons at scale.

Logistics: At the forefront of lessons observed and learned is Russia’s failed logistical performance across the spectrum of operations. Logistics is the foundation that projects and sustains warfighting capabilities. Logistics conducted at speed and at scale enables the warfighting capabilities to initiate and maintain momentum against the adversary, especially in a protracted conflict. The lessons learned from the Russian invasion of Ukraine reiterates the importance of our logisticians, sustained investments in replenishment, and the continued evolution in logistical doctrine to maintain the Army’s ability to project and sustain globally.

COUNTER UNMANNED AERIAL SYSTEMS

27. Senator INHOFE. Secretary Shyu and the White House Science & Technology Offices have prioritized of directed energy capabilities, and specifically high power microwave technological development.

Secretary Wormuth, General McConville, how is this being carried over to the development and execution of Army’s Defense Strategy?

Secretary WORMUTH and General MCCONVILLE. The U.S. Army Rapid Capabilities and Critical Technologies Offices (RCCTO) is focused on directed energy efforts, including Directed Energy Maneuver Short Range Air Defense (DE M-SHORAD), Indirect Fires Protection Capability (IFPC), High Energy Laser (HEL), and High Power Microwave (HPM). Specific to the HPM, the Army—in coordination with the Joint Counter-small Unmanned Aircraft Systems Office (JCSO)—is evaluating capabilities and lessons learned from the deployment of the Air Force’s Tactical High Power Microwave Operational Responder (THOR), as well as recent industry demonstrations at Yuma Proving Grounds, to inform Army decisions on a HPM prototype weapon system. The Army projects that IFPC-HEL and IFPC-HPM will be delivered in fiscal year 2024 as part of a tiered and layered defense capability for fixed and semi-fixed sites, against Group 1–3 Unmanned Aerial Systems (UAS), rotary and fixed-wing aircraft, indirect fire, and Group 1–2 UAS swarm threats.

28. Senator INHOFE. Secretary Wormuth, General McConville, how are Directed Energy systems being leveraged to meet the priority threats and the capabilities of the competition?

Secretary WORMUTH and General MCCONVILLE. The Army is currently executing three Directed Energy programs. First, the Directed Energy Maneuver-Short Range Air Defense (DE M-SHORAD) is on track to deliver its first combat-capable platoon of directed energy weapon systems in the 4th Quarter of fiscal year 2022 and will continue delivering prototypes in fiscal year 2023 and fiscal year 2024. DE M-SHORAD is a 50kW-class laser prototype weapon system—integrated onto a Stryker platform—that protects divisions and brigade combat teams from Group 1–3 Unmanned Aircraft Systems (UAS), rotary-wing aircraft, and indirect fire threats.

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Second, the Army will also deliver 300kW-class High Energy Laser (HEL) and High Power Microwave (HPM) prototype weapon systems in fiscal year 2024 as part of the Indirect Fires Protection Capability (IFPC) battery to support multi-domain operations. As part of tiered and layered defense for fixed and semi-fixed sites, IFPC-HEL and -HPM are designed to counter threats by Group 1-3 UASs, rotary- and fixed-wing aircraft, indirect fire, and Group 1-2 UAS swarms.

Third, in support of the Joint Force and as part of the Army's role as Executive Agent for Counter small-Unmanned Aircraft Systems (C-sUAS), the Army fielded a 10kW capability in June 2022 for deployment OCONUS. This capability is focused on countering threats by Group 1-3 UASs, rotary- and fixed-wing aircraft, and enemy indirect fire capabilities. This 10kW capability will be followed by a 20kW capability by the end of this year.

Our adversaries and non-state actors alike are rapidly proliferating the development and execution of Unmanned Aerial Systems (UAS) that pose a real threat to U.S. forces and infrastructure.

29. Senator INHOFE. Our adversaries and non-state actors alike are rapidly proliferating the development and execution of Unmanned Aerial Systems (UAS) that pose a real threat to U.S. forces and infrastructure.

Secretary Wormuth, General McConville, is the Army seeing an increase in UAS overflight over its personnel and installation in the United States and overseas?

Secretary WORMUTH and General McCONVILLE. The number of documented Unmanned Aircraft Systems (UAS) overflights has increased in both the U.S. and at our overseas installations. In turn, increased training and fielding of UAS detection systems have enhanced our awareness of the UAS threat and the Army's need for continued observation both at home and abroad. As directed by the Joint Staff's Small Unmanned Aircraft Systems Reporting Execute Order, the Army is reporting UAS incidents in a single joint database for documentation and enhanced analysis.

30. Senator INHOFE. Secretary Wormuth, General McConville, what actions is the Army taking to defend against UAS threats?

Secretary WORMUTH and General McCONVILLE. As the DOD Executive Agent for Counter-small Unmanned Aircraft Systems (C-sUAS), the Army established the Joint C-sUAS Office (JCO) to lead the development and integration of emerging Joint C-sUAS capabilities, emphasizing rapid innovation, the synchronization of materiel and non-materiel solutions, and fostering partnerships.

As one of its first actions, the JCO conducted an operational assessment of current C-sUAS capabilities and selected ten initial Joint C-sUAS systems—which are already proving their effectiveness to detect and defeat fixed-wing and quad-copter style sUAS attacks. Additionally, the JCO published the first-ever DOD C-sUAS Strategy and its associated implementation plan and released joint C-sUAS operational requirements to address current and future C-sUAS capabilities. Further, the JCO and all military services are working closely with the Army Fires Center of Excellence to establish joint training and doctrine required to enhance C-sUAS operations.

Additionally, the JCO is also working with industry leaders to modernize current capabilities. As part of this effort, the JCO and partner agencies across all services host semi-annual industry demonstrations to evaluate emerging technologies that close gaps, inform requirements, and promote innovation. The JCO's Rapid Response Team is also supporting combatant commanders with in-depth analyses of the operational threat environment and providing these commands with materiel and non-materiel recommendations that reflect C-sUAS best practices.

The Army is also continuing development of specific programs to mitigate specific capability gaps concerning the defense of fixed/semi-fixed sites and mounted or dismounted configurations. As the efforts mature, the Army will continue to inform this committee of our progress.

31. Senator INHOFE. Secretary Wormuth, General McConville, how is the Army addressing the UAS threat from the top-down?

Secretary WORMUTH and General McCONVILLE. The Army continues to validate, plan, and source counter-small unmanned aircraft systems (C-sUAS) capability requirements in support of contingency operations around the world. The Army remains focused on providing critical C-sUAS capability to divisions in the operational force, while also growing protection of vital fixed and semi-fixed sites in accordance with current requirements. With a goal of accelerating the procurement and fielding

of C-sUAS Division Sets to the operational force, the Army has programmed funds to begin this effort in fiscal year 2022.

Beyond our service-specific efforts to address the unmanned aircraft systems threat, the Army also serves as the Department of Defense's OS Executive Agent for C-sUAS. In this role, and through the Joint C-sUAS Office (JCO), the Army leads and directs the development of joint doctrine, requirements, materiel, and training efforts. The Army's efforts to identify and develop solutions within a joint architecture enhances warfighter capabilities across the DOD.

32. Senator INHOFE. Secretary Wormuth, General McConville, is the Army looking at utilizing directed energy, to include lasers and high power microwave technology, for base security and integration on Army ground vehicles?

Secretary WORMUTH and General MCCONVILLE. Yes. The Army is developing directed energy capabilities for base security, maneuver fire protection, and for integration onto Army ground vehicles.

The Army is currently executing three Directed Energy programs. First, the Directed Energy Maneuver-Short Range Air Defense (DE M-SHORAD) is on track to deliver its first combat-capable platoon of four prototype directed energy weapon systems in fiscal year 2022. DE M-SHORAD is a 50kW-class laser prototype weapon system integrated onto a Stryker platform, that protects division and brigade combat teams from Group 1-3 Unmanned Aircraft Systems (UAS), rotary-wing aircraft, and indirect fire threats. These directed energy weapons are designed to be paired with kinetic weapons for an integrated and layered defense.

Second, as part of a tiered and layered defense of fixed and semi-fixed sites, the Army will also deliver 300kW-class High Energy Laser (HEL) and High Power Microwave (HPM) prototype weapon systems in fiscal year 2024 as part of the Indirect Fires Protection Capability (IFPC) battery to support Multi-Domain Operations (MDO). The threat set addressed by IFPC-HEL is Group 1-3 UAS, rotary- and fixed-wing aircraft, and indirect fire. The threat set addressed by IFPC-HPM is Group 1-2 UAS swarms.

Third, in support of the Joint Force and as part of the Army's role of the Executive Agent for Counter small-Unmanned Aircraft Systems (C-sUAS), the Army fielded a 10kWatt capability in June 2022 for deployment OCONUS. Focused on Groups 1-3 UAS, this fielding will be followed by a 20kWatt capability by the end of this year.

QUESTIONS SUBMITTED BY SENATOR TOM COTTON

ARMY FUTURES COMMAND SUCCESSFUL TRANSITIONS

33. Senator COTTON. Ms. Wormuth, Army Futures Command routinely touts its success stories in terms of the amount of dollars let in contracts or opening new offices to interface with small and innovative businesses. Can you provide a specific example of a contract that Army Futures Command let which has transitioned into a program of record?

Secretary WORMUTH. Several of the 31 signature modernization efforts are now programs of record or about to be so, including Army Integrated Air and Missile Defense, Maneuver Short Range Air Defense, Indirect Fire Protection Capability, Lower-Tier Air and Missile Defense Sensor, Precision Strike Missile, and the Next Generation Squad Weapon.

LARGE MANEUVER ELEMENT TRAINING OPPORTUNITIES

34. Senator COTTON. General McConville, one of the constant critiques of our adversaries is their major exercises are scripted so the commanders always win. Can you tell me—without any caveats—that our major exercises are not scripted at both the operational and tactical levels, including providing training opportunities for soldiers at all echelons, including Brigade, Corps, and Division Commanders?

General MCCONVILLE. Army major exercises are not scripted so that commanders always win. Combat Training Center (CTC) rotations and Warfighter Exercises (WFXs) remain the Army's premier collective training event for brigade, division, and corps commanders and their respective staffs, and offer realistic and demanding training designed to build readiness and train Mission Command during Large Scale Combat Operations (LSCO) in a contested operating environment across all domains. Simulating LSCO in an environment contested across all domains, actions by free-thinking opposing forces ensure that operational and tactical success is never guaranteed.

LOW-COST TACTICAL RADIO

35. Senator COTTON. General McConville, the 1980s SINCGARS radios are breaking down and are unreliable. All the modernization in the world won't help if we can't talk to each other. I would hate to see our soldiers on social media using commercial walkie-talkies like the Russians are. Is the amount of money you requested for the low-cost tactical radio replacement enough to fix this problem in a relevant timeframe?

General MCCONVILLE. The Army fiscal year 2023 budget request reflects our strategy to replace legacy SINCGARS radios and provide a modernized replacement in a relevant timeframe. This modernization strategy, funded in the President's Fiscal Year 2023 Budget Request at \$907 million, includes a mix of platforms that contribute to the Army's cryptographic modernization efforts and enable a resilient, adaptable network in the multi-domain environment.

OVER-CLASSIFICATION OF CAPABILITIES

36. Senator COTTON. Secretary Wormuth, there is tension between the strategy of "integrated deterrence" and the security apparatus purposefully designed to prevent integration of exquisite capabilities. What is your plan to ensure the right people, not only soldiers and civilians in the Army but also people in other services, outside of higher headquarters buildings, have access to the information they need to plan, test, and train with our high-end but classified capabilities?

Secretary WORMUTH. Officials responsible for the development and fielding of Army systems follow information security policies required by Executive Order 13526, as implemented by the Department of Defense. If a particular system contains information that requires protection as classified national security information, the Army adheres to requirements mandated by the Executive Order, federal regulations and DOD policy. Further, Department of Defense issues policies to establish eligibility for personnel who may require access to classified information. The Army grants access to those who have a clearance and a need to know, in order to ensure the right people have the information they need to plan, test, and train with our high-end, classified capabilities.

TACTICAL VEHICLE SAFETY PILOT

37. Senator COTTON. Secretary Wormuth, I want to ask you a question about tactical vehicle safety. It has come to my attention that over the last five years, the Army has averaged four fatalities and \$73 million in property damage per year due to tactical vehicle accidents, not to mention the countless associated non-fatal injuries. While I believe the Army has a good understanding of the principal causes of tactical vehicle mishaps, I am uncertain that they or the Marines have fully explored innovative approaches that could reduce their occurrence. Recognizing that operator behavior is a significant contributor to tactical vehicle accidents, what are your thoughts about a limited pilot program using data recording devices to help identify and alter risky operator behavior before an accident occurs?

Secretary WORMUTH. While Army tactical vehicle fatalities are currently historically quite low, one accident is too many as we value every soldier who has stepped forward to serve our Nation. A key component to reducing the risk of tactical vehicle accidents is training,

leadership, and personal responsibility, which coincides with our development and implementation of an improved driver's training program designed to prevent vehicle accidents. A limited pilot program would likely not yield new data, or would merely confirm what we already know from assessing past accidents. Additionally, the use of data recording devices would be prohibitively expensive if employed across the force. That said, the Army is prioritizing modernization of its High Mobility Multipurpose Wheeled Vehicles (HMMWVs), through the Joint Light Tactical Vehicle (JLTV) program. Every JLTV—unlike their predecessors—will come equipped with an anti-lock braking system and electronic vehicle control (ABS/ESC), integrated front and rear cameras to increase driver awareness, and a crew compartment that enables increased survivability in the event of an accident. The competitive contract for the JLTV is purposely intended to incentivize industry and bring additional driver enhancement technologies into the enduring solution. Concerning the legacy HMMWV, important efforts underway include retrofitting the field with ABS/ESC kits which became standard after 2018. This technology, also commercially available, directly mitigates rollover accidents and their corresponding risk of fatal or serious injury to crew members. The Army is also piloting an effort to integrate autonomous capabilities on the Palletized Load System (a different sec-

tion of the Army's wheeled vehicle fleet) in order to reduce risk to personnel during logistics missions.

38. Senator COTTON. Secretary Wormuth, understanding that we won't be able to prevent all accidents, is there evidence or analysis that data recording devices couldn't be leveraged to help leaders identify and influence risky operator behavior?

Secretary WORMUTH. The Army has considered installing data recording devices in its ground vehicles to help identify risky behavior. However, to be cyber-acceptable, these devices would carry a significant cost and the data recorded would be relatively minimal (speed at impact, etc.). The U.S. Army Combat Capabilities Development Command (DEVCOM) Analysis Center recently assessed it would cost approximately \$20 million to install the devices in 0.5 percent of Army vehicles for a 2-year pilot program, an outlay that might not lead to any conclusive data, and therefore provide no appreciable benefit to leaders. In lieu of such devices, the Army views continued safety and driver's training, leadership involvement, personal responsibility, and accountability measures as the keys to continued improvement in driver attentiveness, decision making ability, and conduct.

QUESTIONS SUBMITTED BY SENATOR THOM TILLIS

UNITED STATES ARMY HOUSING MODERNIZATION

39. Senator TILLIS. Secretary Wormuth, last December, I sent a letter to your office regarding the modernization of substandard barracks for our Ft. Bragg Soldiers. I strongly believe that adequate housing is essential for maintaining Army readiness and maintaining the health and well-being of servicemembers. I also believe that Fort Bragg remains the "tip of the spear" for the Department of Defense. Can you speak to the Army's modernization efforts with regard to soldiers' housing; what improvements have been made thus far and what further plans for improvement do you have upcoming?

Secretary WORMUTH. The Army is working to address unaccompanied housing (UH) requirements within a holistic Army Barracks Strategy. As part of this strategy, the Army has funded ten UH restoration and modernization (R&M) projects at Fort Bragg from fiscal years 2018–2021 for \$102.8 million to address 1,154 bed spaces; two of the fiscal year 2018 projects are complete and the remaining eight projects are ongoing. In fiscal year 2022, the Army plans to award three R&M UH projects (\$45.9 million/356 bed spaces) at Fort Bragg. Going forward, the current Army Facilities Investment Plan includes 22 R&M UH projects (\$210.4 million/2,988 bed spaces) and one military construction UH replacement project (\$32 million/144 bed spaces) during fiscal years 2023–2030. The Army looks to accelerate all barracks renovation and construction projects to the extent possible.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

SERVICE MEMBER SCREENING

40. Senator SULLIVAN. General McConville, last month, I conducted a town hall at Joint Base Elmendorf-Richardson and Fort Wainwright where I spoke with behavioral health providers, military spouses, and junior enlisted soldier and NCOs about the issues they are facing in Alaska. There were several consistent themes throughout these discussions, one of which is proper screening and preparation for being stationed in Alaska. This was something you touched on briefly in our conversation yesterday, telling me, "we have to get the right people up there who will thrive in that environment." Does the Army specially screen servicemembers for service in Alaska?

General McCONVILLE. Several programs are already in place to identify soldiers, noncommissioned officers, and officers who are well-suited for Alaska assignments.

- a. The "Option 20" initiative allows initial entry soldiers, based on their preference, to enlist for assignments in Alaska. Due to unit type and composition, Skill Level 1 Soldiers constitute a significant percentage (over 56 percent) of the assigned strength of the two Brigade Combat Teams (BCTs) in Alaska. Therefore, excluding first-term soldiers from cold weather locales may negatively impact unit readiness.
- b. NCOs and Officers leverage the Assignment Satisfaction Key—Enlisted Module (ASK-EM), and Assignment Interactive Module 2 (AIM2) marketplaces, directly to interact with units to ensure suitable candidates are assigned to Alaska-based units.

Of note, HIPAA prevents Human Resources Command from screening soldiers for past or ongoing behavioral health treatment prior to assigning them to an Alaska-based unit. The law protects disclosure of individually identifiable health information, such as an individual's past or current physical or mental health condition, in most circumstances. Soldiers with ongoing mental health treatment or other medical conditions should consult their medical health provider to ensure that they can receive the appropriate treatment at their new duty station.

41. Senator SULLIVAN. General McConville, if the Army does not screen servicemembers for service in Alaska, will you commit to looking into the implementation of a screening process?

General MCCONVILLE. Yes, the Army is willing to assess and support feasible and legal policy decisions for comprehensive screening implementation to ensure the right soldiers are matched for the right assignments.

42. Senator SULLIVAN. General McConville, does the Army make special exceptions for those servicemembers who seek to remain stationed in Alaska?

General MCCONVILLE. In fiscal year 2022, an Army retention policy added a \$10,000 incentive to soldier's reenlistment bonus provided they were both assigned to Alaska, or Forts Bliss, Drum, Irwin, Polk, Riley and they reenlisted for current station stabilization. The locations mentioned had reenlistment rates below the Army average of 13 percent for fiscal year 2021 and they were the least requested locations by soldiers in the Assignment Satisfaction Key-Enlisted Module. All indications are that this incentive program is working to increase retention in critical skills at less desirable locations. Additionally, over the last six months the Army's enlistment incentive program guaranteed assignment requests to Forts Polk, Riley, Drum, Hood, Bliss and Alaska. Army Reserve personnel also utilize the Army Reserve soldier assignment profile to better align soldier preferences in conjunction with the Army's requirements to fill positions.

43. Senator SULLIVAN. General McConville, as you are aware, the Army has an overseas re-enlistment option which guarantees a 12- or 24-month assignment to areas outside the contiguous United States, to include Alaska. Has this program had much success?

General MCCONVILLE. Active Army soldiers utilize Option 4 (Overseas Reenlistment Option) to reenlist for an overseas assignment of choice. In fiscal year 2022, approximately 16 percent of soldiers stabilized at their current overseas assignment while approximately 9 percent of soldiers reenlisted for an overseas assignment of choice. Specifically, for Alaska, soldiers had a 67 percent increase in overseas stabilization rates from fiscal year 2021 to fiscal year 2022.

FISCAL YEAR 2023 BUDGET

44. Senator SULLIVAN. Secretary Wormuth, the recently released 2022 National Defense Strategy highlights the threat from the PLA's unprecedented military modernization. With an overall real budget cut for the Army, including significant reductions in Research and Development, do you believe the President's Fiscal Year 2023 Budget adequately enables the Army to meet strategic competition requirements, especially in the Indo-Pacific?

Secretary WORMUTH. The Army's budget request enables continued transformation to the Army of 2030 force structure initiative. The budget request also supports the pivot from the past two decades of focus on counterterrorism to an Army that is adapted to meet our top pacing challenge of China and the acute threat of Russian aggression. The investments requested help the Army meet the National Defense Strategy requirements for integrated deterrence, support our active campaigning measures, and help us build and maintain an enduring advantage over peers and potential adversaries. This budget request funds the Army modernization priorities, while simultaneously investing in our sustainment facilities, equipment, people, and the Army's organic industrial base.

This budget request will allow the Army to deliver our hypersonic long-range weapon prototypes and leverage existing missile technology to deliver a Mid-Range Capability prototype. We are transforming the force by fielding our third Multi-Domain Task Force, which integrates fires, cyber, electronic warfare, and information warfare capabilities in an unprecedented way. The request continues to provide investment in Project Convergence 22, which allows for experimentation and exercises with partners and allies to help promote interoperability of our weapon systems. It supports the continued rotations of our Security Force Assistance Brigades to build partner capacity. The request also funds Pacific Pathway exercises in the Indo-Pa-

cific and Defender Europe exercises to assure our allies and partners across the regions.

45. Senator SULLIVAN. Secretary Wormuth, our authoritarian adversaries continue to expand their military capabilities, many of our service branches are heading in the wrong direction and shrinking. Just this year, the Army's end strength will be reduced by 12,000 soldiers. While I understand there is a labor shortage throughout the entire country at this time, we still must find ways to compete and expand our ranks. What is the Army's strategy to increase recruiting and retention to bolster end-strength?

Secretary WORMUTH. The Army, like other services, is facing the most challenging recruiting market in the last 20 years. In fiscal year 2022, Army recruiters are challenged by a tight labor market, a decrease in the propensity of the American population to serve (currently at 9 percent, lowest since 2007), and a shrinking pool of qualified military applicants (only 23 percent of youth (17 to 24) are eligible to enlist in the military without a waiver, down from 29 percent in recent years).

The Army has achieved nearly 40 percent of its enlisted recruiting mission for fiscal year 2022. This is an unprecedented year, but the 4th quarter is typically when we achieve the majority of our total mission goals following high school graduation.

We do expect these recruiting market headwinds to persist, so the Army is improving how we recruit in this new market environment. In March 2022, the Army began a comprehensive review and analysis of our accessions enterprise, recruiting policy, organizational structure, and marketing practices. Recommendations for this review, coupled with other immediate steps we are taking, will help the Army address recruiting challenges and position the Army recruiting for success in the future.

Army senior leaders, at echelon, are fully engaged to identify and implement a variety of initiatives. Some examples include the following: The Army is ensuring that there is ample funding to apply a prudent bonus strategy to attract more prospects. We are applying targeted marketing to increase our outreach to young Americans. In a 2021 survey, the Army found that 75 percent of today's youth know little to nothing about the Army (16–28 year olds). The Army's marketing office has two new creative campaigns in the market today to generate awareness across youth, address the common misperceptions about the Army lifestyle, and motivate receptive prospects. We are also bringing back former highly successful recruiters from our operating force to add experience and depth to our existing recruiting force.

Additional immediate Army recruiting efforts include:

- The Army is offering flexible 2 to 6 year enlistment contracts, including 2 year enlistment in 84 career fields.
- The Army is offering duty station of choice, which means future soldiers can opt to select their first duty station after training. This provides predictability for the future and some popular locations, like Hawaii, Germany, Colorado and Texas (12 duty stations included).
- The Buddy Enlistment Program offers an opportunity for friends to serve together. Up to five people can go to training together and be stationed at the same place for their first assignment.
- The Army is offering up to \$50,000 in enlistment incentives for new recruits.
- Quick ship bonuses of up to \$10,000 are available for individuals who can ship within 30 days of signing a contract.

The Army and our skilled recruiters are working tirelessly to inspire and recruit talented, high-quality individuals to meet fiscal year 2022's assigned mission. We would like to continue to work hand-in-hand with Congress to ensure that you are fully informed and to share any insights or recommendations about the way forward.

QUESTIONS SUBMITTED BY SENATOR MARSHA BLACKBURN

ENERGETICS

46. Senator BLACKBURN. Secretary Wormuth, how do you intend to amend the recently-finalized Army formulating an Organic Industrial Base Modernization Plan based on current events in Ukraine?

Secretary WORMUTH. The March 2022 Army Ammunition Plant Modernization Plan, which specifically addresses energetics (the materials that explode and power projectiles), will be updated annually. The next update will be provided to Congress in March 2023, per the fiscal year 2022 National Defense Authorization Act (NDAA) requirement. The capabilities and infrastructure required to produce the munitions

provided to Ukraine will be assessed for needed modernization resourcing and factored into the next plan accordingly. In the meantime, the Army is addressing immediate industrial base needs to support Ukraine replenishment within Presidential Drawdown funding.

47. Senator BLACKBURN. Secretary Wormuth, several times throughout this plan, it says that projects “can be executed earlier if additional funds become available in any given year.” Do I have your commitment to working with me—and this Committee—to identify those projects and move them forward?

Secretary WORMUTH. Yes, if additional funds become available to the Army, I will work with you and the Committee to accelerate projects.

48. Senator BLACKBURN. Secretary Wormuth, how does the fiscal year 2023 budget contribute to shortening energetics production lead time? When will we see a return on investment?

Secretary WORMUTH. The fiscal year 2023 budget does not contain new projects that will contribute to shortening energetics production lead time; however, we will see a return on investment in fiscal year 2025 when the explosives capacity expansion at the Holston Army Ammunition Plant will be realized, which in turn will result in shortened production lead times.

49. Senator BLACKBURN. Secretary Wormuth, how does the crumbling infrastructure of facilities like Holston induce risk, represents a single point of failure in the munition’s enterprise?

Secretary WORMUTH. Holston Army Ammunition Plant (AAP) is the sole supplier of high explosives in the United States, so it is critical that this facility is modernized and maintained. In order to mitigate the risk of supply disruptions, \$808 million of modernization resourcing is targeted for Holston AAP through fiscal year 2028. This investment will repair and improve all of the Holston AAP’s core capabilities, infrastructure, and support systems.

50. Senator BLACKBURN. Secretary Wormuth, what specific resources or authorities will it require to fully modernize Holston? I am thinking again of opportunities to move projects forward as identified in the Modernization Plan.

Secretary WORMUTH. The March 2022 Army Ammunition Plant (AAP) Modernization Plan identifies \$808 million to repair and modernize Holston AAP through fiscal year 2028. These investments will significantly reduce the risk of Holston AAP not being able to meet operational needs. As the operating contract for Holston AAP is being competed, with a new contract scheduled for award in November 2023, moving additional production modernization projects to the left is not recommended to avoid encumbering the facility during a potential transition to a new operator. However, the fiscal year 2026 “Upgrade Laundry Facility” (\$5.6 million) and the fiscal year 2027 “Natural Gas Pipeline Relocation to Below Holston River” (\$11.6 million) projects could be moved to the left if additional resources are provided in fiscal year 2023 without significant disruption to the facility.

51. Senator BLACKBURN. Secretary Wormuth, what additional resourcing or authorities are necessary to meet more stringent environmental and regulatory compliance in the production of TATB?

Secretary WORMUTH. No additional resources or authorities are necessary for the Army to meet the environmental and regulatory requirements to produce Triaminotrinitrobenzene.

52. Senator BLACKBURN. Secretary Wormuth, what additional resourcing or authorities are necessary to meet more stringent environmental and regulatory compliance in the production of HMX, RDX, IMX, and their precursors?

Secretary WORMUTH. Current environmental regulations, high labor costs, and inconsistent demand provide a high barrier to establishing and maintaining domestic production for some precursors. We are actively working on risk mitigation plans for each material. Examples of environmentally sensitive materials include nitrates, formaldehyde (precursor for hexamine, which is a precursor to HMX and RDX), and fluorinated binders such as BDNAF/F (used in the manufacture of Insensitive Munition explosives).

53. Senator BLACKBURN. Secretary Wormuth, to what extent do we and our allies rely on China for critical energetic materials?

Secretary WORMUTH. The Army is currently tracking multiple critical energetic materials that originate from China. These materials are used in the manufacture

of Army munitions managed by the Army on behalf of the other services and in support of Foreign Military Sales to our allies.

MILCON

54. Senator BLACKBURN. General McConville, considering the Army's unfunded military construction requirements amount to \$1.4 billion, what are the long-term risks if Congress does not immediately address the Army's unfunded MILCON requirements?

General McCONVILLE. Our unfunded priorities are a recognition of our highest priorities in future years. If these priorities remain unfunded, the Army will need to defer these new infrastructure projects in order to address current deficits and to replace failing facilities. We will continue to prioritize military construction efforts to address our highest priority needs and seek opportunities to become more efficient in using our current infrastructure. However, with an \$81 billion backlog of maintenance for existing facilities, coupled with a deficit of \$59 billion in required building square footage, there will always be greater funding needed than is available to address infrastructure requirements.

55. Senator BLACKBURN. General McConville, reports indicate that military construction has been hit with 22 percent inflation rates. How has inflation impacted the Army's MILCON program?

General McCONVILLE. The Army has less military construction buying power in the current economic environment. Rising material and transportation costs are causing contractor bids to significantly exceed both authorized project costs and the Army's reprogramming authority of \$2 million above project cost. There are reduced funds from bid savings to reprogram for these increased costs, causing the Army to cancel or reduce the scope of previously authorized and appropriated projects. In addition, due to the volatility of materials' cost and availability, many contractors will not hold bids for the time necessary to obtain congressional approval of a major reprogramming action—even when funds are available. In order to hold bids in place, contractors generally include added contingencies for anticipated future cost increases.

MODERNIZATION

56. Senator BLACKBURN. Secretary Wormuth, how does record-high inflation impact the Army's ability to deliver prototypes and continued investments in long-range hypersonic weapons?

Secretary WORMUTH. At this time, inflation rates have not barred the Army from staying on track to deliver a road mobile and air transportable Long Range Hypersonic Weapon (LRHW) that will provide residual combat capability to soldiers by the end of fiscal year 2023. The Army is consistently engaged with its industry partners to continually manage risk across the development effort, including addressing inflationary pressures, to keep the effort on schedule.

MILITARY PERSONNEL

57. Senator BLACKBURN. General McConville, how does the Army plan to address the staggeringly low numbers of youth qualified for military service under current guidelines?

General McCONVILLE. The issue of low numbers of American youth qualified for military service presents a challenge for the all-volunteer force. Obesity, medical/physical concerns, and behavioral health concerns all impact the pool of qualified military applicants from which the Army can recruit. To address this diminishing pool, the Army is experimenting with initiatives that expand upon current definitions of quality to expand the pool of qualified applicants and allow interested individuals to serve. The Army has also stood up its special accessions/recruiting tiger team to develop near- and long-term recommendations to ensure the Army meets its recruiting goals and safeguard its future success. This team of experts is reviewing initiatives related to Army recruiters, Army marketing efforts, and Army policy/doctrine. These initiatives are intended to modernize the Army accessions enterprise, provide a holistic review of current practices and incentive structures, and ensure that the Army remains a competitive employer that attracts and retains desired, high-quality talent in a competitive job market. We look forward to sharing the results from this review upon its completion.

58. Senator BLACKBURN. General McConville, how does the Army plan to support troops' reintegration into the civil sector with the current state of the economy and record-high inflation?

General McCONVILLE. The Army's Transition Assistance Program provides soldiers with multiple programs, classes, and opportunities to successfully transition from Active Duty to the civilian sector. Additional training and certification options are available through the Career Skills Program (CSP), and companies offering placement through a CSP are carefully vetted to ensure employment openings provide competitive wages.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

59. Senator HAWLEY. General McConville, what can we do to accelerate development and fielding of Precision Strike Missile Increments 2, so we can take advantage of its anti-ship capability as soon as possible?

General McCONVILLE. The Army has already invested in a science and technology effort to accelerate the technological maturity and concept demonstration of the seeker to satisfy Precision Strike Missile (PrSM) Increment 2 requirements. This technology maturity effort will transition to the PrSM program in fiscal year 2024. We are working closely with industry on the interface requirements to ensure the seeker technology being demonstrated is compatible with and more easily integrated into the base PrSM missile for final system development.

60. Senator HAWLEY. General McConville, when is Precision Strike Missile Increment 4 expected to reach the Initial Operational Capability, and what can we do to accelerate that timeline, so we can take advantage of that system's extended range as quickly as possible?

General McCONVILLE. The Army is working on the acquisition strategy for PrSM Increment 4 now, with a goal of an early operational capability by fiscal year 2027 if the required technology matures as hoped and funds are available. The Army plans to provide a more detailed way ahead for this program in the fiscal year 2024 budget submission.

61. Senator HAWLEY. General McConville, has the Army done an analysis to see what kinds of forces or capabilities the Army is currently providing in Europe that Germany or other NATO allies could provide over the next five to ten years, thereby relieving demand on our forces?

General McCONVILLE. We are always looking for, and encouraging, our allies to do more to provide for their common defense. It is reassuring that many of our European allies have increased their defense budgets; I hope that this trend remains constant in the future. The Army, in concert with the Department of Defense, continues to assess the right balance of rotational and permanent U.S. force presence.

62. Senator HAWLEY. General McConville, what are some of the things U.S. Army forces are currently providing in Europe that our NATO allies may be able to provide on their own, either using forces they currently have or by using forces that they can realistically develop and field?

General McCONVILLE. DOD, USEUCOM, and NATO officials are currently participating in high-level sourcing discussions which will help the alliance determine future military requirements and NATO's future contributions. As a result of these efforts, NATO allies are already providing large amounts of lethal and nonlethal aid to Ukraine.

United States European Command (USEUCOM) and United States Army Europe and Africa (USAREUR-AF) are responsible for guiding U.S. Army security activities and coordinating with our allies in that theater. Since February 2, 2022, the U.S. Army has deployed an additional 15,000 soldiers to Europe to reinforce USEUCOM and NATO.

These forces provide capabilities that include a Division Headquarters, an Armored Brigade Combat Team, and Fires and Logistics elements. USAREUR-AF's goals include expanding our NATO allies' responsibilities in areas such as command and control, security force assistance, and logistics as well as thickening our NATO allies' physical footprint further east in Europe.

63. Senator HAWLEY. General McConville, how important are unattended ground sensors for the U.S. Army in the Indo-Pacific, and what kinds of investments can we make in these sensors in order to improve intelligence and warning available to the Joint Force as we posture to deter Chinese aggression?

General McCONVILLE. In the INDOPACOM area of operations it is extremely important to improve the indications and warnings for the Joint Force so USARPAC can more easily see, secure, and understand the threat environment. To provide

these early warnings, the Army is investing in unmanned signals intelligence ground sensors. In fiscal year 2022, the Army will spend \$13.3 million to develop the initial sensors. The Army intends to spend additional funding in fiscal year 2023 to further the development of unmanned signals intelligence ground sensors.

64. Senator HAWLEY. General McConville, can you provide an update on the Army's modernization efforts to develop and deploy a resilient network, that can effectively receive targeting data during a potential conflict?

General McCONVILLE. We are prepared to provide an update on the Army's modernization efforts in this area is through a classified briefing. The Army's network modernization team can provide a detailed classified briefing on this topic, as requested.

DEPARTMENT OF DEFENSE AUTHORIZATION REQUEST FOR APPROPRIATIONS FOR FISCAL YEAR 2023 AND THE FUTURE YEARS DEFENSE PROGRAM

THURSDAY, MAY 12, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

NAVY POSTURE

The Committee met, pursuant to notice, at 9:30 a.m., in room SD-G50, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Peters, Rosen, Kelly, Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Cramer, Scott, Blackburn, Hawley, and Tuberville.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. Good morning. The Committee meets today to receive testimony on the plans and programs of the Department of the Navy in review of the President's Fiscal Year 2023 Defense Budget Request. I would like to welcome the Secretary of the Navy Carlos Del Toro, Chief of Naval Operations, Admiral Michael Gilday, and the Commandant of the Marine Corps, General David Berger.

We are grateful for your service, for the service of the men and women under your command, and for the support of all Navy and Marine families. The Administration's defense budget request for fiscal year 2023 includes approximately \$231 billion in funding for the Department of the Navy, an increase of \$10.6 billion from the fiscal year 2022 enacted budget. As the leaders of the Navy and Marine Corps, I understand you face significant challenges as you strive to balance current operations and readiness alongside broad modernization efforts.

Our naval forces continue to maintain extremely high operations tempo across all areas. Demand is overwhelming for attack submarines, air and missile defense cruisers, destroyers, and strike fighter inventories. As a result, our ships and the fleet are not meeting maintenance requirements on time or within budget. A number of ships have been waiting several years for maintenance, including the USS *Boise*, which will spend another year at pier side without diving certifications because of deferred maintenance.

I am also concerned that the Navy will not be able to maintain a larger fleet of ships when it is struggling to maintain its current fleet of 294 ships on a consistent schedule. Deferred ship maintenance, reduced steaming and flying hours, and canceled training and deployments have created serious readiness problems within the Navy. These problems are not limited to one sector but are also being experienced by both private shipyards and Navy shipyards.

The 2022 National Defense Authorization Act (NDAA) directed the Navy to study how to improve the capacity in our shipyard industrial base. The Navy has since begun the Shipyard Infrastructure Optimization Program (SIOP) to modernize and improve the efficiency of the public sector shipyards. We look forward to seeing the results of that effort.

Looking ahead, I am pleased that the USS *Gerald Ford* has conducted full ship shock trials, and we understand that she may be deployed later this year. Looming on the horizon, over the next decade, the Navy will need to buy new *Columbia*-class ballistic missile submarines to replace the *Ohio*-class fleet. This is an expensive undertaking on a very tight schedule, and I trust the Navy is making every effort to keep this program on track. I would ask our witnesses for an update on these plans.

This year, the Navy is proposing to retire a number of ships before the end of their useful service lives. This includes a plan to retire nine Littoral Combat Ships (LCS) early, one of which would only be 3 years old. I understand the LCS program showed promise when it was first conceived, but the threats we face have changed, and the Navy no longer believes these vessels would contribute much to a high end conflict.

The Navy made a difficult choice to retire some of the ships now and free up more resources in the future. On the other hand, it seems that this plan would take us in the opposite direction of the Navy's goal for 355 ship fleet. This Committee will want an update on this issue. Turning to the United States marines, the Marine Corps is restructuring around two concepts, Littoral Operations in a Contested Environment and Expeditionary Advanced Base Operations.

The key element of these concepts is the more flexible amphibious force that can support a broader naval fight once ashore. Rather than simply acting as a landing force, the Marine Corps hopes to help control the sea and air around them in support of the Navy and the other services. To accomplish this, I understand the Marine Corps is prioritizing modernization of its ground vehicles, including partnership with the Army and the Joint Light Tactical Vehicle, or the JLTV, to replace the Humvee, and targeted investments in the High Mobility Artillery Rocket System, or HIMARS, to provide marines with ground based indirect fire support.

In addition, programs like the Amphibious Combat Vehicle, the Ground Based Anti-Ship Missile, and long range precision fires will provide critical modernization, increased force protection, and enhanced lethality to the marines. General Berger, I appreciate your consultations and discussions with the members of this Committee as you began this restructuring, and I appreciate your continued engagement with the Committee as this process proceeds.

There also may be discussions this morning about the appropriate amphibious force structure. I understand that the Commandant says he needs 31 large amphibious ships to meet his requirements, in addition to any smaller vessels invented to support the Expeditionary Advanced Base Operations concept. Others in the Defense Department have determined that only 24 to 28 large amphibious ships are needed, and I would ask for an update on these discussions.

Again, I want to thank the witnesses for appearing today, and I look forward to their testimony. Let me now recognize the Ranking Member Senator Inhofe.

STATEMENT OF SENATOR JIM INHOFE

Senator INHOFE. Thank you. Thank you, Mr. Chairman, and I join you in welcoming these three great leaders. For 4 years, this Committee has used the 2018 National Defense Strategy Commission as our roadmap to meet the threats. It has operated very well during this time.

Unfortunately, the Administration has sent to the Congress a budget request that does not provide the resources required to combat that threat and other threats. The Department of Navy budget provides an increase of only 4 percent, and more troubling, the Marine Corps portion includes just 1.8 percent increase.

That is nowhere close to the real growth in—for the Marines, once again, if you account for inflation, it is actually a cut. Given the inadequate budget requests, it is no surprise that Admiral Gilday and General Berger in their unfunded priorities—we call those the risk lists—total \$7.5 billion. More broadly, I am concerned about the state of our Navy and its downward trajectory.

I actually had four items I was going to mention on here. However, all four of them ended up being in the Chairman's opening remarks so I won't use those. The real growth is going to have to be a part of the programs that move the needle. On that topic, I would like to note General Berger's initiative in implementing the National Defense Strategy and his efforts to keep this Committee informed of his plans.

So I look forward to discussing these topics and—from our witnesses and—that we have. Thank you, Mr. Chairman.

Chairman REED. Thank you very much, Senator Inhofe. Secretary Del Toro, please.

STATEMENT OF CARLOS DEL TORO, SECRETARY OF THE NAVY, DEPARTMENT OF THE NAVY

Mr. DEL TORO. Good morning—

Chairman REED. Could you bring that microphone as close as possible, Mr. Secretary—?

Mr. DEL TORO. Good morning, Chairman Reed, Ranking Member Inhofe, distinguished members of the Committee. It is an honor to be here alongside General Berger and Admiral Gilday to discuss the posture of the Department of the Navy. I look forward to working with you to ensure that our sailors and marines are equipped, trained, and prepared to the best of our ability so they can fulfill our vital role to provide combat ready forces in support of the Joint Force.

The United States requires a strong Navy and Marine Corps. Our global economy and the self-determination of free nations everywhere depends on seapower. Our national security depends on seapower. That is particularly true in the Indo-Pacific, where Beijing's aggression threatens the rules-based international order that protects us all.

To answer that challenge, your Navy and Marine Corps must have the resources and the power to maintain credible, integrated deterrence by campaigning forward, forward from the sea, on the shore, and in the air. Thanks to the leadership of President Biden's Secretary Austin, this budget does provide the right balance of capacity, lethality, modernization, and readiness that we need to execute the National Defense Strategy.

We will invest these resources through the execution of a concise, clear, and transparent strategy rooted in three guiding principles. First, maintain and strengthen our maritime dominance so that we can deter potential adversaries and fight and win decisively. Second, empower our sailors and marines by fostering a culture of warfighting excellence founded on strong leadership, dignity, and respect for each other.

Third, strengthen our strategic partnerships across the Joint Force, industry, and our international partners around the globe. We are executing this strategy through the integrated visions of the Marine Corps Force Design 2030 and the Navy Navigation Plan. I strongly support these visions, and I am committed to fielding the ready, capable, and modernized force required to ensure their success.

To maintain and strengthen maritime dominance, we have to be serious about fielding and maintaining the right capabilities to win wars. That is why our budget strongly invested in a nimble, networked, and survivable Navy, with platforms like *Columbia*, DDG Flight III, with enhanced cyber and autonomous capabilities that enable our fleet to campaign forward in a distributed manner.

This budget invests in a truly expeditionary and persistent Marine Corps with the mobility and readiness to respond in force wherever and whenever needed. For advancing cyber security and resilience efforts across the Department with investments to expand the cyber mission force teams, harden networks, and leverage artificial intelligence and machine learning to defend information infrastructure.

To ensure the combat readiness of our platforms, we are more than doubling shipyard infrastructure optimization programs, SIOP, investments over the previous budget. This budget invests in the climate resiliency of our force and our facilities, while continuing efforts to substantially reduce our impact on climate change. We are also investing in facilities that promote the quality of life of our personnel and their families. We owe it to our military families to ensure their safety and well-being.

When we do fall short, we look our problem square in the eye, and we take actions to fix those problems. We are investing in our efforts to recruit, retain, train, and promote the best from all of America. We are increasing funding for naval and cyber education, enhanced shipboard training, and enabling sailors and marines to build their careers wherever the service takes them.

We appreciate the Committee's interest in ensuring our forces have the right facilities to train, fight, and win, including the potential expansion of the Fallon Training Range Complex. We also appreciate the Committee's efforts to include new tools within the NDAA to deter destructive behavior and prosecute sexual assault, domestic violence, and other offenses.

At every level of leadership, we are determined to prevent sexual assault and sexual harassment, hold offenders accountable, and create a safer, stronger, and more inclusive Navy-Marine Corps team. I want to close by noting the importance of strategic partnerships, from the Joint Force and our industrial base, to our allies and partners around the world.

I have seen our partnerships and alliances personally in action, from F-35B operations in the Indo-Pacific to North Atlantic Treaty Organization (NATO) exercises in Norway and the Mediterranean. But our most important partnership is indeed with the American people.

That is why I am grateful for the oversight and interest of this Committee, and I look forward to continuing to work with you in the years ahead. Thank you.

[The prepared statement of The Honorable Carlos Del Toro follows:]

PREPARED STATEMENT BY THE HONORABLE CARLOS DEL TORO

INTRODUCTION

Chairman Reed, Ranking Member Inhofe, Members of the Committee, it is an honor to appear before you alongside General Berger and Admiral Gilday to discuss the posture of the Department of the Navy (DON). I look forward to working with you to ensure that our sailors and marines are equipped, trained, and prepared to the best of our ability, so they can fulfill their vital role in support of the Joint Force, protecting our national security interests.

The United States requires a strong Navy and Marine Corps. The global economy, and the self-determination of free nations everywhere, depends on sea power. Thirty-one million American jobs and \$5.4 trillion in annual commerce rely on the sea lanes, and one third of all international commerce transits the South China Sea. Without a ready, and capable Navy and Marine Corps protecting the sea lanes and lines of communications, the global economy could easily halt.

The national and economic security of our Nation depends on free and open access to the sea. The rules-based international order that benefits us all requires a strong maritime force, campaigning forward alongside allies and partners to provide the sea control and integrated deterrence we need to counter strategic competitors, from Beijing, Moscow, and beyond.

As Secretary Austin stated in his testimony before this Committee, "Integrated deterrence means combining our strengths across all the warfighting domains to maximum effect to ward off potential conflict." The Navy and Marine Corps Team offers forward maneuverable strengths in every domain that serve as a force multiplier within the Joint Force and alongside our allies and international partners. We are determined to ensure the integrated all domain force required to ensure maximum effect for civilian and military leadership, across the range of military options.

Thanks to the leadership of President Biden and Secretary Austin, President's Budget 2023 provides the right balance of capacity, lethality, modernization, and readiness needed to field the globally engaged and dominant naval force required by the National Defense Strategy. This budget will maximize the efficiency and effectiveness of each dollar entrusted to us by the American taxpayer, ensuring sufficient resources for today's challenges, while building future overmatch.

We will invest these resources through a concise, clear, and transparent strategy centered on three primary lines of effort:

1. Strengthen Maritime Dominance.
2. Empower Our People.
3. Expand Strategic Partnerships.

Admiral Gilday, General Berger, and I are executing these lines of effort as one fully integrated DON. The Navy Navigation Plan and Marine Corps Force Design 2030 are complementary visions working together to ensure the distributed capacity, long range fires, amphibious mobility, and network of allies and partners our sailors and marines need to make mission.

Together, we are committed to working with you to ensure these plans are fully resourced, with vigorous oversight, to deliver maximum value to the American taxpayer, and to fulfill our sacred oath to protect the American people.

STRENGTHEN MARITIME DOMINANCE

The security and freedom of the seas, and the resulting prosperity and security of our Nation, did not happen on its own. It required significant investment and foresight by generations of legislative and executive leaders.

Two hundred and twenty-five years ago, Congressional funding led to the commissioning of USS *Constitution*. One hundred years ago, the Navy launched our country's first aircraft carrier, USS *Langley*. Eighty years ago, the Marine Corps began purchasing Higgins Boats. Seventy years ago, President Truman laid the keel for USS *Nautilus*, the first nuclear submarine.

Each of these investments yielded exponential returns, fueling the remarkable growth and global leadership of the United States during centuries of conflict and change. We stand at a similar inflection point today, where our national and economic security depend on the investments we make today to build and maintain our maritime dominance.

Just as our first frigates defended American shipping from foreign aggression, tomorrow's networked frigates and destroyers will define the future of sea control. Just as our early aircraft carriers provided the critical edge at Midway, *Ford*-class carriers will transform the forward posture of our Nation in the conflicts ahead.

Just as the Higgins Boats seized the shorelines from Guadalcanal to Okinawa, tomorrow's amphibious platforms will maintain our combat credibility throughout the Indo-Pacific, and just as our undersea fleet maintained the most survivable leg of the nuclear triad for the last seven decades, our strategic future depends on delivering *Columbia*-class submarines, our top acquisition priority.

Seapower has always required foresight and investment, and the future of our Nation will be defined by the strategic choices we make today. The posture and availability of naval forces must always reflect the strategic needs of the Nation, providing effective options for the President and Secretary of Defense to counter every challenge.

The DON fiscal year 2023 budget request delivers these forces through sustained investment and performance improvement, developing more lethal, networked capabilities and concepts, closely integrated between the services and with our Joint Force and government partners, as well as our allies and international partners.

Fleet Investments

The CNO's Navigation Plan refocuses our integrated all-domain naval power on the core functions of sea control and power projection through Distributed Maritime Operations (DMO). DMO places a high priority on the long range fires and advanced connectivity that will result in a resilient, networked, and dispersed fleet, providing decision advantage and unified action in contested environments.

President's Budget 2023 will invest in both manned and unmanned platforms to meet the strategic and operational demands of DMO, and will invest in the industrial capacity and capability to meet availability and maintenance demands as required to defend the Nation. President's Budget 2023 focuses on delivery and maintaining platforms that will provide the greatest combat capabilities and readiness across the fleet, while divesting in platforms that have less relevance in contested maritime environments where adversaries have advanced weapon systems. This budget provides funding for nine battle force ships in the coming year, including two *Virginia*-class attack submarines and two *Arleigh Burke* Flight III Destroyers, and also continues funding for the *Columbia*-class and *Ford*-class programs.

President's Budget 2023 increases innovation and modernization efforts in Research and Development by 9 percent for the Navy and 6 percent for the Marine Corps. A \$2.7 billion investment in long range fires and hypersonic technologies will extend the lethality and capability of our platforms, and ensure maximum reach, survivability and decision space for our sailors and marines. With an increase of \$81 million for Operation Overmatch in fiscal year 2023, the Navy will field a resilient, networked, and dispersed fleet, connected through the Naval Operational Architecture and Project Overmatch to provide decision advantage in contested environments. President's Budget 2023 also commits \$1.2 billion of Research and Development funding to recapitalization of all portions of the undersea leg of the triad in-

cluding the submarines, TACAMO, Trident D5, and our Nuclear Command, Control and Communications network.

To increase availability, improve maintenance, and maximize throughput for our warships, President's Budget 2023 continues targeted shore investments designed to increase fleet readiness. I was honored to break ground on a new drydock facility at our public shipyard in Portsmouth last fall, and have visited each of the Navy's four public shipyards as Secretary. Each of these facilities provides critical contributions to the availability and maintenance of our fleet, and each has modernization imperatives which are being addressed.

In order to improve naval maintenance production capacity at these facilities, the DON is fully committed to the Shipyard Infrastructure Optimization Program (SIOP), more than doubling SIOP investments over the previous budget, with over \$1.7 billion in funding for dry dock recapitalization, facility optimization, and capital equipment and modernization.

Expeditionary Capabilities

President's Budget 2023 continues planning and design for the future Light Amphibious Warship (LAW). This budget provides for one Amphibious Transport Dock (LPD) and one Amphibious Assault Ship (LHA). Amphibious warships like the LHA and LPD are vital for the organic mobility and expeditionary persistence of our Marine Corps, and remain in high demand as a "Swiss Army Knife" for the Joint Force, meeting varying needs in dynamic situations. These ships provide the sealift necessary to deploy marines for crisis response, contingency missions, humanitarian assistance, and integrated deterrence, supporting Marine Corps Aviation as well as diverse capabilities such as ISR/sensing, long range fires, and decoys.

The Joint Force needs a truly expeditionary and persistent Marine Corps-armed, agile, and postured—capable of operating persistently inside actively contested environments, and ready to respond in force at the speed of relevance. To answer these needs, the Marine Corps has put into motion an aggressive modernization of the Service through Force Design 2030, a transformational effort rooted in the anticipated challenges of the future operating environment.

I thank the Congress for its support of this transformation in the fiscal year 2021 and fiscal year 2022 authorization and appropriation bills. Your support is critical to the future readiness and lethality of the Marine Corps. Building on the cooperative efforts of all of our sea Services, the Marine Corps is reinvigorating the Fleet Marine principle to execute expeditionary warfighting concepts including Expeditionary Advanced Basing Operations (EABO) and Littoral Operations in a Contested Environment (LOCE).

Agile, smaller combined-arms warfighting units, such as the Marine Littoral Regiment (MLR), Amphibious Ready Group (ARG) and Marine Expeditionary Unit (MEU) are the 9-1-1 force for our Combatant Commanders in the most dynamic and volatile situations. For example, during the evacuation efforts at Kabul International Airport last August, the 24th Marine Expeditionary Unit was first on the ground, keeping the aviation lifeline open.

The ARG/MEU is able to support a variety of mission sets, from humanitarian assistance, to coordinated operations with our allies and partners, to agile and lethal response in the combat zone. All of this requires investment in organic mobility, from the fleet, to the field, to the air.

Accordingly, President's Budget 2023 prioritizes and fully funds Marine Expeditionary Forces, and will advance the expeditionary vision of Force Design 2030 through aircraft like the CH-53K King Stallion, with rotary heavy lift capability unmatched across the Joint Force. Platforms like CH-53K and C-130J will play a key role in the rapid deployment of marines and equipment wherever and whenever needed.

Air Wing of the Future

As we mark the centennial of American carrier aviation, naval aviators from both the Navy and Marine Corps are achieving exceptional results in the operational deployment of the F-35 Lightning.

From the short takeoff and nimble capabilities of the F-35B, to our unmatched, carrier-based, precision strike F-35C, the Joint Strike Fighter is having a transformational effect on the reach and capability of naval aviation. In the coming years, a combination of F-35 and Next Generation Air Dominance systems will provide even greater power projection from our carrier force. President's Budget 2023 will procure additional F-35C and F-35B aircraft, and will also invest in the Navy's MQ-25 unmanned aerial refueling system and MQ-9 Reaper, a crucial enabler for the effectiveness, visibility, and maneuverability of marines in the field.

We are taking a comprehensive approach to modernizing the Navy's Fleet Readiness Centers (FRCs), which conduct depot level maintenance, repair, and overhaul of U.S. Navy aircraft, engines, components and support equipment. To build on the positive trend lines we have achieved in operational availability and readiness, President's Budget 2023 includes an 11 percent increase in airframe, engine depot, and component funding. We continue to see positive results in aircraft availability, sustaining a mission-capable rate of 80 percent for F/A-18E/F Super Hornets for three consecutive fiscal years, and five additional airframes achieving 80 percent mission capability over the last 18 months.

Through the Performance to Plan (P2P) initiative we're using data-driven decision-making across the Navy to identify the root causes of maintenance delays and operational mishaps. This data-driven decision-making is integral to a "Get Real, Get Better" approach being applied across the Navy, demanding rigorous self-assessment, detailed analysis characterizing current performance, and providing opportunity to implement improvements. In order to ensure every dollar is maximized to equip and prepare the warfighter, we are building on our financial statement audit success to improve our business systems, account for every asset, and leverage data as a strategic asset.

Sustaining Maritime Information Superiority

Modernization of our information technology infrastructure is a critical warfighting priority for the DON. As an information age naval force, every Navy and Marine Corps warfighting function and mission area is dependent on data and information to rapidly inform decision-making throughout the entire competition to conflict continuum. We are using data driven decision-making to achieve tangible savings while consistently working to become more effective and more efficient. For example, the Marine Corps has implemented Artificial Intelligence-enabled counter-intrusion systems aboard bases, and we will continue to explore the use of information technology to harden defenses and enable capabilities.

Effective use and management of data is key to our digital transformation, and will change how we will fight and win at every level. We are exploring the warfighting enabling capabilities of 5G expansion, and seeking additional ways to leverage new technology for distributed warfighting and unified command and control. Leaders in every functional unit and discipline have been directed to set business systems modernization on an integrated path that is sufficiently resourced and supported across the DON.

Climate Readiness

The United States Navy and Marine Corps recognize the reality of global climate change and the need to prepare for its short and long term effects on operational capability, as well as our responsibility to mitigate our environmental impact.

To make our shore infrastructure more resilient to a changing climate, the Department is incorporating sea level rise modeling and modern facility standards into our new building designs. Navy and Marine Corps installations are adding a resilience component to their master plans and taking steps to ensure critical-mission infrastructure has access to reliable energy sources.

Reducing fuel consumption also reduces overall costs, not only related to end-point consumption, but also costs associated with transporting fuel and resources to protect those assets. New technologies are reducing fuel consumption, including hybridization for newer platforms. In addition, advanced batteries and synthetic fuels are the starting point for platforms that are smaller, more lethal, and more integrated into future battlefield networks.

President's Budget 2023 resources \$719 million for climate-cognizant solutions including hybrid vehicles and propulsion system efficiencies. Reducing energy demand and fuel consumption through advanced technology will enable warfighters to remain forward and self-sufficient for a longer period of time while also contributing to climate change goals.

Especially noteworthy are the regional challenges facing Naval forces in the Arctic, from the changing physical environment and greater access to sea routes and resources, to increased military activities by Arctic states, such as Russia, and non-Arctic states and their attempts to alter Arctic governance. Harsh operating conditions in the Arctic affect our meteorological forecast capability, hydrographic surveys, modeling, and sensors have the potential to impact sea lines of communications.

I have therefore directed a review of our current strategic document for the Arctic, the Arctic Blueprint, to ensure we are adequately preparing our forces for climate change within and through the region. The Navy is also engaging with our Arctic partners and allies through programs such as the Denmark Newport Arctic Scholars

Initiative recently co-hosted by the President of the US Naval War College and Commandant of the Royal Danish Defense College.

EMPOWERING OUR PEOPLE

Everywhere I've gone as Secretary of the Navy, I have been impressed with the professional dedication of every sailor, marine, and civilian executing the many missions of the DON. Admiral Gilday, General Berger, and I are determined to ensure opportunities for every sailor, marine and civilian to advance and grow without barriers or discrimination. It all starts with a culture of warfighting excellence, where all are treated with dignity and respect.

Building the Future Force

To maintain a Fleet prepared to fight and win in long term strategic competition, we must continue to evaluate and improve our capability to attract, retain, and develop a talented and diverse workforce. We face an intensely competitive job market for talented workers, and a rapidly evolving tactical and technical landscape, driving us to modernize and enhance our entire talent management approach in order to succeed.

We are expanding opportunities for civilians with prior military service to contribute their unique experiences to our force through the Targeted Reentry Program. We are also expanding avenues for personnel to learn, operate, and innovate with partners from the private sector, across the Joint Force, and alongside our allies.

We are continuously identifying opportunities for personnel to develop their leadership skills throughout the ranks, promoting equal opportunity in every aspect of our force. For example, the Marine Corps Talent Management 2030 is focused on identifying the individual strengths of every marine and matching these talents to the needs of the Corps.

Our mission demands leaders who possess the highest intellectual and warfighting capabilities to confront the many dangers of a complex world. We value critical thinking, creativity, communication, collaboration, and problem solving. The institutions of our naval education enterprise are developing leaders with the warfighting rigor, intellectual dynamism, and innovation to hold our strategic advantage against competitors and global adversaries. We are creating a continuum of learning through ready, relevant education, attuned to the battle rhythm of Active Duty service.

President's Budget 2023 invests \$425 million in our naval education institutions, including the US Naval Academy, Naval Postgraduate School, Naval War College, and Marine Corps University. This funding will expand access to the Naval Community College ensuring that all of our personnel have access to a high quality college education, no matter where their service takes them. We are investing in distance learning and increasing shipboard training and certification opportunities, while expanding opportunities for personnel to work and research alongside our industrial and academic partners.

We appreciate the Congress's interest in ensuring our naval forces have the right facilities to train, fight, and win. Specifically, we are grateful for the Congress's continued attention to the urgent need to expand the Fallon Training Range Complex, which is necessary to the readiness of every naval aviator and Navy SEAL. I have personally met with Tribal and local community leaders, as well as my counterparts across the Federal Government, and I am committed to finding a favorable solution for everyone involved.

Diversity, Equity, and Inclusion

In order to meet the challenges of a complex world, we must continue to recruit, retain, train, and promote the best from all of America. We need a diverse force, so every child in America can see themselves wearing the uniform or working in our civilian ranks tomorrow, and every viewpoint is represented in our operations today, so that we can draw talent from all of America to build our warfighting advantage. This is a national security imperative, and a critical aspect of the DON's Diversity, Equity and Inclusion initiatives.

We have been reaching out across the Department, through efforts like Task Force One Navy, the Executive Diversity Advisory Council, the USMC Diversity Review Board and the Navy DEI Council to understand what is working, and where we fall short. We are looking at areas of under-representation in military and civilian occupations, and finding ways to build diversity, equity and inclusion efforts into our Navy and Marine Corps culture.

We are expanding recruitment efforts like our Junior Officer Diversity Outreach Program, to build recruitment networks in diverse and underrepresented communities. We are expanding and increasing awareness of career development and

mentorship opportunities to help cultivate the next generation of diverse leadership through the ranks. In accordance with the 2017 Women, Peace and Security Act, we are working with partner nations to expand the meaningful participation of women in defense around the world.

We continue to expand gender integration in Marine Corps recruit training and operational units, strengthening our entire force. Out in the fleet, women are leading as never before. In December, I commissioned USS *Daniel Inouye*, under the command of Commander DonAnn Gilmore. In January, USS *Abraham Lincoln* Captain Amy Bauernschmidt became the first woman to command an aircraft carrier at sea. In February, I was honored to preside over the change of command at USS *Constitution*, as Commander Billie Farrell became the first woman to command our Nation's flagship.

Many more outstanding women are on their way up the ranks. This semester at the U.S. Naval Academy, five of the six people chosen through a competitive process to serve on the staff of the Brigade Commander, the highest ranking midshipman, are women, including the Brigade Commander, herself.

From the E-Ring to the Air Wing, the deckplates to the field, our force is stronger today because of the many women and minorities in our ranks and leadership. But there is still more work to be done. We are working to reduce under-representation by examining our accession and promotion pipelines to recognize and value the service of all our enlisted and commissioned personnel. Our office of Diversity, Equity and Inclusion continues to identify areas for improvement and action. We look forward to working with the Committee to continue expanding opportunities for all Americans to serve and lead.

Destructive Behaviors

Leaders at all levels are expected to set the tone for a healthy climate and culture where destructive behaviors are never tolerated. Trust is at the heart of all our warriors do. Extremist ideologies are a strategic threat to that trust and have no place within the Navy and Marine Corps.

Throughout 2021, DON representatives participated in the Secretary of Defense's Countering Extremist Activity Working Group to develop recommendations to address extremism in the ranks. Specific focus areas included military justice and policy, training and enhancing the insider threat program.

This budget requests \$240 million for Sexual Assault Prevention and Response activities—an 84 percent increase over fiscal year 2022. We have focused our efforts on recognizing and preventing harmful behaviors in the first instance, and ensuring that leaders at every level have the training, skills, and tools available to ensure offenders are held appropriately accountable.

I appreciate the work of this Committee to include new tools within the fiscal year 2022 National Defense Authorization Act (NDAA) to deter misconduct and prosecute sexual assault, domestic violence, and other covered offenses. The Department of Navy is moving forward to create Offices of Special Trial Counsel, as required by the NDAA, and we welcome the meaningful change these offices will help enable. Trained and independent military prosecutors will capably oversee sensitive investigations of covered offenses and independently determine, based on the evidence, which cases are referred to trial by court-martial. They will be led by a senior judge advocate who will report directly to me.

DON leaders have circulated the "Watch List" throughout the force. This prevention tool details warning signs that increase the risk of sexual assault within a command, including sexual harassment, gender discrimination, lack of responsibility and intervention, workplace hostility, and lack of respect and unit cohesion. In conjunction with this training tool, we encourage leaders at every level to speak up and take action when they see these or other behaviors on the continuum of harm.

This fiscal year, we will begin hiring an integrated prevention workforce across the force to redouble our focus on early identification and prevention of harmful and destructive behaviors. I have also directed the DON to expedite the implementation of five recommendations of the Secretary of Defense's Independent Review Commission on Sexual Assault in the Military. These five accelerated recommendations focus on developing, educating, and promoting leaders dedicated to fostering command climates in which all individuals are treated with dignity and respect.

These changes will improve our ability to prevent sexual assault and sexual harassment, hold offenders accountable, and create a safer, stronger and more inclusive Navy-Marine Corps team. I am releasing the DON "No Wrong Door" policy, ensuring victims receive professional care to the fullest extent practicable, regardless of where they initially seek support. This new policy will also serve to supplement existing efforts to further professionalize our workforce, prioritize the prevention of sexual harassment and eliminate collateral duty personnel with full time personnel.

This “No Wrong Door” policy also recognizes that sexual assault, sexual harassment, and domestic abuse exist on a continuum of harm. The DON’s implementation efforts, led by the Assistant Secretary of the Navy for Manpower and Reserve Affairs, are already underway.

Take Care of Our People

The DON is committed to ensuring the health, safety, and well-being for all members within our military community. We are reforming operating procedures and promotion practices to reward initiative, applied problem solving, and innovative thinking at every level. A top priority as we evaluate personnel practices are the needs and challenges of military families, particularly to ensure our policies respect the needs of single parent and dual service families.

The DON offers a variety of mental health and counseling resources, encouraging positive help-seeking behaviors and eliminating the stigma around mental health care among servicemembers. The importance of this issue and the continued emphasis on suicide prevention has been highlighted in recent weeks as we mourn the loss of young sailors aboard USS *George Washington*. We continue to emphasize suicide prevention efforts, breaking the silence, and increasing visibility and access to critical resources.

Through a combination of non-monetary, quality of life, and customer service programs, we are responding to the needs of our warfighters and their families. For example, this budget increases Child and Youth Services funding by 38 percent, including \$56 million for a new Child Development Center at Point Loma, childcare data management system upgrades, and full funding for the Fee Assistance Program.

President’s Budget 2023 also includes significant funding for construction and oversight of family housing, including \$249 million for new family housing at Joint Region Marianas—Andersen Air Force Base, Guam, and \$75 million for construction improvements to family housing in Yokosuka, Japan. President’s Budget 2023 also includes the funding necessary for DON to sustain our increased oversight as necessary to ensure Military Housing Privatization Initiative (MHPI) projects on Navy and Marine Corps bases provide quality housing and a positive living experience for sailors, marines and their families.

As demonstrated by recent quality issues at barracks buildings in Naval Support Activity (NSA) Bethesda in Maryland, the DON must also ensure that our unaccompanied housing is properly maintained and consistent with modern living standards. I have recently visited the barracks at NSA Bethesda to confirm that these quality issues have been appropriately addressed, and I am committed to improving our unaccompanied housing facilities and preventing future problems. President’s Budget 2023 also includes significant investment in unaccompanied housing, including \$101 million for phase II of a Navy barracks project at Kaneohe Bay, Hawaii, and \$101 million for a Marine Corps Barracks Complex at Kadena, Japan.

Finally, I fully support the Secretary of Defense’s decision to defuel and permanently close the Red Hill facility, and I take very seriously the DON’s responsibility to make things right after fuel releases contaminated the drinking water system at Joint Base Pearl Harbor-Hickam. I will continue to work closely with our federal interagency partners and the Hawaii Department of Health to protect the environment and support the military families and residents who have been impacted by fuel-contaminated water on Oahu, Hawaii.

COVID-19

With consistent personal and fleet discipline, vaccine distribution, and continued refinement of best practices, we have ensured a robust, proactive, and coordinated COVID-19 response across the DON. I particularly want to note the contributions of the 265,000 civilian employees across the DON, whose faithful service has continued through the many challenges brought on by the pandemic, continuing critical and essential roles to enable our force to continue making mission.

Guided by Health Protection Condition (HPCON) determinations and mission requirements, we continue to implement flexibilities to help minimize risk to our people and their families as we respond to evolving situations and ensure the continual readiness of our force. We are well positioned to emerge stronger than ever, as the pandemic has forced us to rethink and refine our recruitment, training, and personnel movements across the DON, as well as shipyard operations, deployments, and maintenance schedules, with efficiencies and applications of technology that can continue to benefit our operations and throughput long after COVID-19 is in our wake.

STRENGTHEN STRATEGIC PARTNERSHIPS

Our partnerships provide an unmatched and irreplaceable advantage over every potential adversary. From our fellow Joint Force and government personnel, to our vital industrial base, to our global network of allies and partners, we will sustain, expand, and strengthen strategic partnerships by building seamless integration, communication, and collaboration with each of our partners at the same time that we cultivate new relationships.

Joint Force and Government

Across both services and throughout the DON, President's Budget 2023 will invest in the readiness of integration-ready platforms to ensure continued freedom of action throughout the maritime domain, from amphibious and ground element equipment, to agile warships and submarines, to dominant aircraft carriers and air wings. Successful implementation of the concepts within the Navigation Plan and Force Design 2030 will be pursued through a unified, integrated effort at every echelon.

But our fully integrated naval force is only part of the formidable Joint Force team that stands united in the protection of the American people. Collaboration between Departments, from the Pentagon to the operational front line unit, is critical to the defense of the United States. We are constantly seeking opportunities to maximize the combined efficiency and effectiveness of our force in cooperation with the Army, Air Force, and Space Force. For example, we continue to work with our fellow services on critical advanced research programs including hypersonic weapons, and worldwide, the Joint Strike Fighter program is yielding unprecedented reach and agility for the entire Joint Force.

We are also proud to serve alongside our fellow sea service, the United States Coast Guard. Building on Advantage at Sea, our Tri Service Maritime Strategy, we are continually seeking ways to leverage our combined capabilities, from ice breakers to coastal facilities to embarked personnel. For example, last year USS *Tulsa* and USS *Charleston* conducted missions with embarked Coast Guard detachments as part of the Oceania Maritime Security Initiative. This joint effort improves our maritime domain awareness in the Indo-Pacific to reduce illicit fishing, combat transnational crimes, and enhance regional security. President's Budget 2023 will build on cooperative efforts like this to safeguard every part of the maritime domain.

We continue to work with the United States Strategic Command, the National Security Council and the United States Air Force to support the Strategic Deterrent Forces. We work closely with our Joint Force partners to ensure DON is fully integrated into the national command authority, and ensure the Navy's sea based strategic deterrent is ready at a moment's notice to defend our nation. We will continue to work closely with the Department of Energy and our National Laboratories, to ensure Navy is forward leaning with modernization and sustainment as we continue to invest in the future deterrent through programs like *Columbia* and TACAMO.

Community Partnerships

Across the United States and around the world, Navy and Marines Corps installations partner with the local communities that host us to pursue joint opportunities, collaborate on shared challenges and develop regional plans that enable military readiness while supporting community priorities.

Installation commanding officers are successfully using Intergovernmental Support Agreements to partner with a state or local governments to obtain installation support services, often at a considerable cost savings. Initiatives like the Defense Community Infrastructure Pilot program provide construction funds to states and communities to address deficiencies in community infrastructure that support military installations. Under the Readiness and Environmental Protection Integration (REPI) program, the DON is partnering with local governments and organizations and combining resources to enhance and preserve mission readiness and achieve mutually beneficial, sustainable communities near our installations and ranges.

Industry Partnerships

From the skilled shipwrights who transformed live southern oak into USS *Constitution's* "iron sides", to the over 2,000 suppliers and contractors contributing to the *Ford*-class today, our industrial base has fueled the strength of our Navy and Marine Corps. The innovative platforms and technologies that are so essential to the Joint Warfighting Concept would not exist without the private sector's involvement.

Working alongside our vital industry partners, we are aligning our efforts to produce the right platforms and capabilities for the warfighter, and ensure maximum availability and throughput from design to production to maintenance. A ro-

bust, resilient, and nimble industrial base and supply chain is critical to the long term strength of our Navy and Marine Corps. Funding predictability and long term planning are key elements in ensuring the efficiency of our acquisitions and maintenance processes in partnership with a supply chain calibrated to deliver maximum value to the taxpayer and warfighter.

In order to ensure a strong and stable industrial base to meet our national security requirements, we must be clear and transparent as to our future needs and resource constraints, and fight requirements creep whenever possible. In turn, our partners must be transparent with us as well, managing costs, strengthening the workforce, and delivering platforms on-time and on-budget. Together, we must be good stewards of the taxpayer's money.

President's Budget 2023 will strengthen our industrial base through targeted investments in supplier development, shipbuilder infrastructure, strategic outsourcing, and workforce development. This budget adds \$543 million for submarine industrial base investment and funds for a predictable build plan of two SSNs and two DDGs per year. It maintains a public shipyard workforce at 37,000 full time equivalent workers, and funds 45 private ship maintenance availabilities.

I have held multiple town hall meetings with industry partners to hear about their challenges when doing business with the DON, and seeking greater transparency and cooperation to pursue greater efficiency, innovation and teamwork. I have also made it clear that I expect DON suppliers and contractors to meet their small business commitments, and expand diversity, equity and inclusion efforts in their hiring and subcontracting, in order to expand the innovative private sector universe available to the DON to benefit the taxpayer and the warfighter.

Allies and Partners

As strategic competitors pursue confrontation and coercion, we respond with alliances and partnerships, standing alongside a global community of nations in defense of our common values. I have witnessed the bonds between our sailors and marines working alongside their counterparts in Japan, the Republic of Korea, and elsewhere throughout the Indo-Pacific. I also saw the power of allied cooperation on recent trips to Europe, as I spoke with marines preparing for Exercise COLD RESPONSE in Norway, and sailors aboard USS *Harry S. Truman* carrying out tri-carrier maritime and air policing operations in the Mediterranean and North Aegean Sea alongside the Italian carrier *Cavour* and the French carrier *Charles DeGaulle*.

These activities demonstrate the strength of our integrated deterrence, and the agility of our combined forces. Last year, USS *Sullivans* transited the Mediterranean, the Indian Ocean, and the Philippine Sea as part of the HMS *Queen Elizabeth* Carrier Strike Group, providing air defense and integrated operations alongside Royal Navy and Dutch destroyers, while also working with many allies and partners including Australia, France, Israel, Italy, New Zealand, Japan, Malaysia, Singapore, and more.

HMS *Queen Elizabeth* Carrier Strike Group also featured United States Marine Fighter Attack Squadron 211 operating aboard the Royal Navy's flagship carrier. For seven months, the "Wake Island Avengers" operated ten F-35B Lightnings alongside eight Royal Air Force F-35Bs from the decks of HMS *Queen Elizabeth*. Our marine aviators have also operated the F-35B from the decks of Italy's *Cavour* and Japan's *Izumo*, proving the capability of this aircraft for true allied deck hopping, when paired with United States amphibious ships for aircraft maintenance and sustainment.

President's Budget 2023 will strengthen global alliances and partnerships with funding for joint operations and exercises around the world, including CARAT, MALABAR, and BALIKITAN in the Indo-Pacific, NATO operations in the Mediterranean, and exercises in our own hemisphere like UNITAS. We will continue to strengthen military-to-military relationships with existing allies, leverage specialized allied experience in regional operations, and expand and deepen our partnerships with like-minded nations around the world.

We will continue to build opportunities for sailors, marines, and civilians to train, learn, and operate side-by side with their counterparts in partner and allied forces, and operationally integrate with our allies and partners through shared warfighting concepts, continually campaigning forward to deter adversaries and protect the rules based international order.

Our sailors, marines and civilian personnel are warrior-diplomats for our Nation. Their professionalism and dedication promotes the connections that strengthen our collective security and cultivate shared ideals that send the message that the United States is a friend worth having.

CONCLUSION

The most important partnership for our Navy and Marine Corps Team is with the American people. They entrust us with their hard earned tax dollars, as well as the lives and wellbeing of their sons and daughters, mothers and fathers, husbands and wives who serve in our ranks. We will not fail in our sacred responsibility to the American people, and all who serve in the cloth of our Nation.

On behalf of each of the brave sailors, marines, civilians, and the families that serve at their side, I once again thank the leadership and membership of this Committee for your oversight, interest, and ongoing commitment to the defense of the United States of America. It is an honor to work with each of you, and I look forward to your questions.

Chairman REED. Thank you, Mr. Secretary. Admiral Gilday, please.

**STATEMENT OF ADMIRAL MICHAEL M. GILDAY, CHIEF OF
NAVAL OPERATIONS, DEPARTMENT OF THE NAVY**

Admiral GILDAY. Chairman Reed, Ranking Member Inhofe, distinguished members of the Committee. Good morning and thank you for the opportunity to appear this morning with Secretary del Toro and General Berger.

For nearly eight decades, America's naval superiority, maritime superiority has guaranteed security and prosperity across the world's oceans and has played a unique and predominant role in protecting our Nation's most vital national interests. Maintaining maritime superiority is fundamental to implementing our new National Defense Strategy.

Global competition is heating up, the pace of innovation is accelerating, and the environment our naval forces are operating in every day is growing more transparent, more lethal, and definitely more contested. Everyone in this room is familiar with these trends, particularly China's massive investment in highly capable forces designed to deny our access to the oceans.

Our Navy's role has never been more consequential or more expansive. America needs a combat credible naval force that can protect our interests in peace, and that can prevail in war. Not just today, but tomorrow, and for the long term competition that lies ahead.

Our budget submission for the President's Budget Request for fiscal year 2023 reflects that imperative. It fully funds the *Columbia*-class submarine to ensure continuity for our Nation's most survivable strategic deterrent. It keeps our fleet ready to fight tonight, funding maintenance accounts, filling magazines with ammunition, putting spare parts in storerooms, and giving our sailors the steaming days and the flying hours they need to hone their skills.

It modernizes our fleet by investing in weapons with increased range and speed, integrated systems to improve fleet survivability, and a resilient, cyber secure network infrastructure. It invests in affordable, capable capacity, building towards the goal of a larger, distributed, hybrid fleet in the decade ahead, and taking into account the insights that we are gaining on a monthly basis from our fleet battle problems with the United States Marine Corps, with exercises like Large Scale Exercise 2021, the largest in the world, last summer, and also just a few months ago, the world's largest international unmanned maritime exercise in the Middle East.

These exercises and analysis and many others are helping us to refine our warfighting concepts, experiment with unmanned systems at speed—at the speed of innovation—and grow the fighting power of our Navy-Marine Corps team across all domains. The need to field a ready fleet today, as we are some simultaneously modernizing for the future, has forced us to make difficult decisions, including the decommissioning of platforms that do not bring the needed lethality to a high end fight in contested areas.

While building this capacity at the expense of readiness and modernization can sound like an attractive option, it is not one that I endorse. We have been there before, and we have seen tragic results. I refuse to repeat it again. We cannot field a fleet larger than one we can sustain, and at today's fiscal levels, quantity simply cannot substitute for quality, especially as our adversaries are building advanced warfighting systems.

Failing to modernize to meet those threats would erode America's maritime superiority at a time when command of the seas will decide the global strategic balance and power for the rest of this century. The stakes in this competition are extremely high, which is why U.S. sailors, Active and Reserve, uniformed and civilian are committed to strengthening our naval power every single day.

Thank you again for inviting me to testify, and I am grateful for the Committee's support to our Navy and Marine Corps team. I look forward to answering your questions.

[The prepared statement of Admiral Michael M. Gilday follows:]

PREPARED STATEMENT BY ADMIRAL MICHAEL M. GILDAY

Chairman Reed, Ranking Member Inhofe, distinguished members of the Committee, thank you for the opportunity to testify today on the posture of the United States Navy. Moreover, on behalf of all our sailors, Navy civilians, and their families, thank you for your continued leadership and support. With the funding authorized by Congress these last several years, we increased our readiness, modernized our capabilities, and kept our fleet deployed forward in the most critical regions of strategic competition.

Since the founding of our Republic, the U.S. Navy has played a critical part in defending and advancing national policy by delivering sea power far from American shores. Our Navy's role—and consequently, its composition—has steadily evolved to ensure American security and defend our interests around the world. From our humble beginnings as a small maritime force, fending off pirates and protecting American shipping, we have become a globally postured fleet that underwrites world stability by deterring war, upholding international law, and assuring access to the maritime domain.

Today, our Navy's mission has never been more consequential or expansive. We now face potential adversaries who are attempting to undermine the rules-based international order, aggressively modernizing their militaries, and fielding offensive warfighting capabilities at unprecedented speed and scale.

This is a critical decade. Peaceful, free, and open oceans are vital to America's and our allies' security and prosperity in the 21st century. As global challengers rise, we must strengthen America's naval power to protect and defend our national interests.

THE MARITIME CHALLENGE TO U.S. NATIONAL SECURITY

As a maritime nation, America's maritime superiority is a global imperative. Two expansive oceans connect us to our allies and trading partners. For all of us, our way of life depends upon free, open, and secure maritime areas. Sea control and power projection are essential to U.S. national security and long-term economic health. The People's Republic of China (PRC), our pacing threat, clearly recognizes this and has publically stated that it intends to grow its sphere of influence by challenging the United States' military access to the western Pacific.

Over the past two decades, the PRC has built a comprehensive sea-denial, anti-access system of sophisticated sensors and long-range precision weapons. Backed by a robust industrial base and the largest shipbuilding infrastructure in the world, the PRC has extensively modernized its military and tripled the size of the People's Liberation Army-Navy (PLAN). It is also building next-generation strategic missile submarines, erecting hundreds of new missile silos, and growing its cyber and space capabilities.

Under the cover of this anti-access umbrella, the PRC has embraced the use of "gray zone" activities to turn incremental gains into long-term strategic advantages. Using a multi-layered fleet of naval ships, maritime militia, and coast guard, the PRC is undermining international norms by staking illegal maritime claims, militarizing geographic features in the South and East China Seas, and intimidating its neighbors regarding offshore resources. Additionally, the PRC is extending its global reach with its Belt and Road Initiative—leveraging predatory lending practices, aggressive mercantilism backed, and hard military power—to access critical maritime terrain, ports, and waterways.

Additional threats persist around the globe. Russia remains an acute threat, seeking to fracture NATO and reestablish its sphere of influence using a combination of diplomatic, economic, and military force. Russia's unprovoked invasion of Ukraine has shattered the post-Cold War peace in Europe. The support of like-minded nations for the brave citizens of Ukraine has reminded would-be aggressors of the global intensity of purpose to uphold a nation's inherent right to freedom. As the struggle continues, Russia is risking broader escalation with threats of nuclear attack, deployments of missile-carrying submarines close to American and allied shores, and sophisticated cyber-attacks. North Korea continues to develop both nuclear and missile programs; Iran's missile program is also concerning. All the while, violent extremist organizations remain persistent threats.

Other serious transboundary challenges, including climate change and emerging pathogens, are also increasing the complexity of the security environment. Strategic competitors and non-state actors are gaining access to cutting-edge commercial technologies and wielding them to disrupt America's interests and national security. Artificial intelligence, ubiquitous sensors, and long-range precision weapons are making contested spaces more transparent and more lethal, and these systems are proliferating globally at a rapid pace.

These are several of the many considerations shaping the future strategic environment. When examined together, they illustrate the complexity of 21st century security challenges, particularly in the maritime domain. In a rapidly changing world, a formidable naval force is crucial to effectively implement the 2022 National Defense Strategy (NDS) and protect American security and prosperity. The Nation cannot afford to have its Navy to pull back and cede influence at a time of rising tensions and challenges to freedom of the seas. Nor can it afford our fleet to lose its warfighting advantage.

MEETING THE CHALLENGE

Looking to the future, the U.S. Navy must continue to deploy our fleets forward to meet an unpredictable strategic environment. We must also modernize to field the most capable force possible against evolving threats. America needs a Navy capable of prevailing over any naval adversary to protect and sustain our interests worldwide and deter crises that could lead to war.

Together with the U.S. Marine Corps and Coast Guard, we must deliver integrated all-domain naval power to the Joint Force: delivering the lethal, resilient, sustainable, survivable, agile, and responsive fleet that the NDS requires. Specifically, in support of NDS and Department of Defense requirements:

- The Navy must *defend* the Homeland with an assured nuclear deterrent from beneath the sea to deter all forms of strategic attack.
- The Navy must be capable of controlling the seas to *deter* aggression against our allies and partners, and project power ashore as an integral part of the Joint Force.
- The Navy must be able to distribute and mass effects, integrate with the Joint Force across all domains, and *defeat* adversary forces in conflict.

To prevail in competition, crisis, and conflict, our naval forces must be combat-credible—measured by our ability to deliver lethal effects in contested and persistently surveilled battlespaces. We will deliver these forces by aligning our planning, resources, and investments with national policy end-state objectives:

Strengthening Integrated Deterrence. Integrated deterrence is backstopped by a safe, secure and effect nuclear deterrent. The Navy operates and maintains the most survivable leg of the nation's nuclear triad. Our strategic submarines represent ap-

proximately 70 percent of America's deployed nuclear arsenal. Synchronized with the retirement of *Ohio*-class ballistic missile submarines, we must deliver *Columbia*-class submarines on time, as we continue to modernize our nuclear command, control, and communications systems and supporting infrastructure. These efforts are essential to ensure the United States can deter nuclear coercion or nuclear employment in any scenario.

Deterrence also relies on forward-deployed, combat-credible conventional forces to control the seas and project power. These roles are central to integrated deterrence now and in the future. Employing a host of kinetic and non-kinetic effects launched from platforms on, under, and above the sea, conventional naval forces deploy globally to deter military aggression, support diplomacy, and give national leaders options to protect American interests across the spectrum of conflict. Should conflict arise, the Navy is consistently deployed forward to respond decisively, supporting the Joint Force to end hostilities on favorable U.S. terms.

The Navy also provides the first physical line of U.S. Homeland Defense, preventing potential adversaries from using the oceans to directly threaten America or our allies and partners. No other element of national power can fulfill this role across every domain, from the seabed to space.

Campaigning forward. Naval forces across the globe provide the United States strategic advantages in power projection, diplomacy, influence, and flexibility, without over reliance on access to overseas land bases. Our enduring, forward posture in support of the Joint Force guarantees our Nation the ability to respond to crisis, blunt gray-zone incrementalism, and preserve a stable and secure global maritime order. The Navy's global maneuverability supports diplomacy, reassures our allies, and generates favorable influence in key regions.

Our alliances and partnerships remain our key strategic advantage. They recognize U.S. naval forces as their on-scene partner for building combined maritime strength. Every day, the Navy operates forward alongside allies and partners through combined operations, theater security cooperation, and capacity-building initiatives. These activities strengthen interoperability, increase information sharing, and build capacity for resilient, integrated logistics. Working together—particularly with interoperable, critical-capability allies—we strengthen our ability to prevail in conflict and further bolster integrated deterrence by demonstrating a united front against potential adversaries.

In September of last year, President Biden announced a trilateral security agreement between Australia, the United Kingdom, and the United States (known as AUKUS). The announcement launched an intensive 18-month consultation period among the three governments to seek an optimal pathway for delivering a conventionally-armed, nuclear-powered submarine capability to Australia at the earliest achievable date. The Navy is playing a key leadership role in developing this plan to ensure that our Nation's preeminent expertise is applied to the nuclear-powered submarine initiative. We are focused on ensuring Australia understands the full scope of capabilities necessary to design, build, operate, and maintain a nuclear navy. AUKUS represents a tremendous strategic opportunity for the United States to expand our cooperation and collaboration with two of our closest allies, and we are on pace to respond to the President's tasking.

The Navy is also uniquely equipped to contest gray zone incrementalism by our adversaries. Gray zone aggression thrives with non-attribution. The best way to oppose these activities is to deny our adversaries anonymity with persistent domain awareness, the effective leveraging of intelligence, and the agile application of sea power. Together with whole-of-government partners, the Navy exposes malign behavior, imposes reputational costs, diminishes the effectiveness of propaganda, and galvanizes international resistance.

Building enduring warfighting advantages. Based on the PRC's current and long-term security challenge, the Navy must set a stable and sustainable trajectory to a larger and more capable force now. To ensure we remain adaptable and relevant, our future force design relies on six overarching imperatives to sustain our warfighting advantage, expand our options, and constrain those of our adversaries:

Expand Distance. Long-range precision fires across all domains—and platforms with greater reach—enable naval forces to strike hostile targets while increasing our survivability.

Leverage Deception. Deceptive measures—including stealth, concealment and maneuver, emissions control, and electronic warfare—degrade enemy surveillance and increase adversary uncertainty, enabling naval forces to operate effectively in contested seas.

Harden Defense. Integrating directed energy with hard-kill and soft-kill defensive systems disrupts attacks and keeps naval forces survivable when targeted by adversaries.

Increase *Distribution*. Distributing naval forces geographically and in all domains enables them to threaten an adversary from multiple attack axes. Smaller, lethal, and less costly platforms—including manned, unmanned, and optionally-manned—further complicate threat targeting, generate confusion, and pose dilemmas for our adversaries.

Ensure *Delivery*. Resilient logistics connecting the foundry to the fleet—enabled by secure communications and information technology—refuel, rearm, resupply, repair, and revive distributed naval forces down to the last tactical mile.

Generate *Decision Advantage*. Naval forces will out-sense, out-decide, and out-fight any adversary by accelerating our decision cycles with secure, survivable, and resilient networks, accurate data, and artificial intelligence. Connecting sensors, weapons, and decision-makers across all domains enables naval forces to mass firepower and influence without massing forces.

These six force design imperatives enable Distributed Maritime Operations (DMO), the Navy's foundational operating concept of our team-centric Fleet construct. Today's priority investments are delivering on these imperatives. For example:

- Investments in hypersonic weapons, space-based capabilities, unmanned tanking, and long-range precision fires deliver capabilities for effects at an expanded distance.
- Investments in undersea platforms, weapons, and systems, next-generation aircraft and surface platforms, cyber capabilities, counter-surveillance, and integrated weapons systems deliver increased deception and defense.
- Investments in smaller, lethal platforms, autonomous systems in all domains, artificial intelligence, resilient logistics, and integrated combat systems and networks enable a more distributed fleet, the delivery to sustain it, and expand our decision advantage against peer adversaries.

ACCELERATING AMERICA'S ADVANTAGE AT SEA

The Navy is implementing the 2022 NDS, preparing for the challenges ahead of us, and accelerating America's enduring advantage at sea. Within the scope of the President's Fiscal Year 2023 Budget Request, we are delivering a combat-credible Navy designed to deter conflict and help win our Nation's wars as we maintain a global posture to assure our prosperity. To do this, we remain focused on four priorities: *Readiness, Capabilities, Capacity*, and our *sailors*.

These four priorities are especially relevant because of today's fiscal environment. We face the simultaneous task of recapitalizing our strategic nuclear deterrent, our century-old dry dock facilities, and our strategic sealift capacity. These programs are all critical to our national defense. Meanwhile, Navy manpower, operations, and maintenance costs continue to grow above the rate of inflation. This means we must carefully invest in capabilities and capacity that offer the most significant payoff and warfighting value for strategic competition.

Based on these priorities, I have consistently said that the Navy's size—our capacity—ultimately will be dictated by the budget's top line. We will not field a fleet larger than we can sustain. We also will not grow the Navy at the expense of building the *Columbia*—our top acquisition priority. Nor will we increase capacity by failing to modernize and sacrificing our combat credibility.

The U.S. Navy cannot outpace an increasingly capable PRC by retaining platforms that are decreasingly relevant in modern naval warfare. While some of these platforms may have day-to-day utility in permissive environments, the Navy's first obligation is to deliver a ready, combat-credible fleet with the funding Congress appropriates. Simply maintaining the capabilities of today's fleet will be insufficient to both preserve our long-term interests and protect America. Quantity is not synonymous with quality. We must modernize to maintain our maritime edge.

Therefore, our focus is on delivering capable capacity. America needs a modern strategic deterrent; greater numbers of undersea capabilities; more distributable surface combatants; a host of manned, unmanned, and optionally-manned platforms—under, on, and above the seas; and a resilient logistics enterprise to sustain our distributed naval force. Based on past and ongoing force structure analysis, it is my best military advice that the size of the Navy grows to a 500-ship hybrid fleet by 2045. Integrated with the Joint Force and interoperable with our allies and partners, this all-domain, hybrid fleet will ensure our maritime superiority.

Our Navigation Plan Implementation Framework supports these priorities, implementing lines of effort to deliver measurable outcomes, driving a new Force Design process to improve our agility, and energizing a fleet-wide movement to strengthen our learning culture. Our Navy is addressing the challenges we face with clarity, determination, and urgency. We made significant progress over the past 2 years,

and we are continuing to press forward to deliver the readiness, the capabilities, the platforms, and the people necessary to protect the American people and our interests around the world.

READINESS

To accelerate America's advantage at sea, we must prioritize readiness to keep combat-credible forces forward to deter conflict and protect the free and open system underpinning American security and prosperity. Our competitors are increasing their naval power every day, and their malign behavior and growing presence worldwide places an enormous demand on our forces. Moreover, the Russian invasion of Ukraine and ensuing global instability have provided a stark reminder of why the Navy must be ready to deploy globally in defense of U.S. interests. In fiscal year 2021, the Navy-Marine Corps team executed more than 22,000 steaming days and more than one million flying hours. Because naval forces remain in high demand, President's Fiscal Year 2023 Budget Request emphasizes critical aspects of our readiness.

The Navy continues to make readiness gains with increased shipboard manning, better maintenance performance, increased weapon inventories, more training for our crews, and enhanced spare parts availability. Sustained funding and systematic reforms throughout the fleet have enabled those readiness gains. Despite this momentum, we are not satisfied. Our focus remains on continuous improvement.

Deploying combat-credible forces starts with performing high-quality maintenance on time and in full. To this end, we are using data-driven reforms such as Performance-to-Plan (P2P), the Naval Sustainment System (NSS), and other initiatives to improve maintenance processes, increase operational availability, and save taxpayer dollars. We continue to see positive results with these methods, especially in our aviation community. By leveraging the power of the aviation Maintenance Operations Center (MOC), we sustained a mission-capable rate of 80 percent for our F/A-18E/F Super Hornets across three consecutive fiscal years. Additionally, we have seen five more aircraft types achieve this high mission-capable rate as we have incorporated them into the MOC construct over the last 18 months. With more aircraft available, our aircrews are more ready to dominate the skies than at any point over the last decade.

We continue to take a similar, data-driven approach to improve surface ship maintenance, and we see positive results across the fleet. Since fiscal year 2020, P2P-driven improvements—such as the goal of awarding contracts 120 days before the start of a maintenance availability, level loading ports through better prediction of workload, better availability planning, and improved long-lead-time material acquisition—have generated a 58 percent decrease in days of maintenance delay. President's Fiscal Year 2023 Budget Request prioritizes private sector ship depot maintenance in line with enacted fiscal year 2022 levels to provide industry with a stable and predictable demand signal. The Other Procurement, Navy (OPN) pilot, is seeing positive early results, including more efficient use of contracted ship maintenance throughout the entirety of the fiscal year, improved on-time delivery of long-lead time materials, and reduced impact of growth and new work. We are grateful for the support from Congress in continuing this budgetary authority.

Despite COVID-19, public shipyards have also seen improvements over the last 2 years, with fewer maintenance delay days and increased on-time completion percentages. However, submarine maintenance remains a pressing challenge. We are working hard to reduce submarine idle time at public shipyards by conducting thorough, early material condition assessments to reduce Days of Maintenance Delay and maximize operational availability. Through the Performance to Plan-Shipyard (P2P-SY) and Naval Sustainment System-Shipyard (NSS-SY) efforts, we continue to focus on achieving on-time maintenance availability completion. We are looking for opportunities to balance public and private sector workload and maintain a healthy industrial base for submarine maintenance and new construction. In addition, we are creating a Long Range (15-year) SSN Depot Maintenance Plan to improve workload forecasting in both the public and private sectors for fiscal year 2023 and beyond.

Sustaining our platforms also requires critical investments in our infrastructure ashore. Our worldwide constellation of bases must be capable of sustaining and supporting our fleet at sea, including our public shipyards and aviation depots. The average age of U.S. naval shipyard facilities and related infrastructure is 61 years, while the average dry dock age is approaching 100 years. Our Shipyard Infrastructure Optimization Program (SIOP) provides a strategic roadmap for necessary investments in dry docks, capital equipment, and layout optimization of these vital national assets. President's Fiscal Year 2023 Budget Request prioritizes SIOP, in-

vesting over \$1.7 billion in fiscal year 2023, including funding for three major shipyard projects. Additionally, the Fleet Readiness Centers Infrastructure Modernization and Optimization Plan (FIOP) will ensure our industrial facilities are resilient and optimized to maintain both legacy and next-generation aircraft, and their associated weapon systems.

Our commitment to improving readiness also includes our information forces. We have established a dedicated team to improve our ability to generate and deploy forces for cyberspace operations. We are learning from other highly technical warfighting domains such as aviation and nuclear power to keep pace with cyber-force growth. This effort looks at all aspects of our readiness to include recruiting, training, assignment, and retention. This comprehensive review sets a course for the Navy to meet and sustain United States Cyber Command's demand.

Readiness also extends to the training facilities that generate warfighting advantages. The modernization and expansion of the Fallon Range Training Complex (FRTC) is critical. As the capabilities and ranges of our platforms have grown, our training ranges have not. The FRTC is now far too small to allow carrier-based aircraft to adequately train for high-end conflict with precision-guided weapons, and it is too small for SEALs to conduct mobility maneuver training in a realistic tactical environment. Our sailors need the most realistic training possible if they are going to defeat a strategic competitor. FRTC modernization will ensure that future generations of warfighters remain the most effective in the world. We understand the challenges associated with this project, and we are deeply committed to listening and working with every stakeholder towards a mutually acceptable modernization plan.

CAPABILITIES

To accelerate America's advantage at sea, we must modernize our capabilities to credibly deter war and, if necessary, win in conflict. Disruptive technologies are changing the potential applications and impacts of military activities from the seafloor to space. Artificial intelligence, machine learning, autonomy, quantum computing, and new communications technology are transforming the character of future warfare. Modern naval warfare demands integrated systems, resilient kill chains, better terminal defense, and a robust logistical footprint to support a more distributed force. Transitioning to these capabilities will increase our deterrence posture by expanding our ability to distribute our forces and mass effects.

As we build and put to sea a force able to deter and, if necessary, defeat a strategic competitor, we must prioritize capabilities that support Distributed Maritime Operations, or DMO—our previously mentioned foundational operating concept. Kinetic and non-kinetic effects must be distributed geographically—on, under, and above the seas—as well as in the information environment, the cyber domain, the electromagnetic spectrum, and in space. To operate effectively, platforms, sensors, and weapons must all operate and work together as one cohesive, integrated team. The teams are centered on our Numbered Fleet construct—our cross-domain contribution to the Joint Force. The Navy must empower these teams through secure, survivable, resilient, and common networks. Project Overmatch will deliver the Naval Operational Architecture (NOA), the Navy's contribution to Joint All-Domain Command and Control (JADC2) making major improvements in both resilience and capability to plan, coordinate and execute missions as a critical member of the Joint Force. President's Fiscal Year 2023 Budget Request includes \$195 million in fiscal year 2023 and \$898 million across the Future Years Defense Program for core activities of Project Overmatch, which is an increase of \$122 million in fiscal year 2023. This increase represents a deliberate and executable investment to accelerate the delivery of NOA Increment 1 to carrier strike groups by next year.

Strategic competitors are continuing to develop sophisticated intelligence, surveillance, and reconnaissance capabilities that complicate our operations globally. Our President's Fiscal Year 2023 Budget Request investments accelerate and enhance core Counter-Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, Reconnaissance, and Targeting (C-C5ISR) activities that generate warfighting advantage by degrading adversaries' understanding of the operational environment. In support of both offensive and defensive DMO, these investments integrate three Counter C5ISR&T tenets required to sustain operations in a contested environment with acceptable risk: (1) understand the risk of detection posed by adversary capabilities; (2) orchestrate actions to reduce naval units' targetability; (3) synchronize delivery of kinetic and non-kinetic effects.

As an example, to pace the growing air and missile defense threat set, the Navy developed and approved a strategy over the past budget cycle to deliver enhanced radar sensitivity and electronic warfare capabilities to our DDG Flt IIA ships. This

strategy is called DDG Mod “2.0” and includes the back-fit installation of the Shipboard Electronic Warfare Improvement Plan (SEWIP) Block 3, adding enhanced capabilities to current SEWIP Block 2; a 24 Radar Module Assembly SPY-6 radar to replace SPY-1; and Aegis Baseline 10.

President’s Budget 2023 also includes investments in developing and demonstrating conventional sea-based hypersonic strike weapon systems. The Navy Conventional Prompt Strike (CPS) Program Office and Army Hypersonic Project Office are using a common missile design and joint test opportunities to field non-nuclear hypersonic weapon systems. In 2021, we conducted two First Stage and one Second Stage Solid Rocket Motor static fires, marking the first successful tests of the newly developed missile. The CPS Program also completed an eight-shot Solid Slug Launch Test Campaign, which provided initial validation of the cold-gas launch approach for use on Navy platforms. Stable funding at the requested level will keep this critical capability on track to field on *Zumwalt*-class DDGs followed by *Virginia*-class SSNs equipped with the Block V *Virginia* Payload Module.

We are incorporating other long-range, highly capable weapons into our magazines to improve lethality across domains. President’s Fiscal Year 2023 Budget Request sustains the production of the Blk-I/IA SM-6 and the modernized Blk-V Tomahawk Missile, and it funds the transition of the Maritime Strike Tomahawk to a Program of Record. Additionally, we are arming our submarines with better MK-48 Heavyweight Torpedoes and pursuing more advanced variants. We are also improving the effectiveness of our fighter aircraft, extending their all-domain reach with the Advanced Anti-radiation Guided Missile, AIM-120 Advanced Medium-Range Air-to-Air Missile, and Long-Range Anti-Ship Missile. Altogether, the weapons procurement in President’s Fiscal Year 2023 Budget Request is our best capability insurance against near-term threat escalation while keeping us postured for the future.

In parallel, we are maturing multiple directed energy projects to improve overall fleet survivability in contested environments. We have successfully deployed three directed energy weapons systems in the 7th and 5th Fleets to support Counter-ISR and Counter-Unmanned Aerial Vehicle missions. To reach our goal of “bottomless” magazines, we will need continued advancements and investments in directed energy, scaling and platforms with enough space, weight, power, and cooling (SWAP-C). President’s Fiscal Year 2023 Budget Request funds \$262 million across the Future Years Defense Program to install the eighth Optical Dazzling Interdictor and provides continued funding for Solid State Laser-Technology Maturation, High Energy Laser with Integrated Optical dazzler and Surveillance (HELIOS), and the High Energy Laser Counter Anti-Ship Cruise Missile Project (HELCAP). Our future Navy surface combatants, such as FFG-62 and DDG(X), include SWAP-C reservations to accommodate such systems. We are taking a truly holistic view of this emerging portfolio to carefully incorporate directed energy into the fleet in an evolutionary way.

CAPACITY

To accelerate America’s advantage at sea, the Navy will build a combat-credible, hybrid fleet, bolstered by mature, cost-effective unmanned technologies and operational concepts. A new platform can take up to a decade to go through the planning process, receive authorization from Congress, and complete construction before joining the fleet. To keep up with the accelerating pace of innovation, the Navy must build future platforms with modernization in mind—hardware upgradeable and software updateable at the speed of innovation.

Our number one acquisition priority remains the on-time delivery of the *Columbia*-class ballistic missile submarine, which constitutes our Nation’s most secure and reliable strategic nuclear deterrent. Together with the Trident II D5LE2 Strategic Weapons System (SWS), *Columbia* will ensure the effectiveness and availability of the Nation’s Sea-Based Strategic Deterrent through the 2080s. With the *Ohio*-class submarines nearing the end of their service life, there is no further margin for delays in this once-in-a-generation program without impacting U.S. Strategic Command requirements. *Columbia* must be on patrol no later than October 2030. The first submarine began construction last year, with the second boat on track for procurement next fiscal year. We will continue to advocate for aggressive construction schedules and incorporate “lead ship learning” to guarantee on-time delivery of the entire class to ensure this national asset’s capability in the decades ahead. *Columbia* will continue to grow substantially as a proportion of the total shipbuilding budget beginning in fiscal year 2026, exceeding 25 percent when *Columbia* enters full-rate production.

Sea control and sea denial from beneath the waves are among our Navy's core advantages, and we refuse to yield any ground to the competition. President's Fiscal Year 2023 Budget Request underscores our sustained support for procuring two *Virginia*-class submarines per year, and it invests in developing a follow-on attack submarine program, SSN(X), which will be key to sustaining our undersea advantage—setting the conditions for the warfighting advantage of our fleet.

Unmanned systems will play a key role in DMO. We released the Unmanned Campaign Framework in March 2021 to serve as the comprehensive strategy for a future wherein unmanned systems serve as an integral part of the Navy's warfighting team. U.S. 3rd Fleet executed Unmanned Integrated Battle Problem 2021 to integrate manned and unmanned capabilities in operational scenarios. To further operationalize the Campaign Plan, we established Task Force 59 (CTF-59) to accelerate unmanned and AI solutions, demonstrating the importance of warfighters and industry partners in operational experimentation with available technologies. We intend to scale these lessons to 7th Fleet. We also continued work with partners and allies in events such as NATO Maritime Unmanned Systems Initiative Exercises and International Maritime Exercise 2022.

We completed MQ-25A "T1" aircraft in-flight refueling of Navy carrier-based aircraft and its first carrier demonstration and completed over 4000 hours and 46,000 nautical miles of USV operations. Additionally, we recently established the Unmanned Task Force, a cross-functional team focusing on rapid experimentation and solving operational problems to quickly inform acquisition strategies. The focus remains on enabling technologies to provide near-term capability, take an evolutionary approach, and lay the foundation for the future hybrid fleet.

This year, we celebrated the centennial of our aircraft carriers. They have proven to be the most survivable and versatile airfields in the world, and our nuclear-powered carriers will remain a cornerstone of the Navy's conventional deterrence for decades to come. USS *Gerald R. Ford* (CVN 78) achieved Initial Operating Capability in December 2021, completed flight deck certification, and is scheduled to deploy later this year. President's Fiscal Year 2023 Budget Request supports procuring our follow-on aircraft carriers. CVN 79 construction is 85 percent complete and on track to deliver in fiscal year 2024; CVN 80 construction is 12 percent complete and scheduled to deliver in fiscal year 2028.

The sustained striking power and adaptability of our Carrier Air Wing is vital to controlling the seas and projecting power in contested environments. Today's air wings are more capable than ever with the addition of the F-35C, the E-2D Advanced Hawkeye, and the CMV-22B Osprey. Carrier Air Wing TWO recently completed a deployment with these capabilities, showcasing the cutting-edge lethality of naval airpower. President's Fiscal Year 2023 Budget Request adds to our F-35 inventory to expand our fourth- and fifth-generation fighter mix, and it funds the unmanned MQ-25 Stingray, on track to deploy in 2026, which greatly extends the reach of our Carrier Air Wings into contested battlespaces.

We are also laying the groundwork for tomorrow's air wing through the Next Generation Air Dominance portfolio. This highly networked sixth-generation family of systems will leverage manned-unmanned teaming to further advance the cross-domain lethality of our air wings in contested battlespaces. Delivering this capability is vital to outpace PRC fighter development.

Our future fleet design places emphasis on a balance of greater numbers of large and small surface combatants as the foundation of distributed operations. Our newest class, the *Constellation*-class frigate, is a versatile, multi-mission platform that will support operations across the spectrum of conflict. The future large surface combatant, DDG(X), will bring additional space, weight, and power to support evolving capabilities for a high-end fight. Together, these two ship classes will form the center of our cross-domain teams, bringing more lethality, survivability, and endurance to the fleet.

The Naval logistics enterprise continues to become increasingly agile and resilient to deliver the means to refuel, rearm, resupply, repair, and revive distributed forces, ensuring the Joint Force stays combat credible against any adversary. Over the past 2 years, we have improved our afloat fuel distribution systems, introduced more secure digital systems for better logistics planning and execution, and validated our Future Afloat Logistics Forces Initial Capabilities Document, which defines the capabilities and capacities needed to sustain naval forces. Adequate capacity is a continuing challenge and President's Fiscal Year 2023 Budget Request pursues several platform solutions to close the gaps we have identified, including the continued construction of the John Lewis (T-AO 205) Class Fleet Replenishment Oiler Program, the Submarine Tender AS(X), and continued research and development to support the Next Generation Logistics Ship. Additionally, we are continuing to leverage the generous authorities Congress has provided us to renew our surge sealift capacity

with used vessels, helping us meet combatant commander readiness requirements. We are grateful for this Committee's support.

SAILORS

To accelerate America's advantage at sea, we must invest in trained, resilient, and educated sailors who can adapt faster than our adversaries in today's rapidly changing strategic environment. Our sailors and civilians remain the true source of our naval power. We must continue to prioritize and care for them. From culture to training and education, to overall health and wellness, President's Fiscal Year 2023 Budget Request supports the most important element of our Navy—our people.

History shows that the navy which adapts, learns, and improves the fastest gains an enduring warfighting advantage. The essential element in doing so is fostering a healthy ecosystem—a culture—that assesses, corrects, solves problems, and learns faster than the opposition. Our “Get Real, Get Better” movement will help us reduce the variability in performance between our best and worst performers. Get Real, Get Better will train and educate our leaders on the leadership behaviors required to create this culture, along with the supporting tools to solve our hardest problems. Focusing on our people, and their leaders, will further expand the asymmetric advantage that is the American Sailor.

Through the Ready Relevant Learning (RRL) initiative, we are providing sailors with practical, accessible knowledge and skills that can adapt to the needs of the Navy. Today, RRL provides timely, relevant training using an agile, multi-path approach to ensure our operators have the knowledge they need on the deck plates to succeed in combat. RRL supplements our traditional brick-and-mortar schoolhouses with modern, multi-media, multi-platform solutions. Recently, we transitioned 8 enlisted ratings to this model and completed requirements development for 39 additional ratings. With the funds provided by President's Fiscal Year 2023 Budget Request, the Navy will advance the Career Long Learning Continuum effort, which is critical to the program goal of maintaining continuity and currency of individual training.

The Navy has prioritized the Fleet Training Wholeness initiative to integrate live platforms and simulators across our strike groups. This initiative funds Live, Virtual, Constructive (LVC) unit and strike group training. In the fleet, LVC continues to be a game-changer in training our combat leaders. From the pilot in the cockpit to the technician on the radar scope, LVC allows all domains to train together at unprecedented levels of integration and complexity. President's Fiscal Year 2023 Budget Request builds upon the continued integration of live ranges, ships at sea, and aviation shore simulators, and includes funding to integrate aircraft and information warfare systems and capabilities into LVC training. These investments are advancing our sailors' tactical skills and proficiency against our most advanced competitors.

Building upon the momentum of the Navy's Culture of Excellence campaign, we will implement a holistic and prevention-based Total Sailor Fitness framework. This effort will maximize sailor, unit, and organizational performance while improving sailor trust, resilience, mental health, connectedness, and behavioral metrics. Our Warrior Toughness program enables better performance before, during, and after critical events, providing concepts and skills to develop peak performance and make sailors more resilient and ready for the Fleet. We integrate these programs into the curricula of the Recruit Training Command, Officer Training Command, United States Naval Academy, and our NROTC units. As we drive forward with this Culture of Excellence, the Navy seeks to put the most combat-credible sailors to sea—first-rate warriors who are willing and able to defend our Nation.

In addition, suicide prevention, Sexual Assault Prevention and Response (SAPR), and Diversity, Equity and Inclusion remain pillars on which the Culture of Excellence will continue to build. As part of our suicide prevention efforts, the Sailor Assistance and Intercept for Life Program provides rapid assistance, ongoing risk management, coordination of care, and reintegration assistance for at-risk servicemembers. Continued resourcing of this program saves lives. A full continuum of mental health and wellness support is also available worldwide, including at specialty and primary care clinics, Navy installation counseling centers, on the waterfront, embedded within the Fleet, and via virtual health platforms. Non-medical mental health services are available for sailors and their family members through Fleet and Family Support Centers, Military and Family Life Counseling, and Military OneSource. Navy Chaplains provide confidential counseling and are essential in ensuring the spiritual readiness and resiliency of the Naval Force. There is “no wrong door” for our sailors to get help.

The Navy is leveraging metric-based, sexual assault data to better understand sexual assault risk factors. This strengthens our SAPR programs with research-informed approaches to prevention programs and policies. We are also implementing recommendations from the Independent Review Commission on Sexual Assault in the Military, using a deliberate, methodical approach to improve accountability, prevention, climate, culture, and victim care and support. These include addressing gaps in leader training to develop inclusive cultures that foster healthy command climates, providing sexual harassment victims with SAPR victim advocacy services, completing a SAPR Workforce Study to ensure unfettered support to sexual assault victims that phases out non-deployable collateral duty victim response personnel, and the phased hiring and integration of a primary prevention workforce.

The Navy is building a force that looks like the Nation we serve. We benefit from our sailors' talent, experience, and insights. Today, the Navy is more demographically diverse than ever before. As we strive to become a more diverse, equitable, and inclusive force, we have built on lessons learned from our findings in Task Force One Navy, implementing 36 task force recommendations, with 18 more in progress. We must actively include all perspectives to harness the creative power of diversity, accelerating the Navy's warfighting advantage.

To support our sailors, increase productivity, and generate cost efficiencies, the Navy is modernizing its Manpower, Personnel, Training, and Education Enterprise. Our Human Resources (HR) processes and operations have not fundamentally evolved in over 70 years. For too long, we have been managing our force with over 55 aging information technology systems, some of which are over 40 years old. These systems are not interoperable and do not provide a single authoritative data source. MyNavy HR Transformation is fixing this. We continue to make strides towards our Navy Personnel and Pay system rollout, which is an important foundational step for the overall transformation. By synchronizing and streamlining all aspects of personnel readiness, this overhaul will improve the lives of all sailors and their families.

The Navy is a family, and our families serve along with us. Having witnessed the steadfast resilience of Navy families every day of my career, I have made it a daily practice to think about how to improve their lives. As all servicemembers know, when we take care of them, they take care of us.

CONCLUSION

The U.S. Navy's mission has never been more essential for the preservation of American security and prosperity. Facing increasingly aggressive challengers, the Navy's priorities—Readiness, Capabilities, Capacity, and our sailors—will help us maintain our combat credibility in contested seas.

We will need Congress's continued support. Since 2010, the Navy's buying power has not kept pace with inflation. "Must pay" once-in-a-generation strategic deterrence recapitalization and once-in-a-century shipyard infrastructure investments—along with rising readiness, labor, and material costs—are consuming larger shares of the Navy's budget. This loss in buying power has delayed modernization, reduced procurement, and constrained our ability to grow the force. To simultaneously modernize and build the capacity of our fleet, the Navy would need sustained budget growth at three-to-five percent above actual inflation. Short of that, we will prioritize capability over capacity. This will decrease the size of the fleet until we can deploy smaller, more cost-effective, and more autonomous force packages at scale.

The investments we make this decade will determine the maritime balance of power for the rest of this century. Ships, submarines, and aircraft are undoubtedly expensive instruments of national power, as are the associated costs of maintaining them at a high level of readiness. But history shows that without a powerful Navy, the price tag is much higher.

On behalf of more than 600,000 Active and Reserve sailors and Navy civilians, thank you for allowing me to testify today. I am grateful to this Committee and to your colleagues in Congress for your steadfast commitment to the Navy. We look forward to sailing alongside you to sustain our advantage at sea.

Chairman REED. Thank you, Admiral Gilday. General Berger, please.

**STATEMENT OF GENERAL DAVID H. BERGER, COMMANDANT
OF THE MARINE CORPS, DEPARTMENT OF THE NAVY**

General BERGER. Chairman Reed, Ranking Member Inhofe, and distinguished members of the Committee, as we sit here this morning in a backdrop of a war raging in Ukraine and the malign activities that are ongoing in the Indo-Pacific, it is a good reminder for me that we don't have the luxury of building a Joint Force for one threat, for one region, for one form of warfare. We have to be prepared for the full range of operations, in places we might not expect, and probably on timelines we didn't anticipate.

That is why your Marine Corps' ability to respond to crisis in any clime and place is essential to our national security. Three years ago, as the chairman and ranking mentioned, we embarked on an ambitious program of modernization in an effort to ensure that your Marine Corps could continue to meet its statutory role as America's force in readiness. With the bipartisan support of the members of this Committee, that modernization effort is on track and is building momentum.

Over the past 3 years, your Marine Corps has self-funded \$17 billion worth of modernization. Today, I would like to offer you an update in three areas where we have seen significant progress over the past 12 months. First, over the last 18 months, out in Twentynine Palms, California, which is our live fire maneuver training site, we have conducted nine force-on-force exercises over the past year and a half. Here is what we have learned, and these lessons—these learned lessons have really validated what we thought from the beginning.

Basically, that smaller, more mobile, more distributed units, if they can employ 21st century combined arms and they have organic Intelligence, Surveillance and Reconnaissance (ISR) and they have loitering munitions, they are more lethal than larger units that employ traditional sorts of force structures and traditional concepts.

That is entirely consistent so far with what we have seen in Ukraine. In less than 2 years, we formalized a concept for Stand-In Forces and we built a capability that has dramatically expanded what we can achieve in support of both land and maritime operations. One of those Stand-In Forces is now forward deployed in Europe. As the U.S. European Command (EUCOM) Commander recently testified here in D.C., his words, that force is precious for effective deterrence.

Second, we have achieved some important operational milestones. This year, we are going to deploy the Amphibious Combat Vehicle (ACV) for the first time aboard ship on a Marine Expeditionary Unit. We will retire the Amphibious Assault Vehicle (AAV), the aging AAV, ahead of schedule. We are doing that because of the support of this Committee. This year marked the first deployment of an F-35B squadron aboard an allied carrier, the first deployment of an F-35C squadron aboard a Navy carrier, U.S. Navy carrier.

In fact, some of you all probably heard the brief from VMFA-211 aboard the HMS *Queen Elizabeth*. That was, in our opinion, a significant advancement in not just interoperability, but interchangeability with both United Kingdom jets and Marine Corps United

States jets WF-35s, on board the *Queen Elizabeth*. That is how you commit to allies and partners.

The Marine Expeditionary Unit, the MEU, enabled by amphibious ships, is the crown jewel of our naval expeditionary forces. No naval vessel in our inventory is capable of supporting a wider set of missions than the amphibious warship. Secretary Del Toro, the Chief of Naval Operations (CNO), and I all agree that the minimum number of L-class traditional warships, amphibious warships the U.S. needs is 31, and your support for sustaining that minimum capacity is essential to national security.

Finally, this past year, we published a plan to modernize our personnel system. That will allow us to better recruit, train, align the skills of individual marines, retain them, match them with the needs of the Marine Corps. All that said, what the Marine Corps does for this Nation will not change.

We remain America's force in readiness. We are capable of a diverse set of missions across the operational spectrum. But how we accomplish those missions is changing, and your support is critical to our collective success.

In closing, would just like to offer to Ranking Member Inhofe our sincere gratitude for the three of us for your 50 years of public service. Army veteran, State Legislator, Mayor, U.S. Representative, Senator, just on behalf of the sailors and marines and all of us here at this table, thank you, sir, for your years of service.

With that, I look forward to your questions.

[The prepared statement of General Berger follows:]

PREPARED STATEMENT BY GENERAL DAVID H. BERGER

INTRODUCTION

Chair, Ranking Member, and distinguished Members of the Committee, thank you for the opportunity to present this annual report and share my perspective on the opportunities and challenges confronting your Marine Corps, the naval services, and the larger joint force. As recent events in Ukraine so clearly illustrate, our strategic adversaries and competitors are ready and willing to employ violence—at scale—to support their revisionist aims. They are willing to sow chaos, destroy cities, inflict mass casualties, and suffer casualties themselves to rewrite the international order—an order that has broadly and deeply benefitted humanity. To ensure the joint force remains able to deter, and if necessary, defeat these adversaries, we need to move at even greater speed to modernize the force.

As Commandant, I offer the Service's sincere thanks for the Committee's support to our modernization efforts—anchored on Force Design 2030 and Talent Management 2030. Today, I respectfully ask you to recommit to our modernization program. Embracing change before a catastrophic event occurs takes both courage and foresight; thank you for demonstrating both. As I have stated in the past, the Marine Corps does not seek any additional resources for modernization. Rather, we seek your oversight and assistance in ensuring that the resources the Service generates through divestments, reorganization, and redesign are reinvested in our Corps' modernization priorities.

As I have previously testified, the suggestion that we have to choose between preparing to fight tonight, which we are ready to do, or preparing for some distant point in the future presents a false dichotomy. We must balance the very real and delicate resource tension between the force we employ today and the development of the force needed for the future. Our Nation can no longer afford to hold on to capabilities that do not create a relative advantage over our potential adversaries at the expense of capabilities that will keep us ahead of them—no matter how culturally significant or nostalgic to an individual service those capabilities may be.

WE WILL REMAIN “MOST READY WHEN THE NATION IS LEAST READY”

When defense leaders submitted their posture statements last spring, few of us would have predicted that a major conventional war in Europe—the largest since 1945—was only a year away. Russia’s brutal invasion of Ukraine is a stark reminder that despite our best efforts, we can never know with certainty when, where, or how an adversary might precipitate conflict. Reflecting on this challenge in a related context, former Secretary of Defense Robert Gates said: “When it comes to predicting the nature and location of our next military engagements, since Vietnam, our record has been perfect. We have never once gotten it right, from the Mayaguez to Grenada, Panama, Somalia, the Balkans, Haiti, Kuwait, Iraq, and more—we had no idea a year before any of these missions that we would be so engaged.”

Why does this matter? From the perspective of a service chief, it matters because we don’t have the luxury of building a joint force for one threat, one region, or one form of warfare. We must be prepared for the full range of operations in places we might not expect, and on timelines we did not anticipate. While this is true to some degree for all the services, it is especially so for the United States Marine Corps. Our history is footnoted by examples of our readiness to respond to crisis at a moment’s notice in “any clime and place.” This is essential to our identity as marines, and part of our enduring value to the Nation. In these times of increasing complexity and uncertainty, the Nation needs one force, maintained at the highest levels of readiness that can respond to the crises that few saw coming. We are that force. Maintaining the entire joint force at heightened readiness levels is both unnecessary and unaffordable. Ensuring that the marine Corps does is both strategically vital and fiscally prudent. As marines, we have been, and will continue to be, “America’s 911 Force”—the Nation’s force-in-readiness.

Our ongoing efforts to modernize through Force Design 2030 (FD 2030) and Talent Management 2030 (TM 2030) will ensure the Marine Corps’ ability to meet our statutory role and be ready to respond to crises—across the Range of Military Operations—from active campaigning to conflict. While China, as the pacing threat, is critical to informing our force development efforts, the capabilities we seek are theater agnostic. The fact is, our current modernization efforts will enable us to operate, fight, and win in a more diverse set of scenarios and geographic regions than we can today. We are, and will remain, “most ready when the Nation is least ready”—a force in readiness prepared to respond to any crisis, anywhere, at any time.

POSTURE

Today, approximately 30,000 marines are forward-deployed or forward-stationed, with hundreds more on watch at our embassies across the globe. However, in contrast to earlier periods, fewer of these forward deployed marines are afloat in service to the Fleet. I remain committed to a robust forward posture to support campaigning and to expanding this forward presence through the employment of additional marines aboard L-Class ships, Light Amphibious Warships, and other expeditionary vessels operated by the Fleet or our allies and partners.

L-CLASS SHIPS & LIGHT AMPHIBIOUS WARSHIPS (LAW)

L-Class Ships. For decades, the Navy and Marine Corps have demonstrated the power and versatility of marine expeditionary forces embarked on amphibious ships. Operating as a combined arms team, marines have come “from the sea” to support all manner of operations, to include: projecting combat power ashore, providing humanitarian assistance/disaster relief (HA/DR), reinforcing U.S. embassies, training allies and partners, and executing non-combatant evacuation operations (NEO). No naval vessel in our inventory is capable of supporting a more diverse set of missions across the range of military operations than amphibious ships.

Amphibious ships provide platforms from which to base and employ a host of multi-domain capabilities—air, ground, surface, undersea, and cyber. Amphibious ships serve as mobile command posts, strike platforms, expeditionary maintenance facilities, search-and-rescue platforms, floating hospitals, sources of potable water and electricity for disaster response, transport and docking stations for smaller vessels, and locations where marines can train with international partners without the requirement for host nation access. In the near future, amphibious ships with well decks will increasingly be used as mother ships for uncrewed vessels, carrying a wide variety of unmanned surface vessels (USVs) and unmanned underwater vehicles (UUVs) for intelligence, surveillance, and reconnaissance (ISR), anti-submarine and anti-surface warfare, mining, command and control, and military deception. Amphibious ships are also visible signs of U.S. reach and resolve, and because of

their unique characteristics, can deploy to a region with a less escalatory posture than many traditional warships. Those unique characteristics include an ability to self-sustain embarked forces for weeks at sea without replenishment. Such resilience and persistence are a unique and vital capability for our combatant commanders.

Viewed through the lens of both the 2018 and 2022 National Defense Strategies, big deck amphibious ships (LHA/LHD), which carry F-35Bs, MV-22s, CH-53s, unmanned aerial systems (UAS), and surface landing craft, are arguably the most versatile warships in our inventory. These ships, when paired with their embarked marines, have the highest utility across the entire spectrum of conflict from building partner capacity to humanitarian assistance and disaster relief, to embassy reinforcement, to recovery operations, to strikes and raids against a peer or near peer adversary. This is the very epitome of campaigning forward from mobile sovereign platforms.

During his March 2022 testimony before the House Armed Services Committee (HASC), the Commander of United States European Command (USEUCOM), General Tod Wolters, noted that his requirement for a 365-day Marine Expeditionary Unit (MEU) presence could not be met due to the limitations of the current amphibious fleet inventory, and further characterized the MEU as “precious for effective deterrence.” A week later, Secretary Austin noted in his HASC testimony that, “Amphibs are important to us today. They will be important to us going forward.” I wholeheartedly agree with the conclusions of both leaders, as requested in the fiscal year 2023 Budget. Our MEUs need them; our Fleets need them; and our combatant commanders need them. The National Defense Strategy cannot succeed without them.

Light Amphibious Warship (LAW). Distinct, yet complementary to traditional L-Class amphibious ships, the LAW is envisioned to be a small, amphibious warship purpose-built to provide tactical maneuver for Marine Littoral Regiments (MLRs), forward-deployed naval forces, and other expeditionary advanced base-enabling forces operating within contested environments. The LAW will be a maneuver asset, and as a shore-to-shore connector, is unique and critical to expeditionary littoral mobility. It will facilitate campaigning and will be capable of supporting diverse missions such as security cooperation, HA/DR, logistics support, and the launch and recovery of uncrewed systems for maritime domain awareness. While not optimized for any one threat or region, we envision the LAW as being of particular utility in the sort of maritime gray zone contests we see in the Indo-Pacific. This type of vessel would be well-suited as a platform for marines countering threats posed by groups like the People’s Armed Forces Maritime Militia (PAFMM), and because of its size and characteristics, could be employed with lower risk of escalation. The LAW will be an important asset to advancing our strategic interests by allowing us to more effectively counter our adversaries’ strategies, support and reinforce alliances and partnerships, and do so at a relatively low cost.

On 9 September 2021, the Secretary of the Navy commissioned the Amphibious Fleet Requirement Study (AFRS). The study directed a determination of the “required size and composition of the future amphibious warship fleet . . . needed to support combat operations, global presence, and safe and effective training.” The study found we should have a mix of traditional L-Class Amphibious Warfare Ships and Light Amphibious Warships. The study will be one of many factors considered by the Secretary of the Navy, the Secretary of Defense and the Administration as shipbuilding plans and future budget requests are formulated. In my military judgment we will need to employ a mixed fleet of no less than 31 traditional L-Class Amphibious Warfare Ships and 18–36 Light Amphibious Warships to enable us to carry out the NDS.

NAVAL EXPEDITIONARY CRISIS RESPONSE FORCES AND CAMPAIGNING

While the traditional role of crisis response forces in disaster relief operations, such as those executed by the Expeditionary Strike Group centered on the USS *Bonhomme Richard* during Operation Unified Assistance or via the USS *Essex* during Operation Tomodachi, is well-documented and well-understood, these operations are not always perceived as ones that create relative advantage in strategic competition and campaigning. They do. Our response to humanitarian crises and other natural disasters using expeditionary forces—quickly and decisively—demonstrates to our allies and partners that they are never alone when partnered with the U.S. Further, our ability to execute HA/DR operations from amphibious shipping—without a large logistical footprint ashore in support of U.S. forces—maximizes our flexibility and capability to respond while preserving resources best used for relief. In the strategic sense, the significance of this amphibious-based capability and its impact

should not be underestimated. While our ability to “be there first” on the scene of a natural or man-made disaster is, of course, critical to the preservation of life, it is also a strategic imperative, affecting our bilateral relationships and matters like access and overflight, as well as our international standing. This is true in every region, but today is most pronounced in the Indo-Pacific, where China aims to expand its regional influence through its own amphibious crisis response capabilities.

At the same time, it is important to recognize the criticality of campaigning with our allies and partners—in their regions—on a daily basis. Naval expeditionary forces operating forward and persistently provide combatant commanders with a sort of “escalation rheostat,” prepared to respond to crises—or prevent them—by employing capabilities that are credible across the range of military operations. Both our presence and the credibility of our forces reassure allies and partners.

MARINE ROTATIONAL FORCE—DARWIN (MRF-D)

In 2011, we established the Marine Rotational Force—Darwin (MRF-D) in the Northern Territory in partnership with the Australian government. Our rotational presence has grown from a company-sized element with limited capabilities to a MEU-sized Marine Air-Ground Task Force (MAGTF). Through our recurring presence, we have achieved a high level of mutual confidence and interoperability with the Australian Defence Force, to the point where marines routinely operate from Australian amphibious ships. The training areas in the Northern Territory and other regions of Australia are some of the best in the world, and certainly the region, affording marines an opportunity for high-end training alongside one of our closest allies. Additionally, our rotational presence in Australia has enabled marine forces to engage and train with a range of international allies and partners in ways we did not predict when MRF-D was first established.

VMFA 211 DEPLOYMENT ABOARD HMS *QUEEN ELIZABETH*

From April to December 2021, ten F-35Bs from Marine Corps Fighter Attack Squadron 211 (VMFA 211) deployed aboard the United Kingdom’s aircraft carrier HMS *Queen Elizabeth*. This historic deployment—the first in which a marine squadron completed a deployment aboard an allied vessel—represents the culmination of 10 years of focused bilateral cooperation and demonstrates how far we have progressed in building United States-United Kingdom interoperability. Together with the U.K.’s embarked F-35B squadron, VMFA 211 completed nearly 1300 sorties, flew in excess of 2200 hours, and executed 44 combat missions in support of *Operation Inherent Resolve*. The deployment also marked the first time an F-35B cross-decked from a foreign vessel to a U.S. vessel (USS *America*) to refuel and arm before a strike. During its approximately seven month deployment, which spanned three U.S. geographic combatant commands’ areas of responsibility, VMFA 211 conducted exercises with 10 partner nations and flew from the flight decks of three allied ships: Japan’s JS *Izumo*, Italy’s ITS *Cavour*, and the HMS *Queen Elizabeth*. Finally, VMFA 211 was our first F-35B squadron to deploy as a 10-jet squadron in accordance with our FD 2030 goals and as outlined in my 2019 planning guidance.

FORCE DESIGN 2030 AND STAND-IN FORCES

As we further refined Force Design 2030 through wargaming, experimentation, and analysis, it became apparent that we required new thinking to address anti-access/area denial (A2/AD) strategies, that our Marine Expeditionary Forces (MEF) needed additional operational flexibility, and that marines operating with our MEUs and MLRs could be a substantial part of the solution. This new approach is reflected in *A Concept for Stand-In Forces*, which describes how forward-postured forces, operating in contested areas, and capable of transitioning rapidly from campaigning, to crisis, to conflict, and back again, can create strategic advantage for the joint force.

Stand-in Forces (SIF) are small, lethal, low signature, mobile forces that are relatively simple to maintain and sustain, and designed to operate across the competition continuum within a contested area as the leading edge of a maritime defense-in-depth. The enduring function of SIF is to help the fleet and joint force win the reconnaissance and counter-reconnaissance battle at every point on the competition continuum. That means SIF monitor a potential adversary’s activity and track its forces and sensors at a level that facilitates targeting by the fleet or joint force. Below the threshold of conflict, SIF’s tracking of adversary actions can help expose its malign behavior, which can contribute to deterrence. If armed conflict does erupt, SIF will have already gained and maintained contact with opposing forces in a posture that provides relative positional advantage, enabling the fleet and joint force to attack effectively first, seizing the initiative.

Winning the counter-reconnaissance fight means SIF make themselves difficult to find by maintaining a low signature, moving frequently and unpredictably, and using deception to impose costs on potential adversaries, forcing them to expend limited ISR resources. In the context of a naval campaign, it also means that SIF will help screen for the fleet and joint force, protecting it and increasing the fleet commander's freedom of action.

Beyond reconnaissance and counter-reconnaissance, SIF possess lethal capabilities for warfare at, on, below, or from the sea. For example, SIF can contest a chokepoint, sanitize a strait, or deny a specific area, presenting a surface behind which the fleet can maneuver. Area denial could also serve to canalize or "herd" an adversary into a maritime zone where the joint force enjoys relative advantage. Integrated with other elements of organic and joint capability, the SIF becomes both an enabler and a lethal executor of the joint force mission. In competition / campaigning, SIF provide capabilities that support new deterrence approaches like deterrence by detection, integrating the results of its reconnaissance with other elements of national power. In conflict, SIF serve as battle managers and provide long-range precision fires at the forward edge of a maritime defense-in-depth, enabling naval and joint forces to persist within contested areas rather than attempting to force access into them by fighting through an adversary's A2/AD defenses. Our ongoing experiments with SIF have focused on building a globally-relevant capability of value to all geographic combatant commanders, rather than more narrowly on a single potential threat or theater. While some view the SIF concept as Indo-Pacific focused, the fact is that some of our most aggressive experimentation is occurring in other theaters. For example, in his March 2022 HASC testimony, the USEUCOM Commander noted of his II MEF SIF capabilities: "a brown water force that can shoot, move, and communicate, and that is very, very expeditionary, is *priceless* for 21st century security."

FORCE DESIGN 2030 AND THE RUSSO-UKRAINE CONFLICT

It is too early to draw definitive conclusions about the changing character of war based on the current conflict in Ukraine. Marines aim to be careful and humble students of the ongoing struggle, and resist temptations to declare that it validates or invalidates the foundational assumptions of FD 2030. With that said, we can draw some preliminary conclusions. First, winning the reconnaissance and counter-reconnaissance battle matters. If you are located on a modern battlefield saturated with sensors, you will be targeted. Signature management, maneuver, deception, and tempo are playing an increasingly important role on the modern battlefield. Second, loitering munitions, *missiles and rockets are increasingly capable of rendering major weapons platforms vulnerable, whether MANPADS against helicopters, modern anti-armor systems against armor, or ground-based anti-ship missiles against surface vessels.* Finally, highly-trained and distributable small units able to create combined-arms effects continue to prove their worth on the modern battlefield. Assertions as to the waning utility of dismounted infantry are proving baseless.

FORCE DESIGN 2030 AND CLOSE COMBAT LETHALITY

Generations of marines have been educated and trained to *locate, close with, and destroy the enemy through fire and maneuver.* While the tactical tasks associated with that mission set have not changed, how we satisfy those tasks on a modern battlefield is changing. In addition, the weighting of the discrete tasks within that simple statement is changing, and we must change with it. "Locating," for example, has become far more important on the modern battlefield. Marines within our three experimental infantry battalions, as well as those participating in force-on-force field exercises, are learning and fine-tuning their skills, integrating existing and emerging capabilities in a combined arms system that accounts for the ongoing changes we see on modern battlefields—changes witnessed since at least the 2006 Second Lebanon War. We will build upon the major investments made by the 37th Commandant in close combat lethality (e.g., investments in the Multi-purpose Anti-armor Anti-personnel Weapons Systems [MAAWS]) by adding loitering munitions, organic UAS, and additional Javelins to our infantry units. Finally, it is important to note that throughout the Force Design process, the focus has been, and remains, maneuver warfare in every dimension and combined arms in all domains, including space and cyber.

In the midst of this organizational change, it is also important to highlight those things that are not changing. When we consider ways to maximize our close combat lethality, two things that will never change are: (1) our commitment to growing and sustaining smart and tough small unit leaders—those marines actually tasked with locating, closing with, and destroying the enemy; and (2) our commitment to what

the 29th Commandant called *operational excellence*—the ability of a marine to apply their training, leadership, and discipline with lethal proficiency. No new piece of equipment or warfighting concept can ever be as important. We have always maintained that the individual marine is the most formidable weapon on the battlefield. We still do.

FORCE DESIGN 2030 PRIORITIZED INVESTMENTS

MQ-9 & related sensors. We remain on-schedule to both modernize and increase the number of Marine Corps uncrewed aerial vehicle squadrons (VMU). In 2022, we will expand fielding of the MQ-9, immediately improving the Marine Corps' capability to support both naval expeditionary forces and the joint force. Uncrewed aerial systems are ubiquitous on the modern battlefield, as recent global conflicts have powerfully demonstrated—whether in Iraq, Afghanistan, Syria, Gaza, Yemen, Nagorno-Karabakh, or Ukraine. Over the next 2 years, the Air Force will transfer ten MQ-9AER Block V aircraft to the Marine Corps, saving the Service approximately \$170 million in procurement costs, which can be invested into sophisticated sensors like Skytower or sonobuoy dispensing pods. These advanced sensors, employed from our MQ-9s, will radically improve our ability to conduct reconnaissance and counter-reconnaissance, and further reinforce our competitive advantages in undersea warfare.

F-35B/C. The F-35 is the most advanced fighter, strike, and sensor platform in the world. As the Commander of United States Indo-Pacific Command (USINDOPACOM) recently noted during testimony, “The importance of the F-35 cannot be overstated.” We remain convinced that low observable and very low observable, short take-off and vertical landing (STOVL) aircraft like the F-35B provide combatant commanders a competitive warfighting advantage. Mindful of both cost per flight hour (CPFH) and cost per tail per year (CPTPY), I remain committed to working with the Joint Program Office to reduce costs for both acquisition and sustainment. The Marine Corps remains focused on accelerated transition to an all F-35 tactical aviation (TACAIR) fleet in order to stay in front of our pacing challenge. We have procured 176 of 353 F-35Bs and 48 of 67 F-35Cs to-date.

Organic Precision Fires—Infantry/Mounted (OPF-I/M). OPF-I/M will provide multiple echelons of the Fleet Marine Force (FMF) with an organic, loitering, beyond line-of-sight, precision strike capability, profoundly enhancing the close-combat lethality of maneuver forces. We are currently investing \$2 billion in OPF across the Future Years Defense Program (FYDP), and expect the first systems to be fielded with our enhanced infantry battalions and new mobile reconnaissance units in fiscal year 2025. OPF-I will be employed at the low tactical level to allow marines to rapidly engage the enemy beyond the range of direct fire weapons, while minimizing collateral damage and exposure to enemy direct and indirect fires. OPF-M will integrate a vehicle mounted, multi canister launch platform on our Joint Light Tactical Vehicles (JLTV), Light Armored Vehicles (LAV), and Ultra-Light Tactical Vehicles (ULTV). On its own, OPF-M can strike targets at ranges beyond 40km. However, its lethality is amplified when employed with Group-2 UAS as part of our emerging “hunter-killer team” employment concept. Operating as a hunter-killer combination, our mounted units can deliver precision effects, as well as surveillance before, during, and after striking targets, at ranges previously reserved for the air wing. These combat-tested and combat-proven capabilities will redefine how small units close with and destroy an adversary. Once fully fielded, each infantry and mobile reconnaissance battalion will possess no fewer than four “hunter” UAS (potentially the Stalker VXE Block 30) and seven dedicated “killer” mounted launchers.

Amphibious Combat Vehicle (ACV). In 1989, the 29th Commandant wrote in his posture statement that his number one priority was the procurement of an advanced amphibious vehicle to “replace our current amphibious assault vehicle (AAV), now approaching the end of its service life.” Thirty-three years later, we divested of the AAV and are now focused on accelerating the procurement of the ACV. It remains a “must-have” capability for our forces operating in the global littorals—especially in archipelagic environs across the Pacific. We remain committed to an approved acquisition objective (AAO) of 632 vehicles and have procured 267 to-date. We anticipate procuring another 74 in fiscal year 2023.

Medium Range Missile (MMSL) Batteries. Due to the continued support of Congress, we remain on-schedule to reach initial operating capability (IOC) for one MMSL battery in the Pacific by 2023 (to be employed by 3d MLR). We remain focused on fielding 14 total MMSL batteries (142 total launchers) by fiscal year 2030. These MMSL batteries—combining the *Navy Marine Corps Expeditionary Ship Interdiction System (NMESIS)* and *ROGUE Fires*—will be capable of firing the Naval Strike Missile (NSM) and Tactical Tomahawk, thereby holding adversary tar-

gets at-risk both afloat and ashore, further complicating their decision-making. This capability is just as relevant in the Western Pacific as it would be in eastern Ukraine, where shore-based fires have already been used to destroy enemy surface combatants.

Long Range Anti-Ship Missile (LRASM). In addition to the investments made in Ground-Based Anti-Ship Missiles (GBASM), we have also begun investing in AGM-158C (LRASM) to further expand the range and lethality of our aviation-delivered fires. Marine aircraft equipped with LRASM, operating from both ship and shore, will thicken the existing network of fires, further distribute lethality across a theater, and enhance the credibility of our existing deterrent in any region.

CH-53K. The CH-53K provides the FMF and combatant commanders with an unmatched vertical heavy-lift capability to project, maneuver, and sustain combat forces. It remains the only fully marinized heavy-lift helicopter in development or production. The CH-53K can lift more, farther, and faster than any other rotary wing platform in the world. We declared CH-53K IOC on 22 April after fielding a four-plane detachment worth of aircraft, support equipment, and trained aircrew and maintainers. While we remain concerned by the continued growth of procurement costs, we have actions in place to try to mitigate growth. We are further concerned by the projection of the sustainment costs and the total cost of ownership, which may exceed \$390 million per aircraft. We are actively working with industry to reduce those costs and will continue that fight throughout the life of the weapon system. Still, a marinized, heavy-lift capability is an absolute “must have” for the joint force as the costs of maintaining the increasingly outmoded CH-53E inventory is prohibitive. To date, we have procured 40 aircraft.

Ground Based Air Defense (GBAD). GBAD includes multiple FD 2030 priority programs such as the Marine Air Defense Integrated System (MADIS) and Medium Range Intercept Capability (MRIC). MADIS will enable our low altitude air defense (LAAD) battalions to provide short-range air defense (SHORAD) for our maneuver forces and fixed facilities, to include against hostile aerial threats from UAS. MRIC—currently in development—is an air defense system for fixed sites, designed to counter large UAS (Groups 3 and 4), cruise missiles, and fixed/rotary wing aircraft. Based on on-going operations in Ukraine, and lessons learned from recent conflicts in Syria and Nagorno-Karabakh, we believe these GBAD programs to be essential for our Marine Expeditionary Forces.

FD 2030 EMERGING CAPABILITIES

Long-Range Unmanned Surface Vessel (LRUSV) and Unmanned Underwater Vehicles (UUV). Just as our MQ-9AER and successor platforms will provide persistent surveillance and reconnaissance of competitors and strategically critical geography from the air, the Long-Range Unmanned Surface Vessel (LRUSV) will do the same from a sea-based platform. It will also provide unique capabilities for undersea scouting and C2 enabling. The rapid evolution of long-range precision munitions allows for form factors that can be employed at sea or ashore, and will progressively increase deterrence options as they become available. Our plan is to home-station these capabilities in Guam, Japan, and Hawaii. In addition, UUVs deployed from our existing inventory of L-Class ships or from future Light Amphibious Warships can further reinforce our competitive advantages in undersea warfare, expand our battlespace awareness and that of our partners and allies, and when armed with torpedoes, further reinforce sea-denial operations in contested spaces.

Artificial Intelligence (AI)-Enabled Counter-Intrusion and Counter-UAS. For the past 18 months, we have conducted tests with AI-enabled counter-intrusion and counter-UAS systems aboard several of our bases and stations. The performance of these systems has exceeded all expectations. As a result, the Commander of Marine Corps Forces, Pacific submitted an urgent-needs statement requesting the capability be fielded at all bases and stations in the Pacific. Initially, this capability will be employed at fixed sites. However, in the near-to-mid-term we anticipate employing a mobile version of this small footprint, AI-enabled sensing platform. This will allow our stand-in forces—with allies, and partners—to better sense and make sense of the dynamic maritime and urban terrain where we operate.

Swarming UAS. Over the next 12 months, we will conduct a series of experiments at I MEF with AI-enabled swarming UAS and loitering munitions. While planning for this effort is in the early stages, we are confident this capability will create game-changing improvements to close-combat lethality for our ground forces and will further realize the vision of the 31st Commandant’s Hunter Warrior experiments from 1997–1998. Swarming UAS will extend the area of influence of every maneuver element, creating competitive warfighting advantages over our adversaries.

Unmanned Logistics System-Aerial (ULS-A) and Future Vertical Lift (FVL) Family of Systems (FOS). The past 5 years of wargames have demonstrated that our logistics and sustainment capabilities will be targeted by near-peer competitors. As the ongoing conflict in Ukraine has poignantly illustrated, even traditional ground logistics resupply, executed over interior lines and relatively short distances, can be disrupted, with operational level effects. As we develop our new naval expeditionary units and expand our uncrewed aircraft capability, we will increasingly invest in uncrewed logistics aircraft such as the ULS-A Medium and ULS-A Large. This year we will invest \$32 million in ULS-A Medium (Group 3 UAS), which is capable of carrying 300–600 pounds of cargo a distance of 100NM, while developing plans to procure ULS-A Large. To date, the Air Force has the most mature understanding of this capability, and has experimented with an electric vertical takeoff and landing (eVTOL) aircraft that may satisfy our needs in the future. We are wrapping all these efforts together within our aviation enterprise's FVL (VTOL FOS) program, and have invested \$584 million over the FYDP.

FORCE DESIGN 2030 INSTALLATIONS AND LOGISTICS

Our ability to sustain our tactical forces across time and space is a critical component of integrated deterrence. The pacing threat continues to erode our traditional warfighting advantages, particularly the ability to close and sustain our forces at times and places of our choosing. Unfortunately, most of our current logistics processes and procedures play right into their strengths. Because the operational environment is increasingly contested, our logistics efforts from the tactical edge all the way back to the homeland will have to fundamentally change. As we are witnessing in Ukraine, even a numerically superior force will struggle to sustain itself and protect supply routes against persistent attack and disruption. We cannot allow this occur.

As part of the broader logistics enterprise, we must improve the ability of our installations to provide the critical requirements that enable FMF readiness. We must have resilient infrastructure and services that provide the platforms necessary to enable delivery of capabilities from across the service enterprise. Because the environment is dynamic, we must have the means to protect our installations and organic industrial base from an increasingly complex range of operational, environmental, and climate-related threats. With the proliferation of the Mature Precision Strike Regime and expanding information-related threats, we need to better leverage technology, specifically AI, to ensure we maintain the ability to defend ourselves from emerging and evolving threats such as those posed by small, unmanned aerial systems.

In the Pacific, we are experimenting with command and control and organizational proofs of concept so our installations and logistics units can make more effective, direct contributions to FMF warfighting capability. We will place our installations under an operational command structure to ensure they are more resilient to operational, environmental, and climate-related threats, and better postured to meet the needs of the FMF.

We are pursuing a range of material capabilities to diversify and modernize our logistics portfolio, aligned to a contested littoral environment. At the tactical level, we are currently testing and assessing several platforms that will enable us to transition from a battlefield maneuver and sustainment capability based on crewed aircraft and wheeled vehicles to a diverse collection of crewed and uncrewed air and ground platforms that are smaller, cheaper, and collectively result in a more resilient distribution network of platforms and connectors. In addition to our efforts to generate, store, and distribute renewable energy forward, these platforms will exploit rapidly moving technologies that the Department and our industry partners are pursuing to decrease our dependence on vulnerable fuel supply chains, while enabling us to deliver critical commodities via the naval and joint logistics enterprise across the vast distances of the Pacific, despite enemy sensing and targeting capabilities. The most visible platforms will be a family of uncrewed logistics air systems, the smallest of which are already in prototyping and live experimentation. Our experimentation is yielding exciting results that underscore the need to expand into large and medium uncrewed logistics systems. Additionally, we will begin exploring options to replace our ground logistics fleet with a smaller, lighter, fuel-efficient replacement for vehicles that have run long past sustainability. We are now exploring emerging technologies that we can leverage to deliver capable, yet affordable vehicles that reduce our reliance on fossil fuels. As a modest first step, we will lease 3,875 non-tactical electric vehicles this year, and likely expand our inventory of electric vehicles in the future.

As I have said numerous times over the last year, logistics is the pacing function, and the on-going conflict in Ukraine appears to validate that conclusion. As such, logistics provides the resources and sets the limits for what is operationally possible, even as logisticians attempt to extend those limits as far as possible.

FORCE DESIGN AND THE RESERVE COMPONENT

We recently established the Marine Innovation Unit (MIU) within our Reserve Component. The MIU's work will complement that of our Marine Corps Warfighting Laboratory (MCWL) by accelerating advanced technology development. Reserve marines in the grades of sergeant through colonel will be assigned to this unit on the basis of their expertise in areas like artificial intelligence, data science, human systems, advanced manufacturing, quantum computing, autonomy/robotics, space, supply chain management, cyber, synthetic biology, energy and materials sciences, and other technology fields. This initiative will allow us to tap into the diverse talent pool in Marine Corps Forces Reserve, and through its collaboration with MCWL, integrate research in multiple advanced disciplines into Force Design and related efforts.

READINESS

Though some aspects of our military require substantial change, we should be clear to acknowledge those foundational tenets which remain as relevant and operationally suitable today as they have been over the previous 70 years. In 1952, Members of Congress noted the Marine Corps "can prevent the growth of potentially large conflagrations by prompt and vigorous action during their incipient stages. The Nation's shock troops must be the most ready when the Nation is least ready ... to provide a balanced force-in-readiness for a naval campaign and, at the same time, a ground and air striking force ready to suppress or contain international disturbances short of large-scale war ... " This role as the Nation's force-in-readiness, prepared to create strategic advantage via its ability to be quickest to respond to either crisis or conflict, and prepared to both prevent and contain conflict below the threshold of armed conflict, remains as valid today as it was when first articulated. I remain as committed to ensuring your Marine Corps can fulfill this vital role as those who preceded me.

But as I have previously noted, readiness and availability are not the same things. Ready forces are those that create competitive warfighting advantages. As we are witnessing in Ukraine, available Russian forces are being met by Ukrainian forces possessing competitive warfighting advantages. Prior to the commencement of hostilities, if one had asked for a relative combat power assessment based on each side's bench of ready (available) forces, that assessment would have been disproportionately skewed towards the Russians. As we have seen in Ukraine and in other recent conflicts, true readiness is a hypothesis to be tested and proven via employment in combat, and is not something that can be determined via availability alone.

READINESS AND COVID 19 UPDATE

As of 22 April 2022, 96 percent of the Active Component is fully vaccinated and 97 percent partially vaccinated. Within our Reserve Component, 91 percent are fully vaccinated and 92 percent partially vaccinated. 3,702 marines asked for a religious accommodation and seven have been approved. 1,067 marines have received approval for a medical or administrative exemption. As of 22 April, 1,978 marines have been separated for a failure to comply with a lawful order.

CLIMATE READINESS AND RESILIENCE

The Secretary of the Navy has directed the Navy and Marine Corps to develop plans for increasing our capability and capacity to mitigate both the near-term and long-term operational impacts of climate change. He has also set a goal of achieving net-zero carbon emissions at our bases and stations by 2040. For the Marine Corps, I view our climate-related mitigation efforts as crucial to increasing the Service's operational capability, capacity, and resilience in the face of serious environmental challenges, including extreme storms along the East Coast, rising oceans levels along the Carolina coast, and water scarcity at bases and stations in the Southwest. It also important to note that many of the communities surrounding our installations share our climate-related vulnerabilities. We believe that partnering with Federal agencies, states, localities, tribes, and territories on climate change related planning is critical to maximizing the impact of our collective mitigation efforts.

TALENT MANAGEMENT 2030

Late last year we published *Talent Management 2030* (TM 2030), and in doing so, took a major step toward realizing the goals of Force Design 2030 and our larger service modernization effort. TM 2030 aims to create a personnel system that better harnesses, develops, and aligns the talents of individual marines with the needs of the service to maximize the performance of both, improving both individual and unit readiness, capability, and lethality. The report details the deficiencies in our current manpower model and directs a series of reforms, initiatives, and changes that will fundamentally improve our service's organization, processes, and approach to personnel and talent management. TM2030 was informed by years of studies, reports, and other research, as well as the work of our sister services in the joint force. The influence of Congress is also evident throughout the report, and many of the most important initiatives described in its pages are the direct consequence of expanded authorities that Congress gave the services in the *John S. McCain National Defense Authorization Act for Fiscal Year 2019*.

The totality of changes described in TM2030 are significant. They are also essential, especially within the broader context of our ongoing Force Design 2030 effort. In short, the capabilities we are building as part of Force Design 2030, along with the complementary concepts of Stand-In Forces, Expeditionary Advanced Base Operations (EABO), and Distributed Maritime Operations (DMO), cannot reach their full potential without a profound change to our personnel system. In that way, TM2030 should be viewed as a critical requirement to the success of our overall service modernization.

We plan to fully implement the changes described in TM2030 and transition from our current manpower system to a talent management system no later than 2025. Change of this magnitude requires the dedicated commitment and long-term support of both military and civilian leaders. While I believe we have most of the necessary authorities to fully implement TM2030, I will be sure to inform Congress if any challenges or obstacles arise for which we may need your assistance.

Among the more important changes, the implementation of TM2030 will adjust our decades-old recruiting-centric enlisted personnel model, placing more emphasis on retention. This change will raise the aggregate age of our marines and create a more mature force, consistent with future warfighting requirements. We expect this will raise personnel costs, yet well within accepted norms. For example, today the average cost per marine is \$73,800 per year (pay, housing, training, etc.). By comparison, the average cost of a soldier is \$79,800, the average cost of an airman is \$82,500, and the average cost of a sailor is \$89,900. While we anticipate a cost increase in the short term, we also expect a cost savings over the long term as we reduce the number of recruiters, instructors, and other resources required to maintain a recruiting-centric enlisted personnel model. In the near term, the most visible sign of our shift towards a more mature retention-based force will be a drop in the annual recruiting mission by several thousand, and a congruent increase in retention.

DIVERSITY, EQUITY, AND INCLUSION

I remain committed to maintaining a total workforce that benefits from the whole of our Nation's vast human capital by recruiting, developing, and retaining marines and civilians from all personal, cultural, and professional backgrounds. In practice, that means eliminating all structural, administrative, cultural, or other obstacles that might limit a marine's ability to have a successful career. Capitalizing on the talents, knowledge, skills, abilities, experiences, and perspectives of every marine will make our Corps stronger, more lethal, and more effective on the battlefield, today and tomorrow.

As a Corps, we have made great strides over the last 5 years in eliminating obstacles to the upward mobility of talented marines from traditionally underrepresented demographics. One way to measure our progress is to examine the rate at which marines from these backgrounds are selected to command battalions and squadrons at the O5/lieutenant colonel level, a key career milestone that indicates a marine has potential for a significant leadership position within the Service. Five years ago, 19 percent of African American marines screened for O5 command were selected. Since then, the average is 34 percent with a high of 44 percent. Five years ago, 3 percent of our battalions and squadrons were commanded by female marines. Today that number has increased to 9 percent. In fiscal year 2021, for the first time, a higher percentage of female marines who screened for O5 command were selected than their male counterparts. We do not select our commanders based on gender, race, or any other marker, so the fact that marines from these diverse backgrounds

are being selected for O5 command indicates to me that we are making progress in reducing obstacles to the upward mobility of talent.

While there is evidence of some progress, there is also evidence we still have obstacles to eliminate. For example, we continue to experience a concerning lack of diversity within our TACAIR community. Despite a significant increase in the number of African American officers over the last four decades, we have the same number of African American TACAIR pilots today as we did in 1981. Last year we asked former NASA Administrator and marine, Major General Charles Bolden (USMC, Ret.), to conduct a third-party review to examine the structural and systemic issues that might be leading to this outcome. His observations and conclusions were valuable, and I am confident his recommendations will help us to create a more equitable playing field.

SEXUAL ASSAULT PREVENTION AND MILITARY JUSTICE REFORM

The eradication of sexual assault from our ranks has been a goal of every Marine Commandant for decades. Despite making progress in fostering a culture where reporting of sexual assault crimes has increased and where victims are more willing to communicate with their leadership, we have admittedly been unable to accomplish what we all seek—the elimination of sexual assault altogether. In 2021, there were 1,202 reported sexual assaults in the Marine Corps. We must consider any policies that could increase prevention and offender accountability, and reduce or eliminate retaliation or retribution against victims. I remain committed to timely implementation of the Independent Review Committee's (IRC) recommendations, as well as implementation of changes in the fiscal year 2022 National Defense Authorization Act (NDAA) that seek to improve the investigation, disposition, and litigation of victim-related crimes.

PARENTAL LEAVE AND CHILDCARE

As part of TM2030, we will begin making several key updates to our parental leave program beginning in 2022. First, we are grateful to the Congress for the additional authorities to increase the duration of parental leave for primary and secondary caregivers; we have expanded our secondary caregiver leave and are working with OSD on the timely implementation of increased leave in cases of adoption or long-term foster care. Second, we are developing mechanisms by which primary and secondary caregivers can take additional parental leave—beyond the congressionally-authorized 12-weeks—if they agree to extend their service contracts. Third, we will implement a phased return to work program for the primary caregiver, allowing the caregiver to return to work gradually. Finally, and most importantly, we won't stop learning. We will carefully study the best practices of top performing American companies and institutions, always with an eye to enhancing our service parental leave programs as new research becomes available.

Increasing the availability of childcare remains a top priority for the Service. Unfortunately, persistent supply and demand imbalances have resulted in unacceptable wait times for our marine families. The average wait time for childcare across our major bases and stations is 65 days. However, based on a number of actions taken this year, we anticipate a decrease in the average wait time by 50 percent over the next 12 months. Additionally, we increased funding for our Marine Family Care Programs by \$91 million, beginning in fiscal year 2023 across the next 5 years. To provide a variety of options that fit a families' needs and to mitigate lengthy Child Development Center (CDC) waitlists, we also offer fee assistance for eligible marines who are geographically remote, reside more than 15 miles from an installation, or are assigned to an installation with a lengthy CDC waitlist.

BARRACKS AND FAMILY HOUSING

In fiscal year 2021, we renovated 13 barracks, and in fiscal year 2022, we plan to renovate another 10 at a cost of \$93 million. We anticipate renovating a further 10 barracks in fiscal year 2023 at a cost of \$112 million. This will leave 94 barracks for future renovation. The renovations completed in fiscal year 2021 to fiscal year 2023 will positively impact 3,780 marines living in the barracks. In terms of family housing, our biggest challenge is related to ongoing efforts to renovate over 300 homes at MCAS Iwakuni, for which we recently issued a contract to renovate 44, to be completed by fiscal year 2023. Additionally, we anticipate spending a further \$104 million in fiscal year 2023 to further remediate housing deficiencies across our bases and stations.

TRAINING PHILOSOPHY

In 1990, then Commandant Gray stated, “Training will reflect the fact the modern battlefield demands high levels of initiative and an ability to operate at a fast tempo in an atmosphere of uncertainty, confusion, and rapid change. Unit training will largely be free-play training in order to develop this ability. Individual training, starting with boot camp, will seek to develop independent action and initiative.” This guidance remains as relevant today as it was 32 years ago.

TRAINING RANGES

The Marine Corps has no outdoor training spaces or ranges where ground units can operate in an electromagnetic spectrum operations (EMSO) denied, degraded, or disrupted environment, and limited opportunities to replicate such an environment in simulation. Today, we are able to conduct some of this training at joint facilities, most notably in Alaska’s Joint Pacific Alaskan Range Complex (JPARC). However, we need to be able to train in a similar manner at all of our major training facilities. This is a critical shortfall of our existing training infrastructure in Arizona, California, Hawaii, and North Carolina. Additionally, we lack littoral maritime training ranges akin to our legendary Range 400 at the MAGTF Training Center in Twentynine Palms, California. As we modernize the force for naval expeditionary operations in contested environments, we will require a maritime training site with suitable seaward and landward ranges where we can train with the full range of our multi-domain weapon systems, to include uncrewed systems. Finally, we must remain mindful of the impacts of urbanization and community growth on our training capacity, especially in Hawaii.

ENHANCED INFANTRY AND LEADER TRAINING

In 1997, the 31st Commandant gave a speech at the National Press Club in which he articulated the need to transform our most valued Marine Corps asset—the marine infantry non-commissioned officer (NCO). While most remember his characterization of the future “Three Block War” and the new importance of the “Strategic Corporal,” most forget the context of his argument. General Krulak described to his audience the Battle of Teutoburg Forest, during which the Roman pro-consul Quintilius Varus had his force of three legions ambushed and destroyed by an adversary he put down 3 years prior. As his force was collapsing around him, Varus was heard to say, “Ne cras, Ne cras” (Latin for “not like yesterday”). General Krulak’s prescient assumptions about the future of ground combat in urban areas has proven accurate time and again—whether in Iraq, Afghanistan, Syria, or Ukraine today.

Our continued force-on-force experimentation and training in support of FD 2030 further demonstrate that the future battlespace will not be like yesterday, and change is required—even among the elite marine infantry community. As a result, over the past year we have greatly expanded our infantry training by adding an additional six weeks to the program of instruction. This expansion provides our infantry marines with the training necessary to employ networked communications, organic precision fires to include loitering munitions, and multi-domain ISR capabilities at the lowest tactical level. The result will be a more technically competent and tactically proficient infantry than has ever existed in the Marine Corps—prepared to operate, fight, and win on any modern battlefield. One with both the physical stamina and mental resilience required of all marine infantry past and present. These changes are not limited only to our enlisted force. We have made significant improvements at our Infantry Officers Course (IOC) to expand practical applications via a new live-fire ambush, a new amphibious operations package, uncrewed aircraft systems integration instruction, and final live-fire exercise against a multi-domain threat. Through our continued wargaming and experimentation, it is perfectly clear that an elite infantry is a critical requirement to success on the future battlefield, and the changes that are occurring at IOC and at our Schools of Infantry are now producing that force.

RECRUIT TRAINING

In the 2020 NDAA, Congress directed the Marine Corps to gender integrate training at both Marine Corps Recruit Depots (MCRDs) Parris Island and San Diego no later than fiscal year 2025 and fiscal year 2028, respectively. We are on pace to achieve those deadlines. Since enactment, we have trained 26 integrated companies at MCRD Parris Island and 3 at MCRD San Diego—a total of 11,121 male and female marines who started their service and journeys together. At present, each MCRD company consists of five male platoons and one female platoon (5+1 model),

although there are times when a four male platoon plus two female platoon model (4+2 model) has been employed to accommodate increased female recruit throughput.

AFGHANISTAN

In August of last year, our collective mission in Afghanistan ended. During nearly 20 years of operations, 115,992 marines served in Afghanistan; 5,101 marines were wounded in action; an untold number sustained invisible and permanent emotional wounds; and 478 families became Gold Star Families after the loss of their marine. We have a moral obligation to each of our marines and their families to resist the temptation to push Afghanistan into our distant memory, and instead bring our experiences there into sharp focus in order to learn. Thousands of marines, sailors, soldiers, and airmen answered the call to serve in Afghanistan, and while the outcome there was not what any of them expected, their service was honorable and their courage real. We owe them a hard look at how the war was executed—what we got right and what we got wrong. To that end, I fully endorse the nonpartisan Afghanistan War Commission and its aims to help us more completely understand the full scope of the conflict.

When reflecting on our experience in Afghanistan, we also cannot forget the significant contributions of our allies and partners. The U.S. military was fortunate to operate alongside patriots from dozens of allied and partner nations, and we will never forget the service and sacrifices of these brothers and sisters in arms.

JOINT CHIEF PERSPECTIVE

Trust and Confidence in the Military. I remain concerned with continued reports of the public's declining trust and confidence in the uniformed leadership of the armed services. I am old enough to remember when military service was not perceived in the positive light that it is today. I entered service within a decade after the collapse of the U.S. position in Southeast Asia and a year after the failed rescue attempt known as Desert One. Within 2 years of my commissioning, faith in the uniformed and civilian leadership of the military was further rocked by the tragedy of the suicide-bombing of the Marine Barracks in Beirut.

We must address negative perceptions of the military without hesitation. We must also remain mindful that the deeper we dig into the decisions of the past, particularly related to our campaigns in Afghanistan that such negative perceptions may grow. The long-term health of the Marine Corps, naval services, and entire joint force is dependent upon the cultivation and sustainment of a special bond of trust and confidence between the military and the public. We must ensure that Americans who wish to serve, and the families who support them in their service, trust their military and pursue their service "without any mental reservation." To that end, we must all make a concerted effort to speak with precision, encourage transparency, and welcome any and all oversight that would restore the public's confidence in the military.

Finally, I am increasingly concerned that in our shared desire to eliminate discrimination, harassment, sexual assault, extremism, and every other destructive act within the joint force that is contrary to the core values of all the services, we are unintentionally creating a harmful mental model and stereotype of the services as places where these are the norm vice the exception. The vast majority of young men and women across the joint force serve honorably, and are incredible representatives of their individual families and communities across the entire country. We must never allow the public to think for a moment that military service is anything other than the most honorable service one can provide to their fellow citizens. The success of our All-Volunteer Force requires the special trust and confidence of the public. As you hold me and the other senior leaders accountable for all we do or fail to do, and rightfully seek to eliminate persistent behaviors inconsistent with our values, please continue to help me spread the word that military service is honorable service, and that you remain incredibly proud of the young men and women in uniform.

Wargaming and Transparency. In September 1964, the Chairman of the Joint Chiefs of Staff sponsored a wargame on Vietnam for uniformed and civilian leaders from the Department of Defense (DOD), Central Intelligence Agency (CIA), and Department of State (DoS). The wargame was intended to provide senior policy makers with an opportunity to re-examine our national strategic objectives and the strategy required to attain those objectives. For those passionate about wargaming, SIGMA II 64 is "Exhibit A" in the case for its importance. Once declassified, the wargame report provided clear evidence that senior uniformed and civilian leaders understood the situation in Vietnam much better than historians previously assumed.

The story of SIGMA II 64 illustrates the potential of wargames to increase the breadth and depth of our understanding, but more, it illustrates the damage that can result from a lack of transparency. The SIGMA II 64 wargame results were classified and tightly controlled, not shared widely or with those who maintain oversight responsibilities, like Congress. While it is impossible to know if our national leaders would have pursued a different course in Vietnam had the SIGMA II 64 results been more widely shared, it is certain that the debate would have been better informed.

As a joint force, we should make every effort to increase the frequency, sophistication, and scope of our wargames. In particular, we should look to expand the participation of our allies, partners, interagency teammates, and industry, whose collective insights are essential to a strategy which aims at integrated deterrence. At the same time, we must seek greater transparency. I encourage Congress and staff to participate in wargames, continue asking tough questions, and challenge us to be as transparent as possible.

CONCLUSION

As HASC Chairman Smith recently noted, “The Pentagon tends to reward conformity. As long as you check all the boxes and go up through the 15 layers of decision making, we’re all good, instead of you saw a problem and solved it.” This *has* to change, *is* changing, and can continue to change with your oversight and assistance. For some, the daily feed of images and intelligence from Ukraine has persuaded them that a change in our availability-based model of readiness and our warfighting investments are required. I agree with these individuals. For others, the case for change has long since been made on 21st century battlefields -with little if anything in common. I agree with those individuals as well. However, this does not mean that *everything* requires change, and that our forces are not ready today, to create advantage today, and to succeed today in whatever challenge confronts them. While the need to train and equip our marines and sailors with modern capabilities and equipment that create advantage is beyond dispute, what is also beyond dispute is that those individuals—the individual marine and sailor—are a source of competitive advantage for the service and for the larger joint force, and will always be the most important resource. Your marines are ready today, just as they have always been. What they need is your continued support for resourcing, your continued policy oversight, and your continued faith and confidence. With those things, they will never fail.

Chairman REED. Thank you very much, General Berger. Secretary Del Toro, one of the issues that is arising is the performance of shipyards. We saw, for example, on the attack submarines that the slippage in terms of both delivery time and increase in costs, the reason that most people give is the difficulty of securing the appropriate labor and workers. What can you do and what can the industrial base do to get back on track?

Mr. DEL TORO. Thank you, Senator. I am also deeply concerned about the pace with which both our public shipyards and our private shipyards keep up with the maintenance that is required by both our submarine fleet, as well as our surface fleet as well. I have visited most of the yards, all four public shipyards, and most of the private yards as well. I have met with the leadership of those shipyards to try to better understand the challenges that they face. Without question, the impact of COVID on the last 3 years has been significant.

We continue to cooperate very collaboratively, thanks to the support of the Congress as well, and making investments in those shipyards, both capital investments and also investments with regards to the talent management that is necessary to run those shipyards. I believe that there is still a lot of work that needs to be done, and it does take a team to work this through, obviously.

But the other message that I have also relayed to the leadership of these shipyards is that they also have a responsibility to deliver these platforms on time and on schedule, and they need to divert

the proper resources necessary to do so in terms of capital equipment and also in terms of hiring the necessary workforce at those shipyards in order to increase the pace at which these maintenance cycles are taken.

Let me, if I could ask the CNO to just weigh in as well on this issue.

Chairman REED. Could I?

Mr. DEL TORO. Yes, sir. Forgive me.

Chairman REED. I thank you because—General Berger, Force Design 2030 recognizes this is a much different world than 10 years ago, 20 years ago, certainly 30 years ago. Since World War II, we have basically had guaranteed air superiority if we choose to fight. We also had relatively uncontested logistics.

We have had uninterrupted communications. The concept of joint operations has been evolving for a long time, but it is now more critical than ever. So when you look at all of these factors, lack of air superiority, logistics difficulties, communications that might be disrupted, and the need to operate as a truly Joint Force, I assume that has informed your view of what you want to do with the Marine Corps in terms of your new design.

General BERGER. That is entirely accurate, Chairman. I don't think any of the Joint Chiefs, if all of us were lined up here, would see it any different. Especially on the high end, we will fight, we will operate as a Joint Force. We have to have a pretty keen understanding of the joint capabilities involved there and where the overlaps are and where the gaps are.

The areas that you highlighted, air superiority, command and control, logistics, absolutely are part of the focus. We also know that we are not going to match the—People's Liberation Army Navy (PLAN) in number for number, but that is not actually how we are going to deter and how we are going to dissuade them. It is going to be asymmetric.

Lastly, I would say the need to operate forward as the Secretary and CNO highlighted, paramount. You have got to know what they are doing. You have to paint a picture for the Joint Force Commander 24/7 and that is our role.

Chairman REED. Thank you very much. A question I will address to Admiral Gilday, and with time to General Berger, is that the Navy's unfunded priority list is \$4 billion this year. Marine Corps is \$3.5 billion. Last year, because of the Committee's support for Senator Inhofe's initiative, we were able to cover all of your unfunded priorities.

We can't assume that this year. So I assume that these unfunded priorities are really in priority order. That if we go to the first one, that is the most critical. The second one, the second most critical. Is that accurate, Admiral?

Admiral GILDAY. It is absolutely accurate, sir, and so my priorities—everything on the unfunded list were high regrets that we couldn't get into the budget and are primarily readiness related. So as an example, for weapons arranged in speed, Long Range Anti-Ship Missile (LRASM), Joint Air to Surface Missile-Extended Range (JASSM-ER), Maritime Strike Tomahawk, SM-6, what we are trying to do is maximize domestic production lines to send a demand signals so we can fill our magazines with weapons, and

make sure that if the fight does go down tonight or in the 2027 timeframe, that we are ready to go.

Likewise, those priorities include flying hours, steaming days, maintenance, spare parts in both the aviation side and for our ships as well. It is funding for people, and so those are all—those all have to do with needed midterm readiness. There are also some modernization priorities there as well.

Chairman REED. Thank you very much. General Berger, I will ask for your response in writing and for the record so that we can recognize Senator Inhofe. Senator Inhofe, please.

Senator INHOFE. Thank you, Mr. Chairman and General Berger, thank you very much for your nice remarks. As noted in my opening remarks, the unfunded priorities total \$7.5 billion, approximately \$4 billion for the Navy and \$3.5 billion for the Marine Corps. The question I would ask you, is a yes or no question, is everything on your list executable today?

General BERGER. Yes, sir. Same for the Marine Corps, yes, sir.

Senator INHOFE. Yes. All right. Thank you very much. Secretary Del Toro and Admiral Gilday, it has been 3½ years now since I visited the USS *Gerald Ford*. At that time, they had just completed their—everything has been late on that effort. The catapult and the arresting gears, I think at that time, 3½ years ago, were just about completed. My understanding is that the elevators now, which the last thing, are finally done, albeit 7 years later and \$2.8 billion over budget.

The burden that this 7 year delay of the *Ford* has placed on the rest of the aircraft fleet can't be overstated. I would like to get from all three of you who—in whatever order you would like the—a couple of things, several things here. One is, what kind of a burden has that placed, that 7 year delay placed, and when will it deploy, and probably the lessons learned.

That seems to be the significant thing, I believe, the lessons learned. I have talked to each one of you over a period of time on the, you know, how much of this could be a result of this sole source situation. So any comments you want to make just on the *Ford* now that we have reached this important time zone. I would like to hear from you.

Mr. DEL TORO. Thank you, Mr. Chairman. First, I would like to say that you charged me at my confirmation hearing to fix the elevators on the *Ford*. I am at least pleased to say that they are fixed on the *Ford* now. I think when acquiring ships of this nature, which are extremely complicated, it is very important to ensure that we fully understand the whole—we fully understand the maturity of the technologies that we are going to put on those platforms before we actually acquire them.

I think that those are some of the key lessons that are being learned as we look at DDG Flight III, as we look at our future DDG(X) or SSG(X), as well as the *Constellation*-class frigate. I would like to say that the mistakes that were made in the past are being applied very aggressively to these new acquisition programs that are going to be rolled out in the future.

I think the criticality of land-based testing, for example, for the engineering plants is also very critical to this and the submodules

that are necessary to go on to these platforms. I will ask the CNO to continue the conversation in the limited time we have.

Admiral GILDAY. Sir, the biggest lesson learned from *Ford* and other platforms is that we need to drive down technical risk in these programs, and so we do that with land-based prototyping. We do that with plenty of testing upfront before we become an informed customer and come to you for the money to scale these platforms, LCS would be another example.

If I take a look at the *Columbia*-class submarine, we are at 85 percent design right now as we are building that submarine. If I compare that to the *Ohio*-class, we were at 4 percent, *Seawolf* 25 percent, *Virginia*-class 40 percent, and so we are learning our lessons with respect to *Ford* and putting in the good work now.

We have money in the budget with respect to unmanned to actually have land-based prototyping, significant land based prototyping in Philadelphia as we have had with other ships so that, again, we can make informed decisions before we scale platforms.

Senator INHOFE. Let me comment, before a third—I wasn't being critical in terms of certainly any of the three of you, but the fact that it did take a longer period of time does have implications on other vehicles that are out there.

Admiral GILDAY. Yes, sir, it has. Obviously, funds have been diverted in order to keep *Ford* moving along track. We are very pleased to get her deployed later on this year and likely again the following year. I want to keep her on a high—high degree of operations tempo. This past year, she has had the highest, probably the highest operations tempo of any ship in the Navy. She was our carrier—aircraft carrier off the east coast of the United States.

She was qualifying our new pilots with their cats and traps, and so we are going to continue that high degree of operations tempo with her, keeping in mind, of course, stress on the crew. But they want to go to sea, they are proud of their ship, and it is operating to our expectations right now.

Senator INHOFE. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Inhofe. Senator Shaheen, please.

Senator SHAHEEN. Thank you. Good morning to each of you. Thank you for being here and thank you for your service to the country. Secretary Del Toro, I would like to begin with you and Admiral Gilday, because the Navy's request includes \$503 million in funding for the SIOP Multi-Mission Drydock Project at the Portsmouth Naval Shipyard in New Hampshire and Maine.

I know that you have both been up there to see this project. But given the cost overruns that we saw last year, are you confident that that \$503 million is going to be enough to keep the project on schedule this year?

Mr. DEL TORO. Senator, I think I am confident that we are moving in the right direction. These are extremely complicated programs, as you well know. It is our largest capital project in the Department of Navy. I think that there are going to be more discoveries that will be made. But I don't think that they will be of the nature and increases of the past mistakes that were made previously.

One of the charges that I have given our acquisition force is to ensure that we actually do take the necessary time to come up with accurate cost estimations for the projects, so what you have going on now, we will propose in the future. That takes some time, additional time to reach those answers, and so I would like to think that we are actually moving in the right direction with the necessary discipline to make accurate cost estimations.

Senator SHAHEEN. Well, I appreciate that. I guess—I am trying to understand then why the Navy hasn't adopted the Government Accountability Office (GAO) recommendations from the 2017 report that just—this GAO report just came out recently that identified concerns with SIOP. Planning, including adopting best practices for cost estimation.

It also points out that the performance metrics that were expected to be done by now are not going to be done until 2025. So can you talk about why the delay is there and what needs to happen in order to get things back on track?

Mr. DEL TORO. Yes, ma'am. I can't make—look, I am not going to make excuses for deals of the past. I do know that certainly since I have become Secretary we are taking this responsibility very seriously and trying to come up with very accurate cost estimations and being allowed to be given the time to come up with those cost estimations so that we are not just flying by the cuff.

Senator SHAHEEN. I recognize that the war in Ukraine has happened since the budget was developed, and that along with inflation have added to costs. So do you have any estimate on how that is going to affect the budget numbers that you—we have before us now?

Mr. DEL TORO. I don't today, but that is an accurate assessment that increasing inflation and the shortages in the supply chain as well too will have an impact on costs as we continue to evolve these projects.

Senator SHAHEEN. How soon will you be back to the Committee?

Mr. DEL TORO. So I promise you in the next several months we will have more accurate numbers. We have been working on this very aggressively in the time that I have been Secretary. I have demanded that we have an accurate accounting of projected costs for the SIOP program so that we are on track.

We have also made some additional adds to the program management team as well to make sure that we have the right skill sets on that program management team to address all the necessary risks that are involved.

Senator SHAHEEN. Thank you. General Berger, both the chair and ranking member talked about the challenges, and you all have talked about the challenges of recruitment and retention in the Marine Corps. The marines historically have had the smallest percentage of women compared to the other services.

Obviously, that is one place where there is talent that the Marine Corps could look to for the future. So can you talk about how talent management 2030 is going to look at more gender inclusivity in the Marine Corps and how you expect to incorporate more women?

General BERGER. You know, a system that we have had since the All-Volunteer Force was put in place, largely replaced 75 percent

of the marines every year, a very young force. That is what we needed at that time, and it suited us fine. But going forward, as you have highlighted and others, this is a competitive market for people, and the requirements that we are going to have for marines and sailors, all service members, is going to be even more demanding, even more challenging.

So the change for talent management is instead of the view them as a whole body, each person matching their—what they have coming in, and we have to do a better job of assessing that when they come in, matching that with what the Marine Corps needs, and then a path for each individual to go forward. That is the difference.

Senator SHAHEEN. Do you expect to have any particular focus on recruiting women, or how do you expect to get those numbers up?

General BERGER. The recruiters across the country, as you have highlighted, the last 2 years of not being in high schools has been a real challenge during COVID because their exposure and the high school students' exposure to recruiters is really tough. You have to have the right recruiters out there and they have to have access to the high schools, which now they are back in.

Senator SHAHEEN. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Shaheen. Senator Fischer, please.

Senator FISCHER. Thank you, Mr. Chairman. Good morning, gentlemen. Thank you for being here today. General Berger, how is the Marine Corps looking to change existing logistics processes and procedures to better align with the Force Design 2030 initiative, particularly looking at the Indo-Pacific theater?

General BERGER. The framework we have for logistics in the Indo-Pacific theater that you highlight largely assumed a protected backside. It assumed that we would not be contested. We don't assume that going forward. So the large depot style-like hub and spokes of parts and all classes of supply and from there would be distributed, that has got to change. Because we assume that it is going to be contested all the way from the most forward units back to the factory, all the way.

Not just physically, of course, but in cyber as well. So what does that mean for us? We have to have organically the means to move that—move these sustainment supplies up tactically to operationally, in other words, at that level organically. That is why things like the 53K, CH-53K, the MV-22, unmanned systems that are going to allow us to push supplies laterally, that is what we have to have, that we don't have in numbers yet.

Everything that we do, logistics has to assume that they are going to try to contest it. Which means we got to decoy. We have to camouflage it. We have to move it in smaller numbers. We have to just operate in a different way. But that is—this is natural for marines to do. It is not a new thing, but the change probably is an assumption that all of that will be contested.

Senator FISCHER. Thank you. Mr. Secretary, do you have anything to add?

Mr. DEL TORO. Yes, ma'am. We are actually making major investments over the Future Years Defense Program (FYDP) in additional—adding additional oilers, for example, to support the ships

that will be necessary and the sealift that is necessary. We are also making investments in sealift, buying more used sealift as well, too.

All of this is integrated into Force Design 2030, along with the addition of additional amphibious lift and as well as the wires to provide the shore to shore connectors that are necessary for the marines to be able to effectively execute their expeditionary mission.

Senator FISCHER. Thank you. General Berger, since Russia's invasion of Ukraine, we have seen how small groups of warfighters armed with missiles and loitering munitions, they have real impacts on the ground.

While I agree it is too early to draw definitive conclusions from the ongoing conflict, how do you expect the Marine Corps to incorporate any insights that are gained so far into future exercises as you test out new concepts of operations?

General BERGER. One advantage that we have, and the Army is the same, as we are deployed, we have deployed units in Europe right now. So they can see firsthand, a

lot closer than you and I from Washington, DC, what is working and what is not. We have a built in model within the Marine Corps to feed that back in through our warfighting laboratory at Quantico into the ideas, the concepts, the capabilities of forces design 2030. There is no filter. It is a constant feedback loop.

I think, as you hinted, although you got to be patient in terms of jumping on lessons learned too early while conflict is going on, I think the two for me, the character versus the nature of warfare, some things in other words, are enduring, and those lessons learned haven't changed, frankly. Some of them that my counterparts have highlighted in terms of the importance of small unit leaders and decentralized command and control, speed, momentum, inside the operating decision cycle of an adversary, those are enduring things.

But the things that are changing, of course, the character of war, as you highlighted, the unmanned, the sensors, the growing importance of instilling confidence in those junior leaders to make decisions on their own quickly. So some things are staying the same and validated, some things in terms of the character of war, we need to absolutely feed back into the modernization effort, and we have a means to do that.

Senator FISCHER. Have you started any kind of consultation with our allies, especially within NATO, looking ahead at situations that are currently ongoing or that may develop in the near future?

General BERGER. In NATO specifically, yes. Yesterday I met with the Chief of Defense (CHOD) of Norway. We traveled to Norway last month, met with my counterparts and the Vice CHOD in Norway. In Poland right now, we have marine units operating in Poland, Latvia, and Estonia. We have a good exchange back and forth about what is working and what is not.

Senator FISCHER. Okay. Thank you very much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Fisher. Senator Kaine, please.

Senator KAINE. Thank you, Mr. Chair, and thank you to the witnesses. General Bergner, in his opening statement said, we are all on the same page, we need 31 amphibious ships. I just want to make sure Secretary Del Toro and Admiral Gilday, that is, he was putting, not putting words in your mouth, but stating a consensus opinion.

Mr. DEL TORO. Thank you, Senator. This Administration is very committed to amphibious lift without any question. As you all know, there is over \$2 billion in the budget this year alone in support of LHA and LPD-32 as well too.

I commissioned an amphibious study when I became Secretary of the Navy to try to get at what the right requirements are. That was coordinated closely between the Navy and the Marine Corps, and we informed the Office of Cost Assessment and Program Evaluation (CAPE) as well of all of our progress.

That amphibious study is today being reported out here in the next couple of weeks within the Department. The findings of that amphibious study will also be included in the ongoing naval force structure analysis that takes place—is taking place right now in preparation for Program Objective Memoranda (POM) 2024. I suspect that as we conclude all those assessments, we will see considerable support for amphibious lift moving forward.

Senator KAINE. Admiral Gilday.

Admiral GILDAY. Yes, sir. So the study that we just completed concluded 31, and we actually took a look at three cases that are consistent with the National Defense Strategy (NDS), the new NDS strategy. We took a look at traditional amphibs by themselves, looking across the spectrum of war and what they contribute, both in deterrence and also in the fight.

We took a look at light amphibious warships in the future with those vessels in expeditionary advanced bases. Then we took a look at traditional amphibs and light amphibs together.

We tried to take a look at it holistically, not just in the first two cases, but at the total amphibious fleet, postulating as best we can how we use them in the future. That is informing both the final number and then our acquisition path to field them.

Senator KAINE. Well, this is good news that—you know, there have been mixed messages about this and the Office of the Secretary of Defense (OSD) Cape had numbers as low as 12 or 24. So I know the study will be out formally soon. Based on the testimony today, we expect to see that at 31, and I appreciate your testimony.

Secretary Del Toro, I want to ask you about the *George Washington* (GW). There has been a series of deaths, but also the underlying conditions that sailors endure while a carrier is undergoing an overhaul. These overhauls are unlike others, which might be months at a time. They take several years. The GW has been in overhaul since 2017, and that means that some sailors will spend their entire career on a ship that never goes to sea, and they will never perform the duties that they trained for after graduating from boot camp.

I wonder if that fact, the length of these berths in the shipyard, is a challenging factor. I know that you were in a shipyard with one of the ships you commanded for 18 months during your Active Duty career. Talk a little bit about how the Navy is looking at this

George Washington situation, not only the particular instances, but the particular challenges that result from these very lengthy shipyard berths.

Mr. DEL TORO. Yes, sir, and thank you for your question, Senator. Without question, there is no greater responsibility than our safety of our sailors and our marines, and particularly when sailors go into an extended overhaul in a shipyard. Shipyard life itself is challenging enough.

When you are in the shipyard that long, it presents additional challenges. I think institutionally, the Department of the Navy, we need to collectively do a better job to provide the necessary resources to the ship itself in the contracts that are negotiated with the shipyard itself, to provide a higher quality of life for those sailors in the shipyard.

There are two investigations that are ongoing right now, command investigation, as well as an additional investigation by the Navy to look at some of these additional quality of life factors that perhaps play a role in this very unfortunate situation.

But we need to develop a plan that is more robust than what we are currently doing for especially aircraft carriers, because you are introducing upwards of 2,500 sailors into an already challenging environment.

Senator KAINE. Thank you, Mr. Secretary, and finally, General Berger, I am just going to conclude. My wife and I are moving this weekend from the family home of 30 years into a condo, and everything, every drawer we open is a memory and everything we throw away is a memory, and everything we give to the kids or to refugee families is a memory. We are excited, but change is hard. Change is hard.

I have been thinking about that a little bit in connection with some of the comments about Force Design 2030. I, for one, appreciate the fact that you have rethought fundamental assumptions and recognized the great things we have been doing, but also that the realities of the world mandate a Marine Corps that can perform the same mission but in very different ways, and that you are willing to embrace some significant change. I appreciate it. Thanks, Mr. Chair.

Chairman REED. Thank you, Senator Kaine. Senator Cotton, please.

Senator COTTON. Good morning, gentlemen. Welcome. Thank you all for your testimony and for your service to the country. Mr. Secretary and Admiral, I want to thank you two for taking the time recently to discuss the findings of the report that I commissioned with a few House members about the state of culture and warfighting in the Navy, especially the surface Navy.

I want to thank you for your thoughts on what you are doing to try to address some of those challenges. Mr. Secretary, I want to raise one of those specifically with you. What the report found was the so-called zero defect mentality in the Navy, especially among the officer corps in the surface fleet.

Could you talk to us about the specific policies that you have enacted since you took over to counteract that zero defect mentality?

Mr. DEL TORO. Yes, sir. It is more about an approach to our cultural approach in the Navy with regard to the command. As you

know, the CNO, with my support and collaboration, have initiated a policy of get real, get better. Part of getting real is coming to a very honest determination of the challenges that you face and things that has to improve in order for us to get better.

Part of that cultural dynamic is not having a zero defect mentality so that we can actually encourage our leadership at all levels, not just within the officer corps, but also within the noncommissioned officer corps, which is critical to our mission, so that they can honestly face the challenges that they have and provide recommendations that actually make things better.

So it is more cultural change to just the issuance of individual policies.

Senator COTTON. Okay. Do you think that Lieutenant Halsey or Lieutenant Nimitz would have made it past Lieutenant Commander in today's Navy?

Mr. DEL TORO. Probably not.

Senator COTTON. Admiral Gilday, what about you?

Admiral GILDAY. One of the things that we did recently is, I issued a new charge of command. This is a direction to our commanders, and I specifically addressed some areas where we have a Navy where we don't have tolerance, drug use would be an example, but we certainly can't be a no defect Navy.

One of the things that, in terms of changing the culture, that we together are trying to institute is this idea of embracing the red. So as you see slides in the Pentagon where there are usually stoplight slides and people like to focus on things that are green, things that are going well, swimmingly well, when what we really need to focus on and create an environment to address is to embrace the red and to fix the red.

This gets right to the fundamental need to be able to self-assess and then to self-correct, as individuals is and as an institution. When we took a look at a major fires review and we took a look at 15 different fires over the course of 12 years, and we took a look at the variance between units that perform very well and units that don't, it came down to the ability to self-assess and an environment that allows that to happen without being punished for basically communicating fearlessly up the chain of command.

That is what we are looking for fundamentally, sir, in terms of changing the culture, not just in the surface Navy, but across the Navy. It is going to take us a while, but I think we are on—we are in the beginning of a right path that has been well received by the fleet.

Senator COTTON. Okay. Thank you both. Again, that was just one issue from that report. I thank you all for the time you took to discuss that and the other issues, and I look forward to continue to work with you to implement those reforms, make sure our surface Navy is strong and healthy and ready to fight and win wars in the future.

General Berger, I heard a lot today about your Force 2030 concept and you have heard some support for it from the Committee as well. I just want to be direct about it, though. You seem to have kicked over a hornet's nest among a lot of your fellow retired marines—I guess you are not retired, but fellow marines who are retired.

Even among a former marine who was Secretary of the Navy and a member of the Senate. So I just want to give you a chance in plain English to respond to their many public critiques of your plan. Why do you think they are wrong in those critiques?

General BERGER. The genesis, the start point was really General Dunford when he was Commandant and then followed by General Neller when they, in a setting like this, articulated that the Marine Corps, although is very healthy and capable at that time, was not organized, wasn't trained, wasn't equipped for what the National Defense Strategy called for.

I agree with that. I also think that the speed at which we have to change is not necessarily driven by ourselves, it is driven by the adversary. It is driven by the pace of change of the threats. The level of risk is probably where it boils down to between those who feel like we should go at a more conservative, slower pace. I am driven by the pace at which the adversary is moving. We have to stay in front of that.

My job, like the CNO's, is not just to make sure that the Marine Corps is capable today, but 5 years from now that we have a margin of advantage over the PLAN or whatever the pacing challenge is 5 years from now. That is our job.

Senator COTTON. Thank you for the testimony and thank you for all the hard work you put into that. I hold you and the Marine Corps in high esteem. I hold many of your critics in high esteem as well, though, and I know the Committee will be working through all of those arguments about what has happened, because we share the same goal about a Marine Corps that is ready not just to fight today, but back tomorrow as well.

Chairman REED. Thank you, Senator Cotton. Senator Hirono, please.

Senator HIRONO. Thank you, Mr. Chairman. Secretary Del Toro, thank you for your support and commitment to deal with the Red Hill fuel installation situation in a way that helps restore Hawaii's confidence in the Navy. So the President's decision to include \$1 billion for the Red Hill Recovery Fund in his fiscal year 2023 request to permanently close Red Hill, not only protects the island's drinking water, but ultimately benefits our operations in the U.S. Indo-Pacific Command (INDOPACOM).

The closure rate is going to be a multiyear and multi-faceted endeavor and will require the Department of Defense to work closely with the Hawaii Department of Health and the Environmental Protection Agency (EPA). Secretary Del Toro, can you explain how the Navy is planning for the execution of these funds, and any concerns you have related to safe defueling of the tanks and closing of the facility?

Mr. DEL TORO. Thank you, Senator. Thank you, Senator—and thank you for your leadership on this issue. It means a great deal to our sailors, our marines, our Air Force, our Army soldiers, and, of course, all the people of Hawaii as well, too.

I am pleased that the Department of Navy has collaborated very closely with all the agencies in Hawaii, on Oahu and elsewhere, on this very important task. We will continue to collaborate and work very aggressively with all the appropriate agencies. As you know,

I have a requirement to submit to the Secretary of Defense a Plan of Action and Milestones (POA&M).

We are currently in the assessment stage of putting together that plan of objectives analysis memorandum to come up with the right steps that are necessary. At the same time, there are several investigations that are underway that are going to be revealing on matters and issues that have to be corrected as well too. Those findings will be included in our overall plan.

There is a third party assessment, as you know, that has concluded and is being reviewed right now in the Department of Defense so that we can properly make the investments that are necessary to determine what steps have to be taken to properly and safely defuel Red Hill. We will be collaborating very closely in accordance with the Executive Order that was just issued—revised Executive Order.

As you know, we have appealed the right to a hearing on that, and we wish to continue to collaborate very closely with Hawaii and all the involved agencies to get to the right result, so that we could also inform the Congress in terms of the investments that have to be made to properly execute the plan.

Senator HIRONO. Well, what started off, from my perspective, as a situation where the State of Hawaii, the Navy, Department of Defense (DOD) writ large, we were definitely not on the same page, and that is why your commitment to collaborating, and where I have seen that the State of Hawaii is withdrawing probably some concerns they had about the third party assessment, and the Navy holding back on some appeals processes that they could pursue, I think that is what we have to do. That everybody needs to get on the same page and work together, so that is what I am looking for because this is a very complicated situation, as you well know.

General BERGER, we have heard a lot about the 30—commitment to 31 amphibious ship situation, and this is a new number. So how would terminating the LPD line and having fewer than 31 ships impact the Marine Corps' ability to respond globally?

What I am getting at is I too am committed to 31 ships and there are people who don't think that that is the right number, but what if you—if you have fewer than 31 ships, what does that do to your ability to respond globally?

General BERGER. I will start off, and if there is time, ask the CNO if he has additional thoughts. But from my perspective, with the rest of the Joint Force modernizing as it is, the Marine Corps is probably one of the best hedges you have right now in the next 4 or 5 years. We have to be forward. We have to be ready.

This study that came to the result of 31 Incorporated, as a CNO highlighted, not just scenarios that OSD uses, but how to deter, how to respond quickly. 31 is a floor. Even with 31, there is risk. Of course there is. If we don't have 31, there are places—and there are things that are going to happen in the next 4 or 5, 6 years where the U.S. cannot respond. In the worst cases, somebody else gets there first and they are not a friend of ours.

Senator HIRONO. Admiral Gilday, do you have anything to add?

Admiral GILDAY. I do. Thank you, ma'am. So this is all about speed. It is about flexibility. It is about agility. It is about having options, not just in one theater, but around the globe. The Fleet

Marine Force afloat provides options to every single combatant commander, whether it is in the High North, where we see those forces exercising today, or whether it is in the Middle East or whether it is in the Western Pacific, everything from humanitarian assistance to they are perhaps our best platforms for working together with allies and partners.

Why? Because they are like F150 trucks filled with hundreds of marines with Ka Bar in their teeth. They are a motivator for our allies and partners. There are hundreds of different uses, almost—you are almost only limited by your imagination in terms of how you can use that force.

So, again, they provide options, agility, speed. I think the number 31 allows you to get more ships at sea and allows you to have—allows you to have more options.

Senator HIRONO. Thank you, and, Mr. Chairman, if I could just make two very short observations or comments. Regarding SIOP, we better to do a much better job of estimating the cost of the dry docks and all of that, because that is—that was a huge difference in what was happening with Portsmouth.

The cost estimate was \$750 million and then the contract came in at \$1.7 billion. Huge difference. We need to not have that. I brought up the 15-ship multiyear procurement, and I checked with the shipbuilders, and they said that they could build an additional ship.

So we need to come together on whether or not 15 ships is what we can actually get to. So I just wanted to make that observation, Mr. Chairman.

Chairman REED. Thank you, Senator Hirono. Senator Rounds, please.

Senator ROUNDS. Thank you, Mr. Chairman. Gentlemen, first let me begin by saying thank you to all of you for your years of service to our country. Admiral Gilday, let me once again thank you for the time that you have taken to visit with us most recently on Tuesday of this week, and your explanation of the movement that you are making within the cyber operations for the Navy and the improvements that you envision making as well.

I would like to pivot from that a little bit and move back in along a similar line to what some other members here have talked about, and that is with regard to the maintenance and the operations within our shipyards. In particular, I come back down to the same boat that I have talked about in the past, the USS *Boise*, I believe a *Los Angeles*-class attack submarine.

This is an item which has been up for, and it was supposed to be in the shop for its overhaul in the 2015, 2016 time period. It has been delayed for a number of reasons since that time, and there has been a constant discussion about moving forward. I understand that you are now moving forward and that you have decided to begin that process.

Could you share with the Committee the thinking that you are using and the thought process that goes into the decision that rather than scrapping that piece of machinery and actually rehabbing it, and the other ones, which are also behind it in line, for their upgrades?

Admiral GILDAY. Yes, sir. So I think everybody in this room understands the utility of our submarine force and its importance on a day to day basis in not only deterring adversaries, but when it comes to fight and win, they are absolutely essential as our most survivable, stealthy, strike—effective strike platform that we have in the Navy, perhaps in the entire Joint Force. So giving away any single submarine should only be—that decision should be made after great deliberation and exhaustion of other options.

So in the case of some of our newer 688—688 submarines or 688i's, which have a Vertical Launch System (VLS) capability, we have seven of them planned for engineering overhauls as an example, to keep what some might refer to as a legacy platform, continue to get four or five deployments out of these submarines so that we can continue to keep them in the fight, if you will. The challenge with *Boise* really rests inside the private shipyard that is doing that work.

So we have two private yards that do that work and we need their capacity. So based on the fact that we continue to build a viable submarine force, and we know that we don't have the capacity in our public shipyards to handle all of that maintenance, we need Electric Boat, and we need Huntington Ingalls to be able to do that work.

They are underperforming. They are over cost and way over schedule. But because we need them, we need to hold their feet to the fire to those contracts. They need to pay penalties when they don't meet their requirements. But we need them to be all in with us and the Nation that they are supporting in this critical effort. But we need to continue sort of to press them to do a better job. We need that capability. It is a national imperative.

Senator ROUNDS. Thank you, sir. General Berger, I have looked at your Force Design 2030, and I know that Senator Cotton led into this a little bit. There are some very well-respected former officials within the Marine Corps that had questioned whether or not it was the right direction to go.

I appreciate the fact that you have continued to move forward, but I think perhaps just for the Committee, we could walk way back a little bit in terms of all of the reasons for the need to move in this direction.

I think back to perhaps, and I may be off on this, but in the Nagorno Karabakh war between Armenia and Azerbaijan, which was caught between September of 2020 and November of 2020, we saw two countries that really did not have huge armies, and yet in a very short period of time, Azerbaijan was able to have a very decisive victory using 21st century weapons systems, including loitering munitions, long range precision fires, a lot of the items that you are identifying as being necessary for the Marine Corps.

Could you talk a little bit about the way that you envision the marines fighting, not just when it comes to People's Republic of China (PRC), but other areas around the world that some people think, well, we are looking at PRC. It appears to me that you are looking at lots of different scenarios here, but in particular, the reason why you have moved in the direction of loitering, munitions, and so forth.

General BERGER. Some folks have written about the precision strike regime, the evolution of that over the past 15 years, 20 years. I am in full agreement there. Combine that with the proliferation of sensors, makes it a very different battlefield than we had 20 years ago. So we have to be able to operate inside the threat's collection range, inside their weapons range, and be lethal, both.

That meant adjusting the construct, the warfighting concepts of the Marine Corps and our own structure within, to make sure that we can operate inside there persistently, strip away the adversary's ability to collect against the Joint Force and collect against them all at the same time. That is where we are headed. It is a different force than we had in Desert Shield, Desert Storm. It is not a persistent—it is not a second land army. It is what the Nation needs us to be able to do.

Senator ROUNDS. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rounds. Senator King, please.

Senator KING. Thank you, Mr. Chairman. I want to start with an observation. Senator Cramer and I the other night had dinner with a former member of the Ukrainian parliament from Odessa, and he told us, this is a side effect of this war that I thought reflected well on our support of the Ukrainians, apparently a common name for a new male Ukrainian baby these days is Javelin.

For female babies, it is Javelina, and I thought that was an indication of the importance of the support we are providing to the Ukrainian people. Mr. Secretary, I want to start with a complement which often doesn't occur at these hearings. I want to compliment you because, as I see it, your largest single increase in your budget is research and development (R&D).

I think that is absolutely essential. Looking back through history, technology often wins wars or certainly has an important influence on the outcome of wars. In World War II, radar and of course the invention of the atomic weapon, which was pure R&D, ended World War II. Going back to the Battle of Agincourt was the longbow.

Even the homely stirrup, many historians believe was the basis of Genghis Khan's ability to conquer the known world at that time because it provided stability to his archers on horseback. So I want to thank you for that. Now, here is the question. I believe the technological breakthrough of this moment in time is the hypersonic missile. My question is, are we dealing with that issue both from a defensive and an offensive capability point of view with the requisite sense of urgency?

My concern is that our, for example, our forward presence in the Pacific is based upon aircraft carriers. I realize this is an unclassified setting, but I want some assurance that this is a hair on fire issue at the Pentagon to deal with what could be a strategic game changing technology, the hypersonic missile.

Mr. DEL TORO. Thanks for the question, Senator, and let me assure you wholeheartedly that this is a hair on fire type of investment in terms of developing the necessary, not just developing the R&D for it, but also as it applies to all our platforms and ensuring that we can quickly acquire that technology from the R&D to capa-

bilities that we can actually put in the hands of the warfighters across the board.

With regard to hypersonic, yes, we are making major investments in hypersonic. I feel quite confident that we are going to be seeing some of these tremendous capabilities, particularly Conventional Prompt Strike (CPS) on *Zumwalt*-class destroyers, be deployed within the next couple of years. Then we will be aggressively deploying those ships in the Indo-Pacific where they will be most needed.

Senator KING. Admiral Gilday, are you comfortable with our progress in dealing with the strategic applications of hypersonic?

Admiral GILDAY. No, sir. I am not. But I will tell you what we are taking a look at. With respect to terminal defense, layered terminal defense, right now we have—we are deploying directed energy systems on some of our ships. We are testing it real time against both swarming surface vessels as well as a ballistic missile defense system, which gets your point about hypersonics.

High powered microwave is another critical technology that we are investing in, and a critical enabler for any of those terminal defense systems is going to have to be quantum computing, another area where the Secretary has us making additional advances with respect to R&D.

So in terms of giving us decision superiority over the adversary and understanding, applying both quantum computing with AI capabilities, helping us put a defensive weapon on a target like a fast moving hypersonic missile is going to be key. So those are some of the things that we are working on right now, sir, inside that R&D—

Senator KING. I like it that you started your answer to my question with no rather than bland assurances, because that indicates to me that you recognize the seriousness of this issue. A quick final point, Mr. Secretary, on an entirely different subject. There is data that indicates the most dangerous point for veteran suicide is in the first 2 or 3 years after they separate from the service.

I believe that the services should be putting as much money and time and effort and thought into transition out as it is to recruiting in, because this veteran suicide issue is serious. It is an embarrassment, and it is a tragedy to be losing something in the number of 20 veterans a day.

But since we know from the data that that first year or so after leaving Active Duty is a moment of maximum danger, I hope that you will think about how to make that handoff from after Active Duty to the Department of Veterans Affairs (VA) warmer. Think about not only the physical pieces but also the mental and the stressors that impact our veterans as they become veterans.

Mr. DEL TORO. Senator, I have, and I do actually, having personally made that transition myself. I know the challenges that one faces with regards to suicide and depression and things of that matter. I talk about it just about everywhere I go.

I talk about how important it is for our sailors to take care of each other, to really care for each other throughout, when a sailor shows up to the ship, to the squadron, wherever it may be, while they are there, and actually as they transition from their command to another command or to the civilian sector as well, too.

So we are focused on that, and we actually do work with the Department of Veterans Affairs on this issue.

Senator KING. Thank you. I hope that will be an urgent priority as well. Thank you, Mr. Chair.

Chairman REED. Thank you, Senator King. Senator Blackburn, please.

Senator BLACKBURN. Thank you, Mr. Chairman, and thank you to each of you for your service and for being here with us today. I want to start with the Nuclear Posture Review. Admiral Gilday, yesterday in the House Armed Services Committee hearing, you were asked about support for continuing the Sea-Launched Cruise Missile (SLCM), and your quote was you supported continuing it while we get a better understanding of the world we live in with two nuclear capable peer competitors.

This is something that I have talked about with our commanders as they have come before us for their hearings. I have mentioned it to our Chairman of the Joint Chiefs. They have all expressed concern with the Administration's decision to cancel the Sea-Launched Cruise Missile and have—the Administration's position of that is redundant with our other capabilities.

That is something that causes me concern. So, Admiral Gilday, I appreciated your remarks on this. So Secretary Del Toro, let me ask you, what is your position on this?

Mr. DEL TORO. Yes, ma'am. I agree with the President's budget. I believe that we should zero out the SLCM line. I believe the President has all the tools in his toolkit necessary to deter and deal with the threat of a tactical nuclear missile—

Senator BLACKBURN. So you are not worried about our capabilities?

Mr. DEL TORO. I am not. I believe that the President has all the tools in his toolkit, whether W-76 weapons—

Senator BLACKBURN. Your assessment of China as a—with their push on great power competition, that doesn't keep you up at night or worry you?

Mr. DEL TORO. That absolutely keeps me up at night and worries me. But as far as deterring China's nuclear capability, I believe that we far exceed what we have right now in terms of being able to deter the use of a tactical nuclear missile with the W-76 warhead—

Senator BLACKBURN. Okay. What message do you think it sends to our competitors if we are going to reduce rather than bolster our nuclear capabilities?

Mr. DEL TORO. I think the message that it sends is that we are actually using those resources and to the tune of about \$30 billion to make the necessary investments in hypersonics—

Senator BLACKBURN. So you completely agree with the President?

Mr. DEL TORO. Excuse me, ma'am?

Senator BLACKBURN. You completely agree with the President?

Mr. DEL TORO. I completely agree with the President and Secretary of Defense.

Senator BLACKBURN. That is what I wanted to know. Admiral Gilday, you also referenced a, in your words, a particular gap in

capabilities which SLCM could fill. So tell me, what is that particular gap?

Admiral GILDAY. So the gap specifically is the tactical nuclear capability of specifically Russia, but gaining steam is China. The question is, how do you best close that gap? SLCM-N has been offered as a single point solution. I would offer that there are others to think about, including low yield nuclear weapons that we deploy right now and had support of the Congress, making those changes based on the previous Nuclear Posture Review (NPR).

I also think hypersonics are an important capability. The Army is fielding that capability this year. The Navy is going to follow suit in 2025, as the Secretary mentioned, with that same capability.

Senator BLACKBURN. Yes. Let me ask you about hypersonics because—and by the way, thank you for mentioning quantum computing. I totally agree with you and Oak Ridge National Lab is doing some great work in quantum research. When we look at hypersonics and we look at Arnold Engineering Development Center in Tennessee, which has the capability to support this hypersonic supply chain, talk to me about where you think we are with modernization for our testing facilities, where we are with outsourcing, when it comes to our hypersonic capabilities.

Admiral GILDAY. We continue to make investments in the testing facilities, including the testing facilities that allow us to take out hypersonic weapons and to refine its capabilities so that it is actually able to be launched from a submerged submarine, because we want to put that capability aboard our new subs as early as 2028. So that is an example of continued investment.

As I look at the hypersonics program, that is a joint program among the services, we are meeting every benchmark and milestone in that program. So I am confident, I have a pretty high degree of confidence in the Army system that we will field this year, in a mobile system, and then the Navy system will follow suit.

Now, I think with the continued support of Congress in those funding lines, and last year you actually doubled the Navy's funding for hypersonics, which we are grateful for.

Senator BLACKBURN. Well, I spoke to General Brown during the Air Force posture hearing about this issue and the capabilities that we have at Arnold, and also about looking at how we leverage risk and how we take more risk in pushing forward in this sector. Thank you, Mr. Chairman. I yield back.

Chairman REED. Thank you very much, Senator Blackburn. Senator Kelly, please.

Senator KELLY. Thank you, Mr. Chairman. General Berger, I have got a question about Marine Corps Air Station in Yuma. Arizona is really proud to host the marines in Yuma, including F-35 squadrons. I have had the opportunity to fly the F-35 simulator a couple of times. It is nice to know that our fighters, our premier fighters, outmatch those of our adversaries, and we are happy to have them in Arizona.

So we have got this premier fighter, but we also have a base that has some infrastructure problems, critical infrastructure. Marine Corps Air Station Yuma, they are currently planning to upgrade the water treatment facilities on the installation. My understanding is that the current treatment plant was built in 1947, so

it is nearly 80 years old. This treatment plant supplies water for a large part of the base, bases, the bases' systems, but also supplies water for family housing and tenant commands, and the water doesn't meet water quality standards.

I understand that the current budget plans would not seek funding for this project until fiscal year 2026. So I am concerned that the system is not able to meet these water quality regulations for potable water. This cannot be—with the current plan will not be addressed for a number of years.

General, are you looking to expedite projects like Yuma's water treatment plant that affect the health and safety of our marines and their families?

General BERGER. Thanks, Senator. Having lived at Marine Corps Air Station Yuma in 1991 to 1994, I think, I know exactly what you are talking about. If you will allow me, Senator, I would like to look into this problem and come back to you individually with where that project is in funding, and to your point, what might be done to accelerate it.

But you are never going to—I don't think you expect us to shoot from the hip. So if it is okay with you, I will do the homework and I will come back to your office with "here is where it lays right now and we—and this is what it would take to accelerate it."

Senator KELLY. I appreciate that. I have spent a lot of time down there on the base looking at facilities. You know, I really love looking at the airplanes and spending time there, but it is as important as the airplanes are, you know, things like enlisted housing, which also we, my office would like to follow up on that issue as well. Got a totally different question for Secretary Del Toro and Admiral Gilday.

In April, the State Department announced that the United States and India had agreed at their recent two plus two dialog to explore possibilities of utilizing Indian shipyards for repair and maintenance of ships of the United States Maritime Sealift Command. I was in India just a few weeks ago and had discussions about this with Indian officials, deputy National Security advisor, their Secretary of Defense, and they were really interested in this opportunity and optimistic about it.

So in connection with this possibility, Mr. Secretary, to what degree would doing this work enhance Navy and DOD operations in the Indo-Pacific region, and would doing this work in Indian shipyards strengthen U.S., Indian relations?

Mr. DEL TORO. Thanks, Senator, and thanks for your dedication to this issue, because what distinguishes us from the Russians and the Chinese is the alliances, the strength of the alliances that we have with our partner nations around the globe. That is no better example of our relationship with India as it continues to grow.

While the specifics of this deal is being negotiated, I think overall that it is a perfect representation of what we need to continue to do around the globe as well in order to support our ships deployed in the Indo-Pacific. The CNO has been very engaged in this, and with your permission, I would like to ask him to discuss the matter further.

Admiral GILDAY. Thank you, sir. I visited India and I specifically asked to go to Mumbai to take a look at their civilian shipyards,

to see for myself what their capabilities are. This is a quick win for the United States-India relationship. We are just sending now a team over there to do a more detailed survey. My goal is to get a ship in there this summer to do voyage repairs.

So, it gives us more flexibility, more opportunities in theater to get ships fixed. They have a high degree of confidence in their ability to do that. I think we are on the right track, sir, and I will follow up with you as we nail down that deal.

Senator KELLY. All right, and if there is any other, you know, gaps and authorities that you need from Congress, please let us know. I would like to figure out a way to get this done. India and the United States, we have the same strategic problem in the region, and that is China. So it is—wherever we can look for opportunities to work jointly with the Indian Government, the Indian military, I think it benefits us. Thank you.

Chairman REED. Thank you, Senator Kelly. Senator Tuberville, please.

Senator TUBERVILLE. Thank you, Mr. Chairman. Thank you very much, gentlemen, for being here today and your service. Admiral Gilday, after the fall of Afghanistan, we didn't see a single senior officer lose their job. I think that surprised many, many people here in the United States.

You know, we have heard a lot today about current culture problems plaguing the military, but I want to commend something that the Navy does exceptionally well, accountability. The Navy has a huge culture and accountability—for example, the USS *Connecticut* hit an underwater mountain last fall. Am I correct that you removed the Commander, Executive Officer, and the senior enlisted boat Chief?

Admiral GILDAY. Yes, sir, we did.

Senator TUBERVILLE. In your words, why is the Navy's culture of holding senior officers accountable more important in maintaining standards and performance? Could you give me your thoughts?

Admiral GILDAY. Well, sir, I think standards of command are very important. They are grounded in the law. They are also grounded in Navy regulations. But more importantly, there is the expectation that our sailors have that we hold our seniors accountable.

Perhaps even more important than that, the confidence of the American people. That they send their youth to serve for their country and that they be well-led. If they are not well-led, then we change those leaders out.

Senator TUBERVILLE. Thank you. In your opening statement, there was a couple things that struck me, and this is also for General Berger. Recruiting, training, and accountability. You said that you would much prefer quality over quantity, and I think we all agree with that. 21st century military. I think that we all need to open our eyes about what just happened in the last 70, 80 days, Russia going into Ukraine.

Russia had every hand up in Ukraine, except Russia didn't realize, they hadn't been in a war in a while, and their mid-level officers failed, their leadership failed. They had all kind of weapons, and they got their tails handed to them. I think it is very, very important that we understand this is a different era. I just came from

coaching. The kids, young men and women have changed over the last 20, 30 years, and we need to change with it.

Now, I take my hat off to General Berger of what he has done in terms of changing his philosophy of the weapons that they might use in certain ways. What do you think about the future of recruiting and training and the accountability of today's young men and women in our armed forces?

Admiral GILDAY. Well, sir, I think our recruiting—there are definitely recruiting challenges based on the fact that the pool of qualified recruits is getting smaller, is not getting larger. I will say this, I think it is important for the country to celebrate what a great military that we have so that our youth actually see that as a viable, attractive option for them to serve their country with pride and to make their families proud.

But it is something that, you know, all too often, you know, there are plenty of cheap shots out there, it is easy to be negative. But, boy, the further you get away from D.C., the better things look with respect to the United States Navy and the United States Marine Corps, and the quality of people that we have serving and the quality leaders, the dedication, the passion, the commitment, it is a great outfit with a great future for anybody that wants to join.

Senator TUBERVILLE. Thank you. General Berger.

General BERGER. Sir, you mentioned Russia and other folks in here have mentioned China. I think in the same way as some people contrast the democracy versus, you know, autocracy, we have an All-Volunteer Force. Not lost on us, right. In other words, sort of like democracy is an experiment. All-Volunteer Force is not on autopilot. I mean, that is where you are driving it.

We have to work at an All-Volunteer Force. It is not on autopilot. Now all of us, every recruiter, all of you are part of the health of that force. They come into the military for a lot of reasons. Money is an incentive, but that is not why they joined the Navy, that is not why they joined the Marine Corps. They want to be part of something bigger. They want to be challenged. They want to contribute to the U.S. We all have to be proactive, I think, in how we bring them into the military. It is not on autopilot. It is not on cruise control.

Senator TUBERVILLE. We can't lose our hard nose training because you just saw what happened with Russia's military. Social media, to those men and women fighting for Russia was a problem. They all had phones and they are able to read those. It is a different era.

We need to make sure we can adjust to this era along with it, because if we don't, then it doesn't make any difference how much money we spend or how we go about recruiting. If we don't look at the problems that we just saw from a superpower, then we will not learn ourselves and we could end up on the same side of the boat. Thank you very much, Mr. Chairman.

Chairman REED. Thank you, Senator Tuberville. Senator Peters, please.

Senator PETERS. Thank you, Mr. Chairman. Secretary Del Toro, in February of this year, a Federal judge approved a settlement agreement in the class action lawsuit *Manker v. Del Toro*. The lawsuit alleged that the Navy had systematically denied discharge sta-

tus upgrades to Corporal Manker and thousands of other marines and sailors who were suffering from Post Traumatic Stress Disorder (PTSD) or Traumatic Brain Injury (TBI) at the time of their discharge.

These denials were in direct contravention of statute, as well as internal DOD memoranda. That both a Federal judge and the Department of Navy agreed to a settlement demonstrates the veracity of the claims put forward by Corporal Manker. This agreement is also in line with the earlier settlement agreement from *Kennedy v. McCarthy*, which dealt with nearly the same issue but for the Department of the Army.

As a sponsor of the Fairness for Veterans Act, the issue of bad paper discharges and ensuring our veterans are getting the benefits they have earned through their service is a priority for me, and the allegations leveled in *Manker v. Del Toro* are certainly extremely troubling for these folks who were suffering from PTSD and was not diagnosed at the time of their discharge.

My question for you, sir, is why did the Navy choose to ignore the Fairness for Veterans Act as well as protections laid out in Hagel, Kurta, Wilkie, and Carson memos when dealing with veterans appearing before the Naval Discharge Review Board?

[Technical problems.]

Chairman REED. Mr. Secretary, could you bring the microphone close, please?

Mr. DEL TORO. Thank you, Senator, for your support of the Fairness for Veterans Act. As to the question—and thank you for your support of our veterans in general. I am committed to ensuring that our veterans receive the appropriate due process through the Navy's Discharge Review Board, and I am pleased that we were able to settle on this matter. As I understand it, the Department of the Navy did not endorse the Fairness for Veterans Act, or the protections laid out in these memos.

Though Department of Navy did not clearly articulate that the memos were taken into consideration during the adjudication process itself. The memos provide that not all misconduct can be mitigated. However, there are nuances, including when the memos were issued, and which entities and classes of veterans were subject to them.

I would be happy to set up a specific briefing with your offices to discuss these nuances and your concerns but let me assure you that we will continue to cooperate to the fullest extent as we actually execute the details of the agreement itself.

Senator PETERS. Do you do you see any difficulties in fully complying with this settlement, and what are the timelines you have?

Mr. DEL TORO. I do not. I will have to get back to you on the exact timeline, Senator.

Mr. DEL TORO. Based on current staffing levels, and the need to continue meeting the regular demand and activity of all Council of Review Board (CORB) boards, the CORB anticipates a minimum of 60 months to complete the review and handle the roughly 3000+ cases involved in the Manker settlement.

One restrictive measure is the need for a medical officer, usually a psychiatrist or psychologist, to be part of the review team. Medical officers, especially psychiatrists and psychologists, are in short supply.

Senator PETERS. Well, I appreciate it. I would love to work with your office on this issue going forward.

Mr. DEL TORO. Yes, sir.

Senator PETERS. General Berger, Force Design 2030 calls for, among many things, the Marine Corps to more enthusiastically embrace the use of drones, both at the tactical level, through the use of Ravens and Pumas, but also at the operational level with a recent procurement of MQ-9s.

If U.S. Indo-Pacific Command is the theater priority, which it is, and increasing the marines' organic ISR is a priority of yours as well, that I understand, I am curious though, how you plan to embrace these new platforms as you also at the same time simultaneously seek to divest yourself of roughly 10,000 marines over the next decade.

So my question for you is, in an era of constrained budgets and static or declining personnel levels, how do you plan to leverage the manpower resources available to you in the Marine Corps Forces Reserves to bolster the Marine Corps ISR capabilities and use of drones?

General BERGER. A couple of thoughts, sir. First, the divestments for the Marine Corps are largely done. That is what the last 3 years was focused on, including the structure. We are about where we are leveled off at 177,000 plus or minus, and that is about where we were before 9/11. So that part is complete.

The modernization of the Marine Corps, as you highlighted, will amplify the role of unmanned systems, air, surface, ground, and closing—organically closing kill chains and kill webs is what enables that forward force to do what it is going to need to do. So what is the difference?

Well, some of it is the change in the way that we operate. In other words, unmanned systems for the last 15 years had a big footprint on the ground in terms of ground control stations, infusion. All of that, I think artificial intelligence and the modernization of the network will shrink that.

Second, frankly, the folks who operate those systems now, they are digital natives. This is the world they grew up in. So we are not teaching somebody something from scratch. This is something they have lived with since they were a teenager.

Senator PETERS. That is correct. Thank you so much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Peters. Senator Sullivan, please.

Senator SULLIVAN. Thank you, Mr. Chairman, and gentlemen, thank you for your service. General, I want to stay focused on Force Design. Again, I appreciate, like a lot of Senators, bold initiatives pursuant to the 2018 NDS that you have undertaken with Force Design. I do want to go into a couple of the bigger issues that have emerged, one in which I see probably the biggest risk to the force and the mission of the Marine Corps that I am concerned about is the rate of divestiture compared to the rate of new capability development being fielded.

It is in essence building on what Senator Peters mentioned. In particular, a lot of the experts view one of the most dangerous periods in United States, China relations as in the late 2020s. As you have executed Force Design, the Marine Corps has reduced the number of—the number and size of infantry battalions, divested all

its tanks, reduced the number of aviation squadrons and cannon artillery batteries.

Additionally, just last month, the Light Amphibious Warship (LAW), a central piece to the concept of Stand-In Forces in Force Design, was announced will be further delayed until 2025. First ship is not expected till 2027.

Can you explain how the rate of divestiture and the rate of new capability development integration keeps the Marine Corps optimally prepared for conflict today and in the future? Is there risk and how do you mitigate it? I believe there is risk.

General BERGER. There absolutely is risk. I think in any organization that goes through Force Design, civilian sector or military, if you are going through that effort, there is absolutely some risk. The challenge is making sure you can see it, you can understand it, that you share it with the stakeholders, including this Committee.

You have ways to offset that risk while you are modernizing at speed. If we had waited—for example, Senator, if we had waited 3 years, let's say we have waited until this year to start divestment, we would never be able to stay in front of China. That is the assumption going forward.

At the rate that they are modernizing and expanding, if we had waited, we never could have closed the gap, never would have stayed in front.

Senator SULLIVAN. Can I ask you, General, just to your comments that you just made, to work with this Committee to ensure that this—again, there is a lot of divestment going on right now, pretty dramatic, and capability development is further out. The LAWs are delayed. Some of these systems haven't been fully developed.

Can you provide to this Committee a timeline and a chart that anticipates year by year between now and 2030, or maybe even looking back when Force Design 2030 began, to what we are divesting and what we are gaining and how will that make sure that the gap in the trough between divestment in combat capability is not so big that it poses risk to the force or mission? Can you provide that to the Committee?

General BERGER. I can absolutely do that, and that is the rationale, that is the reason behind publishing each year, "this is where we are with Force Design, this is what we have learned today, the actions taken, this is the plan ahead," which we published last month for this year.

Senator SULLIVAN. Yes. No, I saw that.

General BERGER. That is the goal.

General BERGER. Given the current operational and threat environment, legacy and status quo capabilities do not sustain the United States' competitive advantage. By modernizing at speed, the Marine Corps reduces "long-term" risk to force and mission. Modernization efforts will always incur some risk to current operational demands. However, the prolonged delay in modernization creates greater risk with respect to a pacing adversary. Our modernized systems provide an order-of-magnitude increase in capability that is applicable in a near-peer fight, and across the range of military operations.

The Marine Corps does assume short-term risk in overall capacity stemming from the transition from current legacy platforms to a modernized capability. However, the current modernization program will not incur risk to the Marine Corps' crisis response capability. As modernization progresses, capability will actually increase.

The Marine Corps continues to leverage all elements of the Marine Air Ground Task Force to mitigate potential imbalances between investments and divestments.

Senator SULLIVAN. I appreciate you working with us on that. Let me go to another issue and you mentioned it in your testimony, but some of the criticisms of Force Design is that it is so China focused that it undermines the Corps' capability to be a lethal force in readiness, to meet any contingency anywhere in the world, which, of course, is a hallmark of the Marine Corps.

Can you describe in detail how the Marine Corps of 2030 will apply to combat—combined arms across a range of global conflict scenarios, and how that compares and enhances your current combined arms and Marine Air-Ground Task Force (MAGTF) capabilities anywhere in the world, not just China.

General BERGER. The distinction—the understanding of what pacing means matters, of course. The term pacing, of course, predates 2018 when the National Defense Strategy first came out. Pacing, that is that level, that is the bar at which the capabilities, if you have to either match or overmatch that in order to compete and win.

It is not about invading China. It is not about fighting China. It is about that is the level of capabilities that the Joint Force and the Marine Corps has to have, has to have a relative advantage over. So the whole Force Design effort, in fact, the modernization of the Joint Force is meant with that in mind.

Not us, what is the likelihood of us fighting China, but what is the level of capabilities that we will need in order to have a relative advantage now and into the future? Combined arms in the past of course worked very well for the Marine Corps, has ensured our success. It will be the foundation going forward. But how we fight combined arms will change. The integration of sensors to shooters was step number one.

The second one is the shortening the steps from the data to the shooting element. This is a progression of combined arms, this natural, this is evolution. Again, driven by technology on the one hand, and the threat on the other hand.

Combined arms in 2030 or combined arms in 2027 will look a little bit different than today, and it is necessary, but it is still combined arms, and it is in support of, or in conjunction with, maneuver always.

Senator SULLIVAN. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Sullivan. Senator Rosen, please.

Senator ROSEN. Well, thank you, Chairman Reed, for holding this hearing. Thank you, the witnesses, for being here today, for your service. Secretary Del Toro, it is really good to see you again. Thank you for meeting with me recently. Of course, I am going to talk about our Fallon Naval Air Station today. Secretary Del Toro, as you well know, we are so proud, Nevada is so proud to host Fallon Naval Air Station. It is home to Top Gun, our Nation's premiere carrier air wing, and our SEAL training centers.

The Navy is seeking to expand Fallon by over 650,000 acres. As we have discussed on several occasions, this proposal would impact our local communities, our tribes, sportsmen, ranchers, and others who currently access and operate on these lands. I really appre-

ciate the visits you and Admiral Gilday have made to Fallon, and your continued collaboration with me and the Nevada delegation.

Thank you to all the local stakeholders, as we all work to reach consensus on a proposal that both supports the military modernization requirements you are speaking of, keep up with our current and emerging threats, while maintaining Nevada's natural and cultural resources through land mitigations in the northern parts of our State.

I know we have been working with the Department of Interior to improve the original expansion request, and that the Office of Management and Budget (OMB) has just cleared the legislative proposal on Tuesday for Congressional review. So now that it has been released to Congress, could you speak a little bit about the specifics and how you think it addresses the concerns raised in the original Fallon proposal, Mr. Secretary?

Mr. DEL TORO. Yes, ma'am. Thank you for your leadership and the leadership of the entire delegation on this critically important issue to our combat readiness across to the Department of the Navy, both Marine Corps and Navy.

Obviously, the expansion of Fallon is simply critical to our combat readiness in the future to be able to deter our aggressors and China, Russia, and anywhere else around the globe with modernized aircraft and missile systems and weapon systems.

It is just simply critical that our warfighters be able to train like they fight in order to create a culture of warfighting excellence.

I am very pleased the Department of Navy has been able to come to agreement with all the stakeholders that are involved in a very respectful way across the entire community to try to come to a better place so that this legislative proposal can move forward here in the Congress.

We do look forward to its possible passing this coming year.

Senator ROSEN. Thank you. I want to talk about a critical housing shortage, though, at the Naval Air Station, because it is the only naval base in the continental United States that is designated as a critical housing area.

The housing shortage has just been—we have been briefed to leadership for future construction. Little progress has been made. The shortage, of course, is only getting worse. As we modernize and expand, this is going to place a bigger strain on housing.

I understand that there is about 400 acres of land adjacent to the current base housing at Fallon, which was once housing that was demolished years ago. Are there plans to re-utilize this, and can I have your commitment to really increase housing in Fallon and surrounding areas?

Mr. DEL TORO. Senator, this is another issue that is incredibly important to the quality of life of our sailors across all the Nation, and specifically to Fallon as well too. Allow me to come back to you with answers that regards a specific issue there at Nevada in terms of the timeline.

But we are deeply committed to providing not just family housing to our sailors who have families, but also to our single sailors as well too in order to provide them the quality of life that they deserve. Admiral, would you like to comment any further on that or—?

Admiral GILDAY. Just a quick comment, ma'am. Fallon is a national treasure. What we—what it provides for our warfighters is absolutely unmatched. If you take a look at Russia showing up to a fight untrained that is a reason why we need Fallon.

The first time we use these weapons with these aircraft can't be in conflict. With respect to housing, we are making an investment in Fallon, and we hope to put, we are on track to put a contract for 172 new units in place about a year from now.

Senator ROSEN. Well, that is terrific, because we know Fallon, of course, is a small area surrounding there. There is a housing shortage already. You can't expand and modernize and bring the kind of staff that we need, even the workforce for the surrounding community to support everyone, unless we have at least affordable housing for our servicemen and women.

I appreciate you getting on this and thinking about it as quickly as we can and get it on the board. Because I—we can't have homeless servicemen and women. That is for sure. Thank you. I yield back.

Chairman REED. Thank you very much, Senator Rosen. Senator Scott, please.

Senator SCOTT. Thank you, Chair, for holding for me. I want to thank each of you for your service, your hard work in trying to make sure we have the most lethal military in the world. Can you talk about how it doesn't seem like our risks are going down? China is continuing to be belligerent. They are trying—they are building a big navy. Russia is not getting better.

You know, there is no place in the world that seems like it is getting safer right now. So the President's Budget has us shrinking our naval battle force from 298 ships today to 280 in fiscal year 2027.

So talk about how you are going to—how you are going to deal with the reduced capacity, how—you know, what plans do you have to be able to continue to provide the same support around the world where it might be needed?

Mr. DEL TORO. Good morning, Senator. It is an incredibly important question. Yes, capacity does dip down in the next 5 years, but then it steadies out again 5 years later according to the shipbuilding plan. But what is more important is that although the size of the Navy may dip, the capabilities of the Navy are actually going to be greater than they ever have been before.

We are actually bringing online just over the next set of 50 battle force ships and supply ships that are going to be far more capable of deterring our aggressors, China, Russia, anywhere else that we face aggressors around the globe than we have been able to in the past with the type of R&D investments in modernization that is critical to deter them in every way.

Senator SCOTT. Admiral Gilday.

Admiral GILDAY. Sir, we have underinvested in the United States Navy for two decades, for a good reason, based on our priorities in Afghanistan and Iraq. As you know, getting the industrial base, putting that rudder over and generating new capability at speed, that is a challenge, particularly when you think about the complexity of the warships, the best warships in the world that we put

to sea manned by the best sailors in the world, and so it is going to take time.

I would draw a parallel to the Commandant's challenge with Force Design 2030, when new capabilities always lag the divestment. But based on the top line that we have, and based on the threat that we face, particularly with respect to China, we have to make sure that based on the budget we have, we are fielding the most lethal, capable, ready force that we can.

You mentioned in your comments upfront that lethality matters, so I think we are 100 percent aligned with respect to that. We are trying to make sure that both the Navy that we have today, the Navy we have in the future, has the best capabilities, but also is the best trained force that we can put on those ships.

Senator SCOTT. Can you explain what happened with the Littoral Combat Ships that we just commissioned a couple of years ago, now we are talking about—I mean, what happened? Did we just—did our needs change or did we pick the wrong ship before? I mean, it is a pretty big investment to get rid of.

Admiral GILDAY. Yes, sir. So the Navy's enduring missions are sea control and power projection. We should never, ever lose sight of the capabilities that we are going to invest in, contribute to those two missions. I would offer that LCS was an idea 20 or 25 years ago that just did not consider those two missions with respect to those two enduring missions, with respect to a high end peer competitor like we face right now with China.

With respect to the nine ships we have right now on the table in this budget proposal to retire, that is primarily driven by the fact that the systems that we were going to put on that ship just did not pan out in terms of technical capability against the threat that we are facing.

My best advice would be not to put another dollar against those systems, but to reinvest that in systems that really make a difference in the future and in weapons that we need today in the fleet.

Senator SCOTT. Okay. Thank you. General Berger, as you revamp what the Marine Corps is doing, can you talk about how you are going to have to change your working relationship with the other branches of Government to be able to fulfill your mission?

General BERGER. I don't know that it is a fundamental shift, or are you talking about outside the Department of Defense, Senator? Is that what you mean or—?

Senator SCOTT. No, the other branches of the military.

General BERGER. Oh, the other branches. Here, I think no fundamental change, no, but I think a more realistic view of where overlaps are between the services that are healthy and where they are redundant and excessive. In certain areas, for the Joint Force to do what it needs to do, overlap is healthy—overlap is a good thing. But where it gets to be excessive, inefficient, okay, there we have to be able—we have to make the hard decisions. That is part of what is driving Force Design.

Senator SCOTT. All right. Thank you. Thank each of you for what you are doing.

Chairman REED. Thank you, Senator Scott. Senator Wicker, please.

Senator WICKER. Thank you, Mr. Chairman. I understand there has been a lot of discussion about LPDs. Let me just see if we can summarize. General Berger, your requirement for traditional amphibious ships is 31, is that right?

General BERGER. That is correct, sir.

Senator WICKER. Admiral Gilday, you agree with that, is that correct?

Admiral GILDAY. Yes, sir. Our joint analysis supports that.

Senator WICKER. Okay. Now, there is a study that the CNO, Admiral Gilday, has told us today confirms that 31 is the requirement. So, Mr. Secretary, that is a fact, is it not?

Mr. DEL TORO. The study has concluded. The findings of the studies are now being reported out and being discussed in the Department of Defense, as well as by myself, as well as in the Department of Navy. The findings of that study now has to be balanced by the force structure assessment that is being conducted for POM 2024 that is aligned to the National Defense Strategy. So there is some additional work that needs to be done before the final determination is made.

Senator WICKER. Mr. Secretary, do Admiral Gilday and General Berger know what they are talking about?

Mr. DEL TORO. Yes, sir, they do.

Senator WICKER. Okay. So have they made a misstatement today?

Mr. DEL TORO. No, sir, they have not made a misstatement today.

Senator WICKER. Okay, and we were told we would have this study before today's hearing. Assistant Secretary Stefany said that. So why do we not have the study yet?

Mr. DEL TORO. I don't know why the Assistant Secretary told you that, sir. He may have misspoken, but certainly he did not consult with me in releasing that study because it hasn't been reviewed yet by senior leaders of the Department of Defense.

Senator WICKER. When do you think we will have that study, when all of these extra steps you mentioned are done?

Mr. DEL TORO. It should be, if required, it should be released in the next several weeks, sir.

Senator WICKER. Let me just say also, during the chairman's opening statement, he talked about the 355 ship Navy, and that is I think he may have mentioned it as a goal. You are aware, Mr. Secretary, that that is in the statute, the law of the land passed by both houses of Congress and signed into law by the President of the United States. Are you aware of that?

Mr. DEL TORO. Yes, sir, I am. Okay.

Senator WICKER. Are you guided at all by the fact that the statute actually says 355 ships?

Mr. DEL TORO. Yes, sir, I am guided by that. If you actually look at the, one of the alternatives in our shipbuilding plan, it actually meets the requirements of that statute.

Senator WICKER. Okay. General Berger, would you elaborate on the update to Force Design 2030. What does it mean in layman's terms about the hider-finder emphasis and its ability to support lethality and our ability to win future fights?

General BERGER. Hider-finder, reconnaissance-counterreconnaissance, goes by different names, but it is the same idea, Senator, in that if you have the lethal means to engage your target, hold them at risk, there is a presumption there you can find them. There is also a presumption that you can find them first and get the first round down range.

So more and more as from satellites down to terrestrial, down to subterranean sensors are allowing not just great powers but a lot of powers to see what is going on around them. So winning that—when I say, when we say winning the hider-finder competition, it means the ability to detect, track, and conceal your own location or stay within a displacement cycle that moves you more rapidly than they can target you.

Winning that stays in front of the adversary. Losing that means they can engage you, means you are held at risk. So it doesn't decrease the importance of lethality. Absolutely, it is important as it always has been.

But more and more and more important is the realization that we have to have the means to detect, to track, to hold at risk the adversary and do it first.

Senator WICKER. Thank you very much. Mr. Chairman, I don't—in six seconds, I don't have time to ask about the failure of the USS *Sioux City* and the reason for the class-wide failure of the ship's engineering plant. So I will see if I can take a second round or ask that on the record, and I yield.

Chairman REED. Thank you very much, Senator Wicker. Let me recognize Senator Tillis, please.

Senator TILLIS. Thank you, Mr. Chairman. Gentlemen, thank you for being here. Admiral Gilday, I enjoyed the time that Senator Gillibrand and I spent with you and Admiral Joyner. Thank you for giving us that time.

I want to talk a little bit about Finland and Sweden for a moment, because we have a number of members I think that need to increase their level of understanding as we move into what will likely be an invitation from NATO, to join NATO after they express their desire to do so in the coming days or weeks. Just for our edification purposes, Finland is a Nation of 5 million people.

Right now they have 62 F-18s. They have 64 F-35s on order. They are already spending 2 percent as a percentage of Gross Domestic Product (GDP) on military, and they have announced putting out another \$2.2 billion. In Sweden, they have 80 Gripen fourth generation, somewhere between an F-16, F-18 capability. They are spending 1.3 as a percentage of GDP today, and they have expressed a commitment to getting to 2 percent by 2028.

We know that they embrace Western norms. They have the rule of law. They check all the boxes with respect to what would be a welcomed member of NATO. Number one, would you refute any of that? Number two, can you tell me a little bit about your relationships with your counterparts in both Sweden and Finland and your observations on their participation in various joint exercises that we have had?

We will start with Admiral Gilday, and then, Mr. Secretary, you are more than welcome to opine, but I am really interested in the mil-to-mil relationships first and how you would assess their capa-

bilities. I, for one, think they would be a net exporter of security if they were able to achieve accession into NATO. I would like to get your view on that for the record.

Admiral GILDAY. Yes, sir. I have a relationship with both heads of the navy. In terms of the Swedish CNO, she was just at my home last month for dinner, and so we have ongoing dialog with her. Both of those militaries, as you stated, are very capable. We like their geography as well. They are in a key position.

I would also just reiterate what the Committee already knows and that is they both enjoy a special partnership as a near ally status, and so we exercise and work very, very closely with those militaries.

I would characterize our ability to work together with them in exercises as highly interoperable, and so I see this transition into NATO, if it happens, as virtually seamless from a military perspective.

Senator TILLIS. General Berger.

General BERGER. Sir, I would, probably like the CNO and some others, I have trained with both countries and also from Kosovo to Middle East, fought with them in combat, served with them in units. They are phenomenal, both countries. Both are very focused, very dedicated, disciplined, and well-trained, well-led.

Second part, I would say Finland, because of the long border that they have with Russia and the decades since World War II, have a unique insight into Russia, very valuable for us, just because of the length of the shared border and I would just call it a unique relationship that is very valuable.

Norway just has a little short border with them, but Finland a long one. Third, I would say the unique relationship between Norway and Finland and Sweden will be hugely valuable to us, because Norway being a founding member of NATO, and us working with them for 70 years, their relationship with Finland and Sweden will be a tremendous benefit to the U.S. and to the mil to mil relationship.

Senator TILLIS. Thank you. Mr. Secretary.

Mr. DEL TORO. The only thing I will add, Senator, is I think there is tremendous opportunities for collaboration among all four of those nations that were mentioned in the high North and in the Baltic.

Senator TILLIS. Okay. I am going to submit a lot of questions for the record about Fleet Readiness Center (FRC) East and resource requirements, things like that. Admiral Gilday, I appreciate your comment when we had breakfast about getting back down there again, and Commandant, I appreciate your focus on that area.

The last thing I want to focus on is whether or not you all believe that Admiral Mullen's concerns about our national debt back in 2011, when it was just approaching \$12 trillion, is every bit as much a threat to us today in terms of national security now that we are approaching \$30 trillion?

Now, he didn't state, if you read all that he spoke on and wrote there, it wasn't because of a dollar value, it was because of how disruptive that becomes with the ebbs and flows of investment for defense, for modernization.

Am I correct in assuming that at least some of what is driving you all to rethink how we counter the threat in an effective way in the future is driven by the ebbs and flows and the lack of certainty that you get from Congress with respect to short and long term investments?

Mr. Secretary, I will start with you, and then I will have either of the two opine as well. Thank you, Mr. Chair.

Mr. DEL TORO. Senator, I am always concerned about the Nation's deficit and the Nation's national debt as well, and the impact it has on the economy. Those are challenging economic issues that have to be well balanced among all the other concerns that the Nation faces. Certainly our Nation has faced great challenges since 2001, economic, militarily, and with regards to COVID as well.

Admiral GILDAY. Yes, sir, quickly. I would say that a key piece of that is lack of predictability and stability, and so not just inside the military and not just for the U.S. industrial base, but also what we project to our allies and partners and potential adversaries.

General BERGER. The CNO captured it. I think things like a continuing resolution hurt both internally and externally, just the way that Admiral Gilday highlighted. So working closely with this Committee to make sure we do get a budget on time in October, absolutely instills the confidence that we need.

Senator TILLIS. Mr. Chair, I know I have run over, and I try not to most of the time. I just want to say that when we, excuse me, we have discussions about our disappointment with progress on certain systems, progress on implementing certain strategies, that from time to time we have to look at ourselves and recognize that decisions we make here are a part of the root cause for some of the challenges that you have to deal with.

Not that they are error free, but I think this is a joint—we are jointly responsible for doing a better job and helping you all be more successful. Thank you.

Chairman REED. Thank you, Senator Tillis. Senator Blumenthal, please.

Senator BLUMENTHAL. Thank you very much, Mr. Chairman. Thank you all for your leadership and your service. Commandant, you know, I was very interested in one of your responses to an earlier question about the enduring lessons of war and the new lessons, the technology changes, but some of the enduring facts about military strength remain. One of them has always seemed to me, and it is a strength of the Marine Corps, our noncommissioned officer (NCO) leadership.

If what we hear and see is true about the Russian military right now, one of their central weaknesses has been lack of leadership on the ground among the equivalent of our noncommissioned senior leadership—not so senior, probably. For us, it is men and women in their 20s and early 30s who command units and are able to drive them in times of danger and need.

I think that is one of the enduring facts about the Marine Corps that is a source of its strength for the Nation. I am assuming that you are focused on developing that kind of leadership wherever it may be, regardless of geography, race, religion, and gender.

General BERGER. Two thoughts to offer back to you, Senator, absolutely yes. I am so grateful that my predecessors, like General

Gray and others, put the emphasis and the resources on the training and the education of the noncommissioned officers, because without that—they didn't have the tools. He and others focused on that 25, 30 years ago, where we are reaping the benefits of that now.

The second part of that, I would say the NCO Corps itself is the officers have to have confidence in them and delegate to them without micromanaging, trust that they are going to lead, trust that they are going to make decisions on their own, and that is the way that the Marine Corps operates. That is, as you have captured it, that is the strength of what we do, is the NCO Corps.

Senator BLUMENTHAL. Thank you. Admiral Gilday, I know you made reference to earlier in response, I think, to Senator Rounds, the value of having a private shipyard do submarine maintenance work.

I think that Electric Boat has been a source of great strength in terms of maintenance. The Navy has not yet awarded the contract for work on the Hartford, and I hope that it will do so fairly promptly. I understand it may be in June. Am I correct in that understanding?

Admiral GILDAY. Sir, I will get back to you in the exact timeline. But yes, I would just like to double down on my comments on how important both Electric Boat and Huntington Ingalls are from a repair—not only from a production standpoint, but from a repair standpoint. They are absolutely critical.

Admiral GILDAY. The Navy expects to award the USS *Hartford* (SSN-768) Engineered Overhaul (EOH) contract to Electric Boat in July 2022. The Navy and Electric Boat teams are in the final stages of negotiations, nearing settlement. Electric Boat is required by the Federal Acquisition Regulation (FAR) to provide Certified Cost or Pricing data before Contract Award, which typically takes several weeks for similarly complex negotiations. The Navy is committed to awarding the USS *Hartford* EOH quickly upon receipt of Electric Boat's certification.

Senator BLUMENTHAL. I also want to focus on a somewhat arcane, but I think important, question about the unusually hazardous risk indemnity. This issue is complex, but again, for contractors, it is a very important one. I have recently voiced my concerns over a change in the unusually hazardous risk indemnity policy in an exchange with Assistant Secretary Stefany, last week, as a matter of fact.

I am not going to have time and I know we are at the end of a lengthy hearing, but I would be interested in comments that you may have in writing. The Navy risks losing its private partners and thus its ability to build major weapons systems and technologies for future conflict if it fails to take account of the risks that they undertake by reversing a decades old indemnification policy to no longer cover those kinds of risks involving conventional weapons that rely on high energy propellants.

It may seem like a technical issue, but it is one of great concern to the companies that manufacture these weapons, and I would appreciate you looking into it.

Admiral GILDAY. Yes, sir.

Senator BLUMENTHAL. Thank you very much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Blumenthal. Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman. Thanks, all of you, for being here. Thank you for your service. General Berger, I just want to start by saying that I was particularly pleased to see in Force Design 2030 annual update your continued focus on China as the Nation's pacing threat, on the Taiwan scenario, and your continued use of those scenarios and that threat to benchmark the, what the Marine Corps efforts are, and your strategic design.

I think it is a bold vision which you have been doing, much overdue. I just want to say, I think you have done it in a very rigorous and thoughtful way. So I think it is a model. Keep up the good work.

Mr. Secretary, if I could come to you, you said in response to a question a minute ago that one of the shipbuilding profiles, this is on a shipbuilding plan, one of the profiles of three of them, one of them supports the statutory requirement of a 335 ship Navy. Is that profile three, I assume?

Mr. DEL TORO. Yes, sir.

Senator HAWLEY. Okay. On the same plan, Admiral, Navy officials told me earlier this week and last week that profiles one and two of the shipbuilding plan do not meet the Navy's operational requirements for the pacing scenario in INDOPACOM with regard to Taiwan. Can you confirm that profile three would meet the Navy's operational requirements?

Admiral GILDAY. Sir, three does a better job. The constraint—constraint is still faced in three is the ability of the industrial base to produce those for, the production line to actually produce those ships at pace to meet our requirements. So the warfighting requirements in the Navy and Marine Corps are what—they are best reflected in alternative three.

Senator HAWLEY. So are you telling me, Admiral, we would get there in three, but we might, it might still be a push, even under three. Am I hearing you right?

Admiral GILDAY. We would get there with three, but that would require real growth in the budget.

Senator HAWLEY. Let me just ask you how long it would take to get to the point under three where the Navy would be able to meet its operational requirements?

Admiral GILDAY. So with respect to 355, sir, that would be out in the 2040s in order to put us on that path, which I think is probably physically reasonable, given, again, the constraints of the industrial base.

Senator HAWLEY. What about the operational requirements for the pacing scenario in INDOPACOM—that is defeating a fait accompli against Taiwan.

Admiral GILDAY. So capacity does give you, obviously gives you greater capability. Based on the way we are going to fight, which we believe is to be distributed, a distributed fleet rather than amassing forces, we would mass effects. We want—we need more ships of every different type.

I am not ignoring the need for capacity but given the top line that we have and dealing with reality, what we are trying to do, Senator, is make sure that the ships that we have and that we are building are the most capable and high quality that we can field.

Senator HAWLEY. I just want to say again, for the record, that I think it is disturbing, and this is no reflection on you, Admiral, but I think it is disturbing that of the three profiles in the ship-building plan, only one of them comes close, and you were saying even then it will be a push but comes close to meeting the operational requirements that the Navy has to deal with the pacing challenge and the pacing theater.

I mean, if that is not a wakeup call to this Committee, I don't know what is. Let me ask you about the danger of simultaneous conflicts, Admiral, in multiple theaters. So what would happen if the Navy—well, let me ask it this way. What would the impact be on the Navy's ability to meet its operational requirements in EUCOM if we had to withhold Navy forces from Europe in order to deter Chinese aggression in INDOPACOM?

Admiral GILDAY. I think we would be challenged. We would have to take a look at how you squeeze the most are the Joint Forces have and use it in the best possible way. But I think we would be challenged. You know, right now, the force is not sized to handle two simultaneous conflicts. It is sized to fight one and to keep a second adversary in check. But in terms of a two—two all-out conflicts, we are not sized for that.

Senator HAWLEY. Can you give us a sense of what kind of capabilities that the Navy provides that would be in high demand, are in high demand in both EUCOM and PACOM?

Admiral GILDAY. First of all, submarines. I think secondly would be carrier air. Third would be amphibious ships, and then you need destroyers with multiple weapons in order to protect those assets. So across the board, you need more of everything.

Senator HAWLEY. Yes. Thinking about the constraints that we would face in either theater, but particularly in EUCOM, what are some of the capabilities you would say that the Navy is currently providing in Europe that maybe our allies in that region could be doing more to provide on their own, should we need them in PACOM or elsewhere?

Admiral GILDAY. I think submarines are a key capability in any fight, and so that would be one message I would give to Europe to invest more heavily in those kinds of platforms.

Senator HAWLEY. Yes. Thank you. In my few remaining seconds here, Mr. Secretary, let me ask you about an interesting article I read from former Undersecretary of the Navy, Robert Work, who recently said, I want to make sure I get this right, he is talking about forward presence, and he said, over time, an emphasis on forward presence could lead to a decline in warfighting readiness with potentially dire results.

Do you agree with the Former Secretary that the presence operations can trade off with proficiencies that are critical to combat?

Mr. DEL TORO. I don't agree with his assessment that we need less forward presence. I think we need greater access to bases and logistics, bases in particular across the globe, wherever we can find them.

Senator HAWLEY. Let me just—last question here, Mr. Chairman. I will finish with this. Let me ask if you agree with this statement. This is Work again. The Navy's warfighting materiel readiness should no longer be sacrificed on the altar of forward presence and

the Navy should no longer confuse that with winning a war. Do you think that that is right, wrong, oversimplified?

Mr. DEL TORO. I don't think we have sacrificed our wartime capabilities in exchange for presence. I think the two go together. I think what we need is the right capacity, the right capabilities to deliver the right lethality. That also demands access to those logistical bases throughout the globe, working with our partners and allies.

Senator HAWLEY. I am not so sure about that, but we will follow up. Thanks, Mr. Chairman.

Chairman REED. Thank you, Senator Hawley. We have concluded the first round. Members have requested a second round. We will have a classified session in SVC-217.

I will recognize Senator King first and then go to the other side. I would ask you to keep your questions concise and necessary for this open session, because you will have another opportunity to talk to these gentlemen in a closed session. Senator King, please.

Senator KING. Just several quick points. Number one, I want to associate myself with Senator Hirono's comments about the 15 ship multi-year for destroyers. I know there is some discussion about whether the industrial base has the capacity to meet that. I think there is a bit of a circular argument.

My experience, working with Bath Iron Works is you give them the signal and they can meet it. If they don't get the signal of the longer term multi-year, then it makes it less likely that they will meet it.

So I don't think there should be a constraint. I think everyone realizes from this discussion that, number one, multi-years are better for the taxpayers, they are better for the industrial base, and a longer multi-year sends a strong signal to the industrial base that the business will be there. They can make the investments and meet that requirement. That is number one.

Number two, on the Portsmouth Naval Shipyard, we have been talking a lot about readiness, and I want to thank you for the investment that the budget makes in completing or at least moving forward the capital improvements at the shipyard.

Already with that new dry dock, Mr. Secretary, as you and I saw, the USS *Cheyenne* is in that dry dock successfully. So the next step, of course, is to double the capacity of that dry dock. But I want to mention a sort of a side issue, in talking to the people of the Portsmouth Naval Shipyard, they are talking about all the investments in the infrastructure, that is really important. But they also have investments in the people.

Every worker, every business in America is short of workers. They told me that the way to attract additional workers to Portsmouth Naval Shipyard is childcare and parking, and, you know, you don't really think about parking as a naval function. But if we want good people, and they are competing for the best in the region, we have got to think about those kind of quality of life things, and that we were talking a lot today about new requirements of younger workers.

Those are the two things that have been brought to my attention. So I wanted to mention those to you as you think about the investment in the Portsmouth Naval Shipyard. Finally, Mr. Secretary,

you have indicated in an excellent report about the collaboration and joint development that is going on between Huntington Ingalls, Bath Iron Works, and the Navy on the new DDG(X).

I want to commend you for that report, and just, if you could just state for the record, why it is important in the development of this new platform, because where we have had problems in the past is on new platforms. This is a case where I think we are moving down a very beneficial path. If you would just state for the record your conclusions on that subject.

Mr. DEL TORO. Yes, Senator. Obviously, given the power constraints on our current classes of DDG Flight IIs and Flight IIIs due to the size of the whole DDG(X), or sort of that next transition to new technologies that will take us above and beyond, such as the utilization of laser systems, is one example. It is important to have that transition. As we stated earlier today, is also important to ensure that the technologies that are going to go on that platform are mature, well understood technologies that work so that we don't make the mistakes of the past.

Finally, I would argue that we also need to ensure that DDG(X)'s, the concept of operations for its employment is well thought out, so that we could also integrate the autonomous or semi-autonomous technologies that we look forward to integrating well into the future as well.

Senator KING. In order to do that successfully, working with the yards to be sure that what we design and set for requirements can be built, I think, is an important part of that process. Do you agree?

Mr. DEL TORO. It is, Senator.

Senator KING. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator King. Senator Wicker is recognized, and I, just for the benefit of everyone, I am going to enforce the five minute rule. I don't do it usually.

Senator WICKER. Okay. Very good, and I think we can do this in less than 5 minutes. Secretary Del Toro, just last Friday, it was reported that the USS *Sioux City* would be headed to the Arabian Gulf. It has been spending time in the Mediterranean. This is a *Freedom* variant LCS ship. The Navy has announced it will decommission a total of 24 battle force ships, including the first 10 *Freedom* variant LCSs.

The *Sioux City* is reportedly going to be decommissioned only 4½ years after it was commissioned, and in part due to a class-wide failure in the ship's engineering plant. So I want to ask this, how many ships have this class wide failure in the ship's engineering plant?

If the failure is that serious, why is it capable of being sent to the Arabian Gulf for serious duty? Either it is not reliable and not capable, or it is capable enough to send it—to be sent into harm's way. Then we will leave time for Admiral Gilday to help answer that question also.

Mr. DEL TORO. Yes, sir. It is my understanding that the USS *Sioux City* being of the *Freedom* variant with the Anti-Sub Warfare (ASW) module on it, and that is particularly the reason why it is going to be decommissioned. As to the class-wide failure, there are operational restrictions that were put on the utilization of the ships

in general, which keeps them safe to operate, but not in their most extreme fashion. Perhaps I could ask the CNO to further elaborate on that.

Admiral GILDAY. Secretary is right, sir. We have operating limitations on those ships based on a known problem in the engineering plant that needs to be replaced. Over time, you know, we are replacing the combining—it is called the combining gear. It gives you more flexibility with your engineering plant configuration and allows you—it allows you to operate at high speeds.

To your point, we believe the risk is—we can mitigate the risk using that vessel forward, given the operating constraints that we have identified and the guidance that we have given to the commanding officers. So we have trained that ship for combat and sending her forward to be able to provide the capability needed by the U.S. Central Command (CENTCOM) Commander.

Senator WICKER. Is the failure in, Admiral, is the failure in the engineering plant the same in all of these ships—in all of this class?

Admiral GILDAY. No, sir. Just in the *Freedom*—just in the *Freedom* variant.

Senator WICKER. How many of those are there?

Admiral GILDAY. Sir, there are about between 15 and 20.

Senator WICKER. So the failure is the same in those 15 or 20?

Admiral GILDAY. The fix needs to occur in those 15 or 20. But one of the proposals is to decommission nine, right, and so as the Secretary mentioned, it is not just the combining gear, but also we were making an investment in an anti-submarine warfare module for that ship that is technically has not met its requirements. It is incapable, in other words—

Senator WICKER. What about the others that are going to be—that are going to not be decommissioned?

Admiral GILDAY. So 15 of those will have a mine countermeasures module. That particular capability is on track to reach Initial Operational Capability (IOC) this year. Those 15 ships are going to be required to replace our existing minesweepers that operate out of both the coast of Japan and Bahrain. Additionally, there are six LCS that we would have the existing anti-surface module on those ships, and that is a proven capability that went IOC 3 years ago.

Senator WICKER. Mr. Chairman, I yield back 49 seconds.

Chairman REED. We appreciate it, and that is the challenge for our other colleagues. Senator Sullivan, you are recognized.

Senator SULLIVAN. Thank you, Mr. Chairman. General Berger, you mentioned that the rate of divestiture and the rate of new combat capability development pose a risk, and you have got to manage that risk.

One of your assumptions on the overall Force Design was flat budgets, that you had to make these difficult choices. Unfortunately, I think you are seeing that that is actually true. If you actually had a more robust budget, it would help mitigate some of the risk in modernization, wouldn't it, General?

General BERGER. It would, absolutely. Everything on the unfunded priority list for us accelerates modernization. Correct.

Senator SULLIVAN. So, Mr. Secretary, I was disappointed, and I have raised this with Secretary Austin and General Milley, we have clearly a more dangerous National Security situation around the world, and yet the budget that was being put forward by the President for the Department of the Navy, that is the Navy and Marine Corps combined, is a 4 percent increase from the enacted budget, we bolstered that.

Again, the President put forward a weak budget last year. But with 8 percent inflation, that is actually a 4 percent inflation adjusted cut. So do you support a 4 percent inflation adjusted cut? The Commandant just showed that this would help mitigate the Force Design risks if we had a more robust budget.

But I am concerned, very concerned, and Congress is likely to have to do cleanup like we did last year and significantly increase the budget despite the President putting forward a weak budget. He has done it again. So how do you support such a budget—4 percent inflation adjusted cuts?

Mr. DEL TORO. Senator, I do support the President's budget completely. It is actually the first time in quite some time where we have actually proposed a budget that is greater than the previously enacted budget, and I applaud the President for doing that.

Senator SULLIVAN. A 4 percent increase with 8.3 percent inflation is a 4 percent inflation adjusted cut, correct?

Mr. DEL TORO. So it is today. However, budgets, as you well know, Senator, are prepared well in advance of when they are executed, and inflation is always a difficult thing to predict in the future.

It is part of the reason why in the President's EABO 2023 budget, we actually also enacted 4.6 percent increase for our sailors and marines across the board, and a 5 percent increase in Basic Allowance for Housing (BAH)—

Senator SULLIVAN. Again, I appreciate all those, but the reality is even those don't keep up with inflation. But let me—I am going to try to keep to my five minutes. I want to turn to Force Design, but to you, Mr. Secretary and Admiral.

I was struck by the Navy's documents, strategy documents, which my team and I read the tri-service strategy, CNO's navigation plan, the surface warfare competitive edge plan, and how they don't articulate how the Navy will support the survivability and sustainability of Marine Corps Stand In Forces and otherwise facilitate the execution of Expeditionary Advanced Base Operations (EABO).

Those are all key parts of the Marine Corps Force Design strategy. So here is my question. Actually, when you look at the Navy documents, Stand In Forces, forces that I don't even think they are mentioned, they are alluded to, but much of these documents describe how Stand In Forces will enable the fleet to control the seas and reposition to conduct naval strikes from a myriad of different directions.

But there is little, if anything, in these documents about support in the reverse. What I mean by that is the fleet support to enabling successful EABO or stand in forces. So, Mr. Secretary, maybe start with you, Admiral, a fleet commander is ready to help execute this

part of Force Design and Stand In Forces to execute the EABO concept and other things, which would put ships at risk.

If so, how come none of that is articulated in the Navy strategies that at least I have been reading thus far?

Admiral GILDAY. I would offer, sir, that you can get an inaccurate picture by just judging our commitment to Force Design based on the tri-service strategy and the navigation plan, and the reason I say that—

Senator SULLIVAN. You do see my question though—

Admiral GILDAY. I do. But the reason I say that is because most of what has been written publicly about Stand In Forces has been produced after the production—after the release of both of those documents.

Now, if you take a look at the concept of operations that are co-signed by both fleet commanders and Marine Expeditionary Force (MEF) commanders, whether it is in the Western Pacific or whether it is in Europe, they both rely heavily on Stand In Forces as part of the warfighting concept.

I would also offer that today the Naval Commander in Europe, the Component Commander under General Walters, has marine elements, I would characterize them as EABO, EABs in terms of what they are doing, in terms of sensing and making sense of the environment, in terms of helping understand what effects that we can produce in theater. They are right now on the ground in places like Estonia, in Iceland, and in Norway.

So I would offer, sir, that is very much alive at the fleet level in terms of how we are integrating with the Marine Corps. I will have an update to my navigation plan within the month, and I will take special note to make sure that I footnote Stand In Forces.

Chairman REED. Thank you, Sullivan—Senator Sullivan. Thank you very much. Senator Hawley, do you request recognition? Please.

Senator HAWLEY. Yes, sir. Briefly. Admiral, just a question for you on aircraft carriers. I realize that by statute, by law, Navy is required to maintain at least 11 operational carriers, but absent that statutory requirement, my question is, is it the best use of the Navy's allocation to maintain 11?

Here is where I am going with this. If you had 8 or even 10, that would free up a lot of resources to invest in other capabilities that might be more effective in deterring China and our pacing theater. So do you have a thought on it?

Admiral GILDAY. Yes, sir. Honestly, I think 11 is a conservative estimate. Based on the demand signal from combatant Commanders now, there is no more survivable airfield in the world than an aircraft carrier. In terms of what it brings to the fight, in terms of sortie generation, in terms of our move now with unmanned refueling that extends the range of the air wing by hundreds of miles.

My unfunded list tries to top off on domestic production of weapons with range and speed principally for the air wing. They remain, along with our submarine force, the main batteries of the United States Navy with respect to offensive weapons. So, sir, I remain very bullish on aircraft carriers, and I can't think of anybody out there in the Joint Force that is not.

Senator HAWLEY. How survivable, though, is the carrier, admiral, if it is parked in the Taiwan Strait? I mean, I know they are survivable off the coast of Hawaii, but doesn't it depend on where they are?

Admiral GILDAY. So based on how we use those carriers, sir, we are going to put them in a place where they can be most effective. We also are leveraging both space and cyber in terms of how we position those units. I will tell you that if you take a look at an airfield on an island in the middle of the Pacific that was targeted when the lava cooled, you can move an aircraft carrier tomorrow, but Reagan National is going to be the same place that is today.

If that were an aircraft carrier, tomorrow it would be West of the Mississippi and Missouri, or it could be off in Newfoundland, or it could be off of Key West, Florida. So we can move them around. That is one of the real value of naval forces in general.

Senator HAWLEY. Fair enough. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Hawley. Thank you, gentlemen. We will recess or adjourn the open session and let us attempt to reassemble at SVC-217 at 12:20 p.m. For my colleagues, there is a vote pending right now.

We will vote and then we will attempt to get together again at 12:20 p.m. at SVC-217. Again, gentlemen, thank you for your testimony. The open hearing is adjourned.

[Whereupon, at 12:07 p.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEANNE SHAHEEN

GENDER INTEGRATION

1. Senator SHAHEEN. General Berger, reports indicate that the Marine Corps will need nearly \$198 million over the next few years to upgrade facilities at its recruit depots for gender integration. Will these cost estimate change if you integrate boot camp at the platoon level versus company level? If so, what additional changes need to be made to integrate at the platoon level and how much more would it cost?

General BERGER. The infrastructure identified for recruit training depots are necessary investments in aging facilities that will ensure the continued success of recruit training writ large and are not specifically tied to gender integration efforts. Per 10 USC 8431, we are required to provide physically separate housing and latrine facilities for males and females at recruit training; regardless of the integration model used, recruits will sleep and conduct hygiene in separate squad bays as they currently do. As such, the level of integration (platoon vs company) is projected to have no impact on the estimated cost for barracks construction.

2. Senator SHAHEEN. General Berger, it appears the Marine Corps is heading down a path to integrate boot camp at the company level, but leave platoons segregated by gender. Why is the Marine Corps continuing with plans to integrate women at the company level versus the platoon level?

General BERGER. We are committed to executing gender integration in a deliberate way and are continuously evaluating the effectiveness of our integration model to ensure that we are pursuing a sustainable solution without compromising the careers of those who train recruits or the top-tier training we provide at the depots. Our entry-level training continuum is unique in that we have a multi-phased approach which begins with recruit training—transforming civilians into marines. After recruit training, all marines undergo follow-on training at the School of Infantry and then Military Occupational Specialty Schools, all prior to arriving at their first duty station. Training events where males and females are integrated at the platoon level and below exist at every phase of this training continuum, to include recruit training, and become more frequent as marines progress through their training and into the Fleet Marine Force.

3. Senator SHAHEEN. General Berger, marines historically have been comprised of the smallest percentage of women compared to the other services. According to the most recent Department of Defense (DOD) Annual Demographics report, just 8.9 percent of Active Duty and 4.3 percent Reserve marines are women. What is the Marine Corps doing to improve its ability to recruit and retain women?

General BERGER. This year I published Talent Management 2030, a modernization effort, which is focused on reforming our personnel system to recruit and retain talent. The Marine Corps' personnel management system was designed in an industrial era that predates contemporary cultural and technological norms. We recognize that this system, which was built to create and maintain a young, enlisted force of primarily conscripts, is not adequate for the more diverse and highly-trained force that we employ. Talent Management 2030's focus is on the mission and the marines we need to complete that mission. These systemic changes will improve professional and personal opportunities for women.

Our data shows that we retain women at similar rates to men overall, with a few variations at different career decision points. While we are still studying the factors that go into marines' decisions to stay in or get out of the Marine Corps, we are committed to new ideas to keep women in the Corps.

Some of the example of initiatives under Talent Management 2030 include expansion of career flexibility options, reducing strains of multiple permanent change of station (PCS) moves on the marine and their family, and data-informed and decentralized manpower management in order to ensure the assignment of the marine support their individual goals, the mission needs of the command, and the overall needs of the Marine Corps.

Importantly, we are committed to better supporting marines and their families while maintaining our mission readiness. The Military Parental Leave Program (MPLP), marine parents with a new child are authorized paid leave that includes Maternity Convalescent Leave (MCL), either Primary Caregiver Leave (PCL) or Secondary Caregiver Leave (SCL), and annual leave. This year, we expanded SCL leave from two to three weeks, and we are working with the Department on the recent parental leave expansion authorities in the fiscal year 2022 NDAA. Currently, primary caregivers are authorized up to 5 months of paid leave (6 weeks MCL + 6 weeks PCL + 8 weeks annual leave); MCL may be extended as medically necessary. Secondary caregivers are authorized up to 2.75 months of paid leave (3 weeks SCL + 8 weeks annual leave) following the birth of a child.

Additionally, we recently updated our policy regarding parenthood and pregnancy—notable guidelines include:

- 1) Assignment: To the extent possible, pregnant marines must not be assigned duties that adversely affect their health
- 2) Deployment: The Marine Corps allows, but does not require birthparents to defer operational deployments, overseas assignments, or any TAD/TDY away from home station for up to 12 months after the birth or adoption of a child.
- 3) Physical Training flexibility: Effective 8 Feb 2021, a marine is exempt from physical fitness and body composition standards until at least 12 months after the date of the birth event.

Recognizing that a marine may want to pursue an unconventional opportunity, stabilize their family, or stay in career-broadening tours, we recently implemented the statutory authority that permits qualifying eligible officers to “opt out” of promotion consideration without penalty. Approvals of opt out requests are based on the service of the requesting officer in a broadening assignment, completion of advanced education, completion of an assignment of significant value, overall performance history, and the officer's ability to meet career progression milestone requirements.

The Marine Corps has offered new flexibilities in 2022 for officers to remove their name from consideration by the Commandant's Education Boards (CEB) and the Recruiting Station Commanding Officer (RSCO) selection boards. Historically, these boards screened eligible officers regardless of their desire to compete, and as a result, if selected, officers had to make decisions either to accept a duty that is not within their career or family goals or exit the Marine Corps. These initiatives now allow officers to have a more active voice in career decisions as they relate to professional, personal, and family needs and desires.

Additionally, we have modified the “pay back” for the Career Intermission Program to make it more attractive for marines. In 2013, the Marine Corps implemented the Career Intermission Program (CIP) to allow marines to take a temporary break from Active Duty to meet personal or professional needs outside the Service. CIP currently allows marines to take up to 3 years-off to raise a family or pursue other goals with no impact to their career. This year, we reduced the pay-

back requirement from, from 2:1 to 1:1, effectively lessening the burden on the servicemember.

Finally, we are also continuing to refine and reduce PCS (Permanent Change of Station) tours in order to increase marine and family stability and, ultimately, retention. Since 2019, we have steadily increased the number of local moves known as permanent change of assignment (PCA) where it made sense in lieu of PCS. Last year, we had an all-time high of 22,000 PCA orders. The net result today is 40,000 marines who have been at their duty station for more than 3 years. We will continue to seek out way to increase stability for marines and their families, balanced with the needs of the Marine Corps.

QUESTIONS SUBMITTED BY SENATOR ANGUS KING

CHINA COMMISSION

4. Senator KING. I believe we must establish an unbiased and non-partisan commission to examine a grand strategy for our approach to China, similar in intent to President Eisenhower's Solarium Project. We need to think of a holistic approach to create a stable international order in which China (or Russia) cannot dictate regional developments.

Secretary Del Toro, Admiral Gilday, and General Berger, in order to avoid the United States trying to "spend our way out of conflict," what are China's primary areas of influence the United States and allies should focus on countering that will provide the most significant impact?

Secretary DEL TORO and Admiral GILDAY. The United States and its allies in the Pacific and elsewhere should focus on creating credible, lethal combat forces, and developing new partnerships and modes of fighting which complicate China's defense planning. The trilateral security pact between Australia, the United Kingdom, and the United States known as AUKUS and Marine Corps Force Design 2030 are examples.

General BERGER. Increase persistent and consistent Joint Force presence throughout the Indo-Pacific, this presence will both assure allies and partners and deter People's Republic of China (PRC) actions by providing security cooperation exercises. Training and exercises will increase allies' and partners' capabilities while assuring United States resolve to deter significant People's Liberation Army (PLA) intervention. Continued forward presence also provides capabilities to counter PRC malign gray zone activities and provide the national command authority with options in the theater during crisis and conflict.

5. Senator KING. Secretary Del Toro, Admiral Gilday, and General Berger, what would be the greatest benefit this commission could deliver?

Secretary DEL TORO and Admiral GILDAY. The proposed commission might well make important contributions to U.S. strategic thinking on China. The activities of the existing "China Economic and Security Review Commission" should be assessed and coordinated with the mission of any new "China Commission" created by Congress. Also a new Commission should incorporate the very significant amount of China-related analysis and strategy development accomplished by the Executive branch in recent years.

General BERGER. An unbiased, non-partisan commission could help synchronize United States Government efforts across all instruments of national power to focus on the current and future threat posed by the People's Republic of China (PRC). This commission could recommend policies that would support the United States and allied Defense Industrial Base, aligning efforts across the U.S. Government to accelerate or moderate efforts to shore up U.S. competitive capabilities while avoiding triggering inadvertent escalation which could result in military actions.

6. Senator KING. Secretary Del Toro, Admiral Gilday, and General Berger, what would put us in the best position to avoid the U.S. and China from escalating conflict and careening into a war with China?

Secretary DEL TORO and Admiral GILDAY. Integrated Deterrence will best position us to deter escalation of conflict. This approach combines our strengths to the greatest effect—working across geographic theaters and warfighting domains, employing all elements of national power in a mutually reinforcing fashion, and combining our strengths with our network of Alliances and partnerships.

General BERGER. In the short term, we must position the Joint Force to both assure our allies and partners of our resolve to counter People's Republic of China (PRC) activities. Forward presence deters People's Liberation Army (PLA) military

intervention by forcing the PRC to contend with a strong United States response in its attempts to leverage its military to achieve its political aims.

In the long term, we must prevent acquisition of critical technologies and build Western/allied supply chain resiliency while impeding PRC supply chains for critical supporting materials/technologies. Resiliency thus would enable Western/allied nations to weather sudden economic sanctions and reduce PRC ability to weather sanctions. This further increases the national cost to the point that the benefit of military action overwhelmingly outweighs any political aims of the CCP.

7. Senator KING. Secretary Del Toro, Admiral Gilday, and General Berger, what are the 'toughest problems' OUTSIDE of military imbalances?

Secretary DEL TORO and Admiral GILDAY. The tyranny of distance is one of the greatest challenges. To address the challenge, the Department of Navy will strengthen relationships with Allies and partners and explore opportunities to further extend access through development of enhanced and new partnerships. Together, partnership and access assist in mitigating the tyranny of distance as like-minded nations work toward common objectives to deter or, if deterrence fails, defeat an adversary.

General BERGER. The current decline of the U.S. industrial base along with the illegal transfer of critical scientific research and technologies.

UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

8. Senator KING. Admiral Gilday and General Berger, do you support the ratification of the United Nations Convention on the Law of the Sea (UNCLOS)?

Admiral GILDAY. I support U.S. accession to UNCLOS. As the world's foremost maritime power, U.S. security and broader national interests are intrinsically linked to the freedom of navigation. UNCLOS codifies the law in a manner beneficial to naval operations, preserving the freedoms of navigation and overflight, passage rights, and traditional uses of the sea. The United States is currently forced to rely on customary international law to contest activities by other countries that are inconsistent with the law of the sea. Accession would also enhance our ability to counter excessive maritime claims, land reclamation, and militarization efforts by China in the South China Sea, as well as excessive maritime claims by Russia along sea routes in the Arctic.

General BERGER. Yes. The United States has treated the navigation and overflight provisions of the Convention as customary international law, and acts in a manner consistent with those provisions. Accession would increase U.S. credibility and legitimacy when acting to protect the rights, freedoms, and lawful uses of the sea reflected in the Convention. It would give the United States a seat at the table to set the course for future law of the sea discussions and counter the excessive claims of China and Russia. The law of the sea is continuously being interpreted, applied, and developed. By not being a party, the United States is not on the inside to protect and advance its interests, and risks losing the Convention's benefits the longer it remains a non-party.

QUESTIONS SUBMITTED BY SENATOR ELIZABETH WARREN

LITTORAL COMBAT SHIP (LCS)

9. Senator WARREN. Secretary Del Toro, the LCS has been plagued with numerous technical and mechanical issues since its inception in 2001, leading to the Navy's decision to retire nine *Freedom*-class ships. What is the estimated cost of maintaining the *Freedom*-class through its lifecycle if it is not retired?

Secretary DEL TORO. The total buyback cost for all nine *Freedom*-class Littoral Combat Ships is \$568 million in fiscal year 2023 and over \$4.3 billion over the next 5 years. Within our directed budget topline, the Navy's Fiscal Year 2023 President's Budget prioritizes these resources on investments with higher warfighting value for strategic competition.

10. Senator WARREN. Secretary Del Toro, has the Navy estimated the cost of the repairs the LCS would need to complete its anti-submarine warfare mission?

Secretary DEL TORO. The total cost to repair and upgrade the nine *Freedom*-class Littoral Combat Ships proposed for decommissioning in fiscal year 2023 is \$568 million in fiscal year 2023 and over \$4.3 billion over the next 5 years. In addition, the cost to reverse the anti-submarine warfare (ASW) mission package sundown would be an additional \$117 million in fiscal year 2023 and \$489 million over the next 5 years. With the forthcoming introduction of FFG 62 as a capable ASW platform,

these resources are better prioritized on investments with higher warfighting value for strategic competition within our directed budget topline.

11. Senator WARREN. Admiral Gilday, you testified before the House Armed Services Committee that the Navy “[hasn’t] had the best track record of procurement” and cited the LCS class as an example. What lessons does the Navy hope to learn from the failures of the *Freedom*-class?

Admiral GILDAY. I would say the LCS program taught us to approach our new programs with an “evolutionary, vice revolutionary” mindset and deliberate risk reduction. Starting with requirements for FFG-62 and DDG(X) the Navy has established “informed” requirements through a collaborative process including Acquisition Professionals, Naval Architects, Fleet, Industry and cost estimators. This enables us to establish requirements across cost, schedule, and performance that can be achieved with confidence. The Navy has initiated a renewed focus on utilizing non-developmental technologies and existing proven Program of Record combat system elements to reduce execution risk, provide required capabilities and leverage existing training and spare parts through increasing commonality. A prime example is the new FFG-62 class, which required use of a proven parent design, non-developmental technologies, and will be outfitted proven Navy Program of Record combat system elements like AEGIS combat system, SPY-6 variant radar, MK-41 VLS as well as common C4I and Electronic Warfare capabilities. Additionally, this evolutionary approach will be realized on DDG(X) by using the proven DDG Flight III Combat System while evolving the hull and power systems. In parallel with design efforts and prior to ship activation the engineering plants and hull forms will be tested at land-based test sites which also significantly buys down integration risk prior to test and activation in new ship construction. Use of land-based test sites is being implemented for both FFG and DDG(X).

We are also reinforcing the Fleet Integration Team (FIT) effort, to ensure the necessary support; whether it’s training, supply support, or tech manuals, is in place for ship delivery so sailors have the tools and resources necessary to succeed from the first day new platforms enter service. These structures were not fully enacted when LCS entered service and it took significant effort to get the resources the fleet needed to operate and maintain the ships. FFG-62 is planning to have full supply system support in place at time of delivery.

12. Senator WARREN. Secretary Del Toro, you testified before the House Armed Services Committee that “if the Congress approves to divest some of these ships, particularly the LCSs, I think those are very strategic opportunities to move some of those ships to our allies and partners.” Does the Navy have any plans to recoup any portion of the cost of the LCS through the sale of these ships?

Secretary DEL TORO. The Navy plans to place the ships in an inactive status.

13. Senator WARREN. Secretary Del Toro, if any of those LCS are sold, how much does the Navy estimate it will be able to recoup?

Secretary DEL TORO. The price for sale of a single decommissioned ship to a non-grant eligible country would be roughly fifty percent of the acquisition cost, depending on material condition and other factors.

SEA-LAUNCHED CRUISE MISSILE—NUCLEAR (SLCM-N)

14. Senator WARREN. Secretary Del Toro, do you believe that there is a significant enough gap in the United States’ existing nuclear arsenal lacks that warrants further investment into the SLCM-N at the expense of investment in conventional Navy capabilities?

Secretary DEL TORO. No, the Department of the Navy eliminated SLCM-N research and development funding as part of the President’s Budget 2023. The Department will continue to evaluate nuclear deterrence requirements and needs to ensure naval capability investments, including conventional requirements, support implementation of National Defense Strategy priorities.

15. Senator WARREN. Secretary Del Toro, if the budget stays relatively flat, what conventional Navy capabilities will need to be reduced in order to support SLCM-N?

Secretary DEL TORO. The Department of the Navy eliminated funding for research and development for a SLCM-N in fiscal year 2023, which eliminated the need to conduct tradeoff analysis to support SLCM-N.

16. Senator WARREN. Secretary Del Toro, what analysis has the Navy done on how its broader conventional goals may be impacted by investment in the SLCM-N?

Secretary DEL TORO. An impact analysis of SLCM-N investments was not conducted by the Department of the Navy, as funding for SLCM-N was eliminated during the Analysis of Alternatives phase and prior to developing the Concept of Operations.

17. Senator WARREN. Secretary Del Toro, do you believe that the SLCM-N will serve as a deterrent to either Russia, China, or other potential adversary that would prevent aggression against U.S. allies or the expansion of their own nuclear arsenals?

Secretary DEL TORO. No, funding for SLCM-N was eliminated in fiscal year 2023. Nuclear capabilities are a critical component of integrated deterrence and the sea-based leg of the nuclear triad is essential to complicating adversary decision calculus and diminishing any perceived benefits of aggression.

18. Senator WARREN. Secretary Del Toro, the Navy has a goal of expanding its fleet to 355 ships by 2043. Does the Navy believe this goal is achievable on this timeframe if it is simultaneously developing a missile that you and other senior DOD officials have suggested is redundant?

Secretary DEL TORO. Based on the Navy's analysis in Alternative 3 of the fiscal year 2023 Shipbuilding Plan, expanding to 355 ships by 2043 is achievable with significant additional resources to procure, operate, and sustain this increased fleet size. Under any topline, the Navy carefully balances readiness, capability, and capacity. The resources required to grow capacity would be in addition to the resources needed to support readiness and modernization requirements to defend and advance national policy in accordance with the national defense strategy.

19. Senator WARREN. Secretary Del Toro, if the *Virginia*-class submarines were outfitted with SLCM-N what impact would that have on their basing?

Secretary DEL TORO. Research and development funding for SLCM-N was eliminated in fiscal year 2023; therefore, the impact of outfitting *Virginia*-class submarines with SLCM-N was not assessed.

20. Senator WARREN. Secretary Del Toro, would they still be stationed in Groton and Norfolk?

Secretary DEL TORO. Research and development funding for SLCM-N was eliminated in fiscal year 2023 prior to the development of a concept of operations; therefore, stationing considerations were not reviewed.

21. Senator WARREN. Secretary Del Toro, if so, would new arrangements need to be made to account for a nuclear payload?

Secretary DEL TORO. Research and development funding for SLCM-N was eliminated in fiscal year 2023 prior to the development of a concept of operations; therefore, the Department of the Navy did not review the need for potential new arrangements.

22. Senator WARREN. Secretary Del Toro, has the Navy done any analysis of how outfitting the *Virginia*-class may impact basing in allied ports abroad given several countries have banned port calls from ships carrying nuclear weapons?

Secretary DEL TORO. Research and development funding for SLCM-N was eliminated in fiscal year 2023 prior to the development of a concept of operations; therefore, a detailed analysis of where, how often, and which ships it would be deployed on had not been conducted. It is longstanding U.S. policy to neither confirm nor deny the presence or absence of nuclear weapons aboard warships or on aircraft; the five Nuclear-Weapon-Free Zones (NWFZs) around the globe contribute to the Department's strategic calculus when determining global force posture.

QUESTIONS SUBMITTED BY SENATOR ROGER WICKER

LITTORAL COMBAT SHIP

23. Senator WICKER. Secretary Del Toro, Admiral Gilday, the LCS mine countermeasure (MCM) warfare package should reach initial operational capability this year. The four existing MCM vessels stationed in Bahrain are scheduled to be decommissioned in 2025, and the four MCM vessels in Sasebo are scheduled to be de-

commissioned in 2027. Will the LCS will be ready to replace existing MCM vessels, or will there be a capability gap in 5th Fleet or 7th Fleet?

Secretary DEL TORO and Admiral GILDAY. No, there will not be an Mine Countermeasure (MCM) capability gap in 5th Fleet or 7th Fleet. The Littoral Combat Ship MCM Mission Package will have four mission packages ready to deploy to 5th Fleet by the end of 2024 and an additional four MCM MP ready to deploy to 7th Fleet by the end of 2027. This schedule will allow the MCM-1 *Avenger*-class vessels in both 5th and 7th Fleet to be decommissioned as scheduled in 2025 and 2027, respectively.

24. Senator WICKER. Secretary Del Toro, Admiral Gilday, what has the Navy done to ensure that Bahrain and Sasebo have the necessary support infrastructure to facilitate the arrival and presence of LCS?

Secretary DEL TORO and Admiral GILDAY. Sasebo and Bahrain are both supportable ports for LCS.

1. Sasebo: Littoral Combat Ship (LCS) has been using Sasebo for 7 years.
 - a. First LCS port visit: USS *Forth Worth*-2015
 - b. Last LCS port visit: USS *Charleston*-May 2022
 - c. No additional facilities are required to support LCS missions out of Sasebo.
2. Bahrain
 - a. At NSA Bahrain, Navy has constructed a multi-story maintenance/administration building. The facility provides administrative, industrial and management support spaces, marine maintenance and shop areas, operational storage including limited hazmat storage, and a LCS Mission Module Readiness Center (MMRC) and single story high-bay warehouse/operational storage facility foundation. The MMRC provides dedicated storage and pre-staging for double-stacked twenty-foot equivalent units, Operations/Installation maintenance and Mission Package support. A separate exterior covered and uncovered staging and lay down areas includes converters for special power, 28 VDC, 400 Hertz electrical power as well as 60 Hertz power (shore power in Bahrain is 50 Hertz) as well as a passenger/freight elevator and high bay bridge crane.
 - b. Pier, wharves, and utilities support LCS and other various class ships whether transitory or homeported.

QUESTIONS SUBMITTED BY SENATOR TOM COTTON

SLCM-N

25. Senator COTTON. Admiral Gilday, is it your best military advice to continue developing the Nuclear Sea-Launched Cruise Missile?

Admiral GILDAY. The long lead time for modern weapon system development requires us to anticipate and invest for a degree of uncertainty in the future. Waiting until we need a capability is too late to invest and SLCM-N would fill anticipated future deterrence gaps. It is worth continued investment for development and technology maturation, building a capability we could scale when needed. However, to continue that effort, Navy would require topline relief in order to also afford today's operational tasking, sustainment, and modernization.

26. Senator COTTON. Admiral Gilday, would you agree that a partial investment in a capability such as the Nuclear Sea Launched Cruise Missile, which requires long development schedules, makes those programs take even longer?

Admiral GILDAY. The long lead time for modern weapon system development requires us to anticipate and invest for a degree of uncertainty in the future. Waiting until we need a capability is too late to invest and SLCM-N would fill anticipated future deterrence gaps. It is worth continued investment for development and technology maturation, building a capability we could scale when needed. However, to continue that effort, Navy would require topline relief in order to also afford today's operational tasking, sustainment, and modernization.

DIVESTMENT OF EA-18G

27. Senator COTTON. Admiral Gilday, on average, how many flight hours remain on the EA-18G aircraft you propose to divest?

Admiral GILDAY. The average flight hours remaining on EA-18G aircraft in operational squadrons is 4,361 out of the current 7,500 flight-hour limit.

28. Senator COTTON. Admiral Gilday, the Navy hosts the only dedicated stand-in electronic attack platform in the joint force. How would the joint force fill the capability gap if these aircraft were divested?

Admiral GILDAY. The Joint Staff is conducting an assessment on Joint force Airborne Electronic Attack (AEA) capabilities within each service to fulfill COCOM identified mission sets in the high-end fight. The assessment will identify all available Joint AEA capabilities and evaluate risk to force and risk to mission in the absence of Expeditionary EA-18Gs. The assessment will help inform the Joint Staff on future courses of action for AEA capability and capacity for each service.

29. Senator COTTON. Admiral Gilday, did the Navy investigate transferring these aircraft to carrier-based squadrons rather than divestiture?

Admiral GILDAY. The divestment of Growler squadrons is proposed to occur in fiscal year 2024—there is no action or savings in fiscal year 2023. Navy continues to assess all of our warfighting requirements based on the changing security environment and 2022 National Defense Strategy. We are currently re-assessing our requirements for airborne electronic attack capability and capacity—this work is ongoing and no decision has been made yet. If this divestment is included in the fiscal year 2024 President's Budget, then Navy will consider transferring the aircraft to carrier-based squadrons rather than divestiture.

30. Senator COTTON. Admiral Gilday, without going into classified details, are there current operational plans that might be affected by the divestment of these aircraft?

Admiral GILDAY. The Joint Staff and Combatant Commanders are conducting an assessment on the impact to operational plans without the expeditionary Airborne Electronic Attack capability.

FLEET TRAINING

31. Senator COTTON. Admiral Gilday, I'm pleased to see the improvements in training with the Fleet Battle Problems reintroduction. Could you clarify, are submarines involved in these exercises?

Admiral GILDAY. Our submarines participate in the Fleet Battle Problem series of exercises. To support the recent exercise objectives, submarines have acted as opposing hostile forces to exercise and test our fleets' anti-submarine warfare capabilities, including advanced capabilities introduced in the inaugural unmanned battle problem hosted by 3rd Fleet in 2021. Previous fleet battle problems exercised our submarines' integration with the fleets in a friendly force role, executing multi-domain fires.

32. Senator COTTON. Admiral Gilday, do submariners have opportunities to train in large exercises the way naval aviators do at exercises such as RED FLAG or TOP GUN's Integrated and Advanced Training Phases?

Admiral GILDAY. Yes, submarines have long participated in large scale exercises, and those exercises continually adapt to changing operational conditions and are increasingly more inclusive of our allies as outlined in our National Defense Strategy. These include:

1. The DYNAMIC series of exercises that test and train warfighting interoperability with NATO.
2. The BLACK WIDOW series of exercises that brings together Navy aircraft, surface ships, and submarines to rehearse our unique undersea warfare capabilities in a high-end warfighting environment.

Each submarine is also tested in a Combat Readiness Evaluation. However, in terms of RED FLAG and TOP GUN, the enduring crown jewel of combat training for our boats and crews is the Submarine Command Course. No other navy's submarine force can match the scale of the operational planning, execution, and logistics required to safely and successfully engage in this at-sea crucible training, and we do this four times a year. While this course focuses on prospective submarine Commanding and Executive Officers, it's notable that three to four boats and crews, including ballistic missile submarines (SSBNs), support each class, and those boats get to fire an entire torpedo room full of exercise weapons in scenarios called "Mini-Wars", opposed by anti-submarine warfare capable surface action groups, fixed and rotary-wing aircraft, and other U.S. nuclear and allied non-nuclear submarines. The Mini-Wars occur on 3-dimensional instrumented ranges in the Atlantic and Pacific, tracking every participant and weapon from space to the seabed, leaving no doubt as to weapons placement and effectiveness. Each course also includes specified tactical development objectives for the participating warfare communities, so the course

provides a steady forcing function to improve the state of the practice for maritime warfighting.

33. Senator COTTON. Admiral Gilday, aside from Live, Virtual, and Constructive models, what is the Navy's strategy to develop or invest in full spectrum maritime training facilities which focus on proving the concepts of Expeditionary Advanced Base Operations (EABO), subsea and seabed warfare, special operations forces, and aviation forces integrating and operating in the near-shore or in contested littorals?

Admiral GILDAY. Navy continues to recognize the critical role force training provides in every environment we operate in, including the littorals. Our investments across the PESTONI (Personnel, Equipment, Supply, Training, Networks, and Installations) pillars capture fleet integrated priorities and evaluate requirements through the Fleet Training Wholeness process that best support force generation while developing realistic open air and learning center training environments so our sailors are prepared to prevail against current and emergent threats.

We continue to modernize our ranges and learning center simulators supporting surface, undersea, aviation, and SEAL exercises in Fleet concentration areas and open air ranges such as the Pacific Missile Range Facility (PMRF), Southern California Tactical Training Range Complex (SCTTR), and the Fallon Range Training Complex (FRTC), among others. Recent investments include upgrades to Navigation, Engineering, and Combat Systems training facilities for surface ships and undersea warfare facility trainers as well as recapitalization of the instrumented undersea warfare training ranges (Barking Sands Tactical Underwater Range (BARSTUR) and Barking Sands Underwater Range Expansion (BSURE), Southern California Offshore (SCORE) Deep Water Range, and Atlantic Undersea Test and Evaluation Center (AUTC) while continuing to developing robust synthetic and LVC capabilities to prevail against our strategic competitors.

Our investments in the Undersea Warfare Training Range (USWTR) Program includes \$47.98 million dollars in fiscal year 2023 and \$448.56 million across the FYDP to recapitalize the BARSTUR/BSURE deep water ranges, SCORE deep water range and install shallow water training ranges in vicinity of Tanner Bank and San Clemente Island to provide an instrumented undersea training environment. AUTC recapitalization includes \$26.7 million dollars in fiscal year 2023 and \$44.6 million across the FYDP.

The Navy is pursuing the Fallon Range Training Complex Modernization which supports all advanced aviation training and SEAL ground mobility training. This modernization effort, submitted as an fiscal year 2023 Legislative Proposal, requests additional withdrawal of both federal and private land to increase the FRTC foot print by approximately 828,000 acres to support the increased standoff distance required for new weapons systems and provide a realistic tactical training environment. If the legislative proposal is approved, Navy requested \$48.3 million for MILCON P-445, Fallon Range Training Complex Land Acquisition Phase II as a CNO Unfunded Priority List item. Additionally, the Navy has invested \$332.5 million in the Naval Aviation Warfighting Development Center (NAWDC) Integrated Training Facility (ITF) at Naval Air Station Fallon. At initial operational capability (IOC) in December 2022, the ITF will facilitate fully informed, synthetic Carrier Air Wing integrated training for F/A-18E/F, EA-18G, E-2D, and Aegis operators.

OVER-CLASSIFICATION OF CAPABILITIES

34. Senator COTTON. Secretary Del Toro, I've heard horror stories of the huge amount of time and effort spent on an outdated security architecture regarding Special Access Programs. Specifically, despite the existence of an online database of accessed individuals, sailors and marines must ask their security managers to email visit certificates for temporary duty assignments as if we're still using secure fax machines. What are you doing to address the wasted time and energy spent on this bureaucracy to allow our sailors and marines to focus on warfighting?

Secretary DEL TORO. The Department of the Navy, in coordination with our fellow Services and the Department of Defense, continue to evaluate ways to remove cumbersome work practices such as what you highlighted. Our goal and current practice is to leverage digital tools to meet our enduring requirements. These tools support managing access to our most classified capabilities in an agile and flexible manner.

35. Senator COTTON. Secretary Del Toro, the Department of the Navy maintains a robust portfolio of Special Access Programs. When is the last time a Secretary of the Navy has directed a review of those programs to determine if they should remain classified as Special Access Required?

Secretary DEL TORO. The Department of the Navy is organized to ensure our Fleet is proficient at using our most highly classified capabilities. For instance, the Department of the Navy has a single accountable official responsible to me for developing, delivering, and protecting our Special Access Program capabilities. He does so as a member of both the Navy staff and my SECNAV staff to ensure we have the proper requirements, resourcing, and security for these capabilities from cradle to grave. In executing these authorities, he ensures our Fleet has the personnel accesses, the physical spaces, and information technology capabilities to develop tactics, techniques, and procedures, and then routinely operate and exercise with these capabilities so that our sailors and marines can fight and win on demand. I have designated my Under Secretary to provide oversight of these capabilities on an annual basis to ensure we are protecting only those capabilities which merit enhanced security protections and to ensure that our Fleet is proficient at using those capabilities we must protect at the enhanced security level.

The Department annually validates the continued need for each Special Access Program, considering key risk factors when making these evaluations. Upon determination that a security change is warranted, a plan is developed to implement the desired outcome. These annual reviews are necessary to ensure we are not over-protecting technologies, thus artificially constraining employment in the Fleet.

Additionally, Alternative Compensatory Control Measures (ACCMs) for the Department of the Navy follow strict adherence to guidance published by Department of Defense Manual for ACCMs.

36. Senator COTTON. Secretary Del Toro, if the National Defense Strategy relies on integrated deterrence, what steps are you taking to ensure security barriers such as Special Access Programs or Additional Compensatory Control Measures within the Department of the Navy don't hinder operational and tactical integration at echelons lower than headquarters?

Secretary DEL TORO. The Department of the Navy is organized to ensure our Fleet is proficient at using our most highly classified capabilities. For instance, the Department of the Navy has a single accountable official responsible to me for developing, delivering, and protecting our Special Access Program capabilities. He does so as a member of both the Navy staff and my SECNAV staff to ensure we have the proper requirements, resourcing, and security for these capabilities from cradle to grave. In executing these authorities, he ensures our Fleet has the personnel accesses, the physical spaces, and information technology capabilities to develop tactics, techniques, and procedures, and then routinely operate and exercise with these capabilities so that our sailors and marines can fight and win on demand. I have designated my Under Secretary to provide oversight of these capabilities on an annual basis to ensure we are protecting only those capabilities which merit enhanced security protections and to ensure that our Fleet is proficient at using those capabilities we must protect at the enhanced security level.

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MENTAL HEALTH FOR MARINES AT HAMID KARZAI INTERNATIONAL AIRPORT (HKIA) IN AUGUST

37. Senator COTTON. General Berger, I know there are many counseling and mental-health resources readily available to support our troops, but do you know what support has been specifically provided to the members of the Marine Corps involved at the Kabul airport gates last August?

General BERGER. Within days of receiving 24th MEU's orders to support the retrograde from Hamid Karzai International Airport, the Commanding General of II Marine Expeditionary Force (MEF) engaged with the Force Chaplain and the Force Surgeon to form a Religious Ministry and Behavioral Health Support Team to surge in support of this mission.

This team consisted of the Deputy Force Chaplain, two Operational Stress Control and Readiness (OSCAR) Providers, a Religious Program Specialist, and two Behavioral Health Technicians.

Upon reaching the retrograde site in Kuwait, this team provided Warrior Transition, mental health counseling and behavioral health counseling to the retrograding

units. This support consisted of stress management, grief, anger and alcohol, moral injury, and group counseling.

Providing Warrior Transition and Decompression in a forward setting was critical to helping our marines process their grief and begin the process of recovery. Individuals were assigned an elevated risk in the Command Individual Risk and Resiliency Assessment System (CIRRAS) in an effort to continue to keep faith with affected marines and sailors.

Upon return to their home station, our marines received a follow-up round of Warrior Transition ("Warrior Transition II") consisting of one-on-one counseling and appropriate referrals to higher echelons of care. We continue to support our marines and their families with additional care.

38. Senator COTTON. General Berger, have you followed up with the marines who served at HKIA in August to see how they've been coping since their return?

General BERGER. I attended the memorial services for both 2d Battalion, 1st Marine Regiment and II Marine Expeditionary Force, where the Sergeant Major of the Marine Corps and I personally engaged with marines returning from Afghanistan. Since then, we have visited the marines at 5th Marine Expeditionary Brigade in Bahrain and have held town halls attended by marines who were deployed in support of this operation. I am also in regular contact with the MEF Commanders leading these marines and sailors; they keep me apprised of anything concerning to them. More important than visits from me, our Service is providing these marines the professional resources and support they need to grieve, cope, and prepare themselves for continued service.

39. Senator COTTON. General Berger, will you commit to working with me on this issue moving forward?

General BERGER. Absolutely. I am fully committed to health and well-being of all marines, particularly those who most need our assistance after answering the Nation's call. I've reminded commanders and staff that the health and well-being of these marines is a priority and to ensure they are getting the assistance they need.

QUESTIONS SUBMITTED BY SENATOR THOM TILLIS

FLEET READINESS CENTER—EAST

40. Senator TILLIS. Secretary Del Toro and Admiral Gilday, the Fleet Readiness Center East (FRC—East) aboard Marine Corps Air Station provides depot level service and repair to multiple airframes across the Department of Defense. Last year, we talked about how FRC—East has been relegated to operating out of 1950s-era hangars and buildings that lack the necessary infrastructure and space. FRC—East supports 4,000+ well-paying jobs in eastern North Carolina, not to mention significant support to marine aviation. While the Department of the Navy continues to invest in modern aircraft, it seems to fail to recognize the need for maintenance facilities such as this. Can you provide an update on any plans you have to improve FRC—East's infrastructure?

Secretary DEL TORO and Admiral GILDAY. The Department of the Navy has developed a depot infrastructure modernization and optimization plan to ensure that the Navy and Marine Corps aviation sustainment system meets the needs of the current and future force with the ability to surge in the event of a major conflict.

On April 29, 2022, the Navy submitted a 5-year plan to the Subcommittee on Readiness, Committee on Armed Services, which outlines the near-term infrastructure efforts at the three aviation depots. The plan integrates all infrastructure and industrial plant equipment investments to improve Navy maintenance capabilities by expanding depot capacity and optimizing depot configuration. At Fleet Readiness Center East, the Fiscal Year 2023 President's Budget requests MILCON funding for an H-53K Gearbox Repair and Test facility (\$38.4 million) and had funds programmed to construct an F-35 Aircraft Sustainment Center in fiscal year 2025 (\$217.4 million). In addition to these infrastructure projects, ongoing investments began in fiscal year 2021 to address aging, inefficient, and unreliable industrial equipment to include advanced technology.

The DON is evaluating additional opportunities to maximize our depot capacity, reduce cost of ownership, and foster cooperation with private industry in accordance with all applicable laws and DoD guidance. This includes potential partnership opportunities with the State of North Carolina to support Navy and Marine Corps Aviation both now and into the future.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

RATE OF DIVESTITURE TO CAPABILITY DEVELOPMENT

41. Senator SULLIVAN. General Berger, to execute Force Design 2030 you have pursued a divest-to-invest strategy, aimed at generating savings internally to use for modernization efforts. I commend you for this bold and urgent approach to address the threats identified in the 2018 National Defense Strategy. I am concerned about the rate of divestiture compared to the rate new capabilities are being fielded. There is much discussion within the Senate, the DOD, and outside experts that the 2020s may be the most dangerous period in United States-China relations because we have only belatedly begin a military modernization process designed to deter and defeat the Peoples Republic of China (PRC) in a military conflict. To execute Force Design 2030, the Marine Corps has reduced the number and size of its infantry battalions, divested of all its tanks, and reduced the number of aviation squadrons and cannon artillery batteries. Additionally, just last month it was reported that the Light Amphibious Warship—a central piece to the concepts of Stand-in Forces (SIF) and Force Design—would be furthered delayed until 2025, with the first delivery not expected until 2027. I'm concerned that this could create a significant gap in capability during a dangerous time-frame related to a Taiwan scenario. Could you explain how the rate of divestiture to the rate of new capability integration keeps the Marine Corps optimally prepared for conflict both now and in 2030?

General BERGER. Through experimentation and consultation with stakeholders, including this Committee, we build the necessary force of tomorrow while maintaining our capabilities for crisis response and combat. The Marine Corps continues to leverage all elements of the Marine Air Ground Task Force to mitigate potential imbalances between investments and divestments. Recently designating II Marine Expeditionary Force as a Service retained CONUS-based immediate response force, Task Force 61/2 activities in Europe, and 2d Marine Air Wing's shift from exercises in Norway to help counter Russian aggression reflect the Service's ongoing initiatives to support the Joint Force and remain prepared for conflict. Meanwhile, as a result of continuous experimentation and refinement, we adjusted artillery, infantry, and aviation structure to optimize meeting our modernization objectives while remaining a viable, relevant force today. We will continue this iterative process of sourcing combat-credible task-organized forces, experimenting, and refinement, constantly mindful of the pacing threat and our Service's role to the Nation.

COMBINED ARMS

42. Senator SULLIVAN. General Berger, in public remarks you have been adamant that Force Design 2030 will not prevent the Marine Corps' from generating combined arms capable formations. Marine Corps Doctrinal Publication—1 Warfighting defines combined arms as “the full integration of arms in such a way that to counteract one, the enemy must become more vulnerable to the other.” For the last 80 years, combined arms in the Marine Corps meant tanks, cannon artillery, and aviation. Underpinning Force Design is a new vision of what combined arms warfare requires under modern combat conditions. Could you describe in detail the difference between how the Marine Corps employs combined arms now and how it will do so in 2030?

General BERGER. Combined arms now and in the future encompass additional domains such as space, cyber, and information. New capabilities in each of these domains must be integrated within our combined arms approach. Additionally, we must also use older capabilities in new ways that are effective against technologically advanced adversaries.

Force Design 2030 will retain 7 Active component and 6 Reserve component cannon artillery batteries and 14 Medium Range Missile (MMSL) batteries and 3 Long Range Missile (LMSL) batteries. While initially fielded with an anti-ship missile, the MMSL will incorporate the MLRS Family of Munitions (MFOM) enabling a wider array of effects. Additionally, our Organic Precision Fires (OPF) program will add loitering munitions to the force, which when integrated in a combined arms plan will significantly increase the lethality of the force as shown recently in the Second Nagorno Karabakh war and in ongoing operations in Ukraine.

These new capabilities at echelon enhance the combined arms effects (both kinetic and non-kinetic) that units can generate. Combining anti-armor (loitering munitions, MAAWS, Javelin and manned aviation) systems along with fielding the Amphibious Combat Vehicle provides an ability for armor protected maneuver, fires and anti-armor capability.

Finally, the Marine Corps retains its ability to conduct combined arms operations at echelon while enhancing its ability to serve a critical role in gaining and main-

taining custody of targets and subsequently closing “kill webs” for the Naval and Joint force. Our continuous experimentation in reconnaissance / counter reconnaissance continues to inform this capability.

43. Senator SULLIVAN. General Berger, throughout time the Marine Corps proved itself “most ready when the Nation was least ready,” rapidly accomplishing all assigned missions and prevailing on every battlefield to which it was committed. How will the Marine Corps, both now and in 2030, be able to maintain a “force in readiness” and respond to crises outside the Indo-Pacific?

General BERGER. While the Service focuses on the pacing threat in the Indo-Pacific, it remains the Nation’s premier expeditionary force in readiness, capable of global employment at a moment’s notice. Marines serve currently in multiple crisis response missions outside the Indo-Pacific region:

- Our marines deploy aboard Navy Amphibious Ready Group (ARG) shipping as part of Marine Expeditionary Units (MEU), offering the Geographic Combatant Commanders a ready force which cooperates with Allies and Partners, competes with potential adversaries, and stands ready to provide humanitarian assistance, disaster relief, or otherwise respond to crisis.
- We provide task organized rotational forces to Europe, capable of rapidly shifting from competition to crisis response, as demonstrated this year when Russia invaded Ukraine and Marine Corps forces exercising nearby shifted location and mission to support the Geographic Combatant Commander and our allies.
- Task Force 51/5 is an integrated Navy-Marine Corps team in U.S. Central Command, capable of crisis response. In fact, 51/5 provided some of the first boots on the ground during the 2021 Afghanistan noncombatant evacuation operations.
- Marine Corps Fleet Anti-Terrorism Security Teams and Marine Security Augmentation Units posture in the United States and abroad to reinforce embassies or other United States Government high value locations worldwide. We also provide aviation support to crisis response forces in East Africa.

Meanwhile, we work to enhance our crisis response capability by recently designating II Marine Expeditionary Force (MEF) as a Service retained CONUS-based immediate response force. This force will include a 2 to 3-star Joint Task Force Headquarters, a regimental headquarters (led by a Colonel), and an infantry battalion, all capable of deploying within 10 days to wherever the Joint Force needs marines to stabilize a situation and/or build our national security leaders’ situational awareness. Also, recent Task Force 61/2 activities in Europe reflect the Service’s experimentation with formations similar to Task Force 51/5, capable of competition and crisis response in other geographic regions. These forces will be complimentary to, not in place of deployed ARG/MEUs that we and our Navy counterparts will continue to deploy at a persistent global presence.

ACCESS

44. Senator SULLIVAN. General Berger, the concept for Stand-in Forces calls for the marine to operate within an adversary’s weapon engagement zone (WEZ). However, in the event of a conflict with the PRC, many of the countries in which Stand-in Forces might be deployed will be under immense political, economic, and military pressure from the PRC to either expel U.S. forces or deny access to U.S. forces. What assumptions about access have you made with SIF concept development?

General BERGER. The Stand-in Forces’ (SIF) forward and persistent presence establishes posture and enables it to support naval campaigning in the contact layer by building upon existing relationships with allies and partners. These relationships then inform how SIF provide specific support to allies and partners, and where and how they can operate from host nation littorals. Achieving the necessary level of access will require close coordination through the chain of command to the combatant commander, as well as close coordination with interagency partners, particularly the State Department. Among other activities, SIF use security cooperation, security force assistance, and exercise events to deepen relationships and to develop the maritime domain awareness picture. Ultimately, SIF seek to routinely and consistently operate forward with our allies and partners to build and sustain access during competition. If armed conflict occurs, SIF extend the battlespace as the forward element of a maritime defense-in-depth to limit adversary freedom of action in support of naval maneuver and joint force access. Furthermore, having an increase in shipbuilding for our amphibious fleet will provide the flexibility and resilience under various operational contexts.

45. Senator SULLIVAN. General Berger, how would denied or revoked access to Indo-Pacific nations within the first- and second-island chains impact the Marine Corps' ability to employ SIF or execute EABO?

General BERGER. Any operations conducted without the support of allies and partners significantly reduces military options. Operations in close alignment with them, from their territories, alongside their ships and aircraft, and in cooperative and even integrated formations on the ground will enhance deterrence and enable success. Our collective security is a product of our alliances and partnerships. Stand-In Forces must campaign continuously with our partners to ensure we are postured to deter adversaries such as China. Our modernized global positioning network consisting of a mix of shore and ship based pre-positioning assets provides us with the flexibility and resilience to operate under a variety of operational contexts. This is why we continue to advocate for an increase in shipbuilding for the U.S. Navy including our amphibious fleet.

COMBATANT COMMANDERS AND FORCE DESIGN

46. Senator SULLIVAN. General Berger, how has combatant commander demand signal shaped Force Design 2030?

General BERGER. As our Marine Expeditionary Forces continue to work with their Fleet counterparts, the geographic combatant commanders are taking notice of the value we bring. For example, our experimentation with the Sixth Fleet conducting reconnaissance and counter-reconnaissance activities is filling a gap for the EUCOM Commander. The same is the case in both Central Command and Indo-Pacific command. The more we experiment with the fleet with newly fielded equipment, the more we are learning. We continue to evaluate our assumptions and theories and are making adjustments as we go. Combatant Commanders want capabilities that are useful across a variety of contexts. For example, they want marine capabilities to respond to crisis, provide situational awareness, and possess combat credible capabilities to support deterrence. Our Corps meets those demands.

47. Senator SULLIVAN. General Berger, how have combatant commanders been integrated into the iterative process of Force Design 2030?

General BERGER. Largely through our operations and experimentation, as described above. Each time a Marine Expeditionary Unit (MEU) deploys or a Marine Air Ground Task Force (MAGTF) conducts an experiment or exercise, they are in support of a combatant commander. Marines are filling the requirements the combatant commanders are registering. For example, we directly support the Indo-Pacom commander with exercises such as Pacific Sentry and RIMPAC. We do the same for EUCOM during exercises such as Cold Response. The objectives for these exercises are set by the combatant commanders and refined by the Marine Expeditionary Force and Marine Force planners to ensure we provide what they want along with testing some of our hypotheses.

48. Senator SULLIVAN. General Berger, did the U.S. Combatant Commanders concur with the level of risk being introduced into their plans, operations, activities, and investments with the implementation of Force Design 2030?

General BERGER. With modernization there is an inherent balance of near and long-term risk. If we sacrifice long-term risk in favor of the present, the risk in the long-term is likely to grow exponentially to which we may not recover from. As part of the Title X requirements for the Commandant of the Marine Corps, it is the Commandant's legal responsibility to man, train, and equip a force capable of meeting statutory requirements now and in the future. The Commandant must balance Geographic Combatant Commanders and the Chairman of the Joint Chiefs of Staff's requirements with available resources and emerging technological, cultural, financial, and other trends.

49. Senator SULLIVAN. General Berger, in the past, the Marine Corps had three infantry regimental headquarters and eight infantry battalions located in the Indo-Pacific Command's theater west of Hawaii. Under Force Design 2030, these infantry regimental headquarters will transition into three Marine Littoral Regimental headquarters. Was this significant change approved by the Indo-Pacific Command Commander?

General BERGER. Under Title X, the Commandant of the Marine Corps is responsible for manning, training, and equipping the service necessary to meet its statutory requirements. This includes modernizing a force to increase its value proposition to the joint force. The current plan to transition 3d, 4th, and 12th Marine Regiments to 3d, 4th, and 12th Marine Littoral Regiment, we believe, does just that. However, as part of our Campaign of Learning, the Marine Corps will refine its

modernization by, with, and through the input of our operating forces to ensure the right support for the joint force.

AMPHIBIOUS SHIP REQUIREMENT

50. Senator SULLIVAN. Secretary Del Toro, Admiral Gilday, and General Berger, in a statement to Defense News on April 4th, Deputy Commandant of the Marine Corps for Capabilities Development and Integration, Lieutenant General Karsten Heckl, stated, “the Marine Corps has a requirement for absolutely no less than 31 amphibious warfare ships.” Could you please elaborate on the operational imperative for 31 amphibious warfare ships?

Secretary DEL TORO and Admiral GILDAY. The operational imperative for 31 traditional amphibious ships (LHA/LHD/LPD/LSD) is to provide credible deterrence, support campaigning strategies, and offer options for the rapid aggregation of forward, scalable, tailored, and ready forces to respond to crisis or conflict in support of Combatant Commanders operational and Global Force Management (GFM) requirements. Additionally, traditional amphibious ships provide crisis response outside of conflict through activities such as Humanitarian Assistance/Disaster Relief and Non-Combatant Evacuation Operations. Thirty-one ships provides global response options at an acceptable level of risk while maintaining Navy and Marine Corps force generation cycles for maintenance and training.

In the past 12 years in AFRICOM and CENTCOM, marines from amphibious warfare ships evacuated United States embassies in Libya and Yemen; reinforced the embassy in Iraq; rescued a downed Air Force pilot in Libya; put artillery units ashore to bombard ISIS in Syria; and, most recently in August, were the first on the ground to support the evacuation efforts out of Afghanistan. With fewer than 31 traditional amphibious ships, the Navy will have reduced capacity to respond to crises in the future.

General BERGER. In my professional military judgment, the Marine Corps has a requirement for no less than 31 amphibious warfare ships. As ships are being decommissioned faster than they are procured, delivered, and eventually employed, the inventory under the current plan will decrease to approximately 25 ships over the next few years. With this lower inventory, we will likely still support the Indo-Pacific region but will have to accept risk elsewhere in the world. For instance, in the past 12 years in AFRICOM and CENTCOM, marines from amphibious warfare ships evacuated United States embassies in Libya and Yemen; reinforced the embassy in Iraq; rescued a downed Air Force pilot in Libya; put artillery units ashore to bombard ISIS in Syria; and most recently in August, were the first on the ground to support the evacuation efforts out of Afghanistan. The Marine Corps’ ability to respond to crises like these in AFRICOM, CENTCOM and EUCOM will be at risk as amphibious warfare ship numbers decrease to approximately 25 ships in the next few years and remain at that level for the remainder of the decade.

51. Senator SULLIVAN. Secretary Del Toro, in your statement submitted to this Committee, you write, “Amphibious warships like the LHA and LPD are vital for the organic mobility and expeditionary persistence of our Marine Corps, and remain in high demand” Yet, this budget would cut LPD production after hull number 32 and potentially dip the amphibious ship count to around 25 by fiscal year 2027. If these ships “remain in high demand” as you state, why is that not reflected in the budget?

Secretary DEL TORO. The Department is very committed to amphibious lift. The fiscal year 2023 budget balances capability and capacity across warfare areas to deliver a combat capable force in the near-term. Warfighting requirements will be updated based on the 2022 National Defense Strategy, which will inform the fiscal year 2024 shipbuilding plan. Further, the forthcoming Amphibious Fleet Requirement Study will set the requirement for traditional amphibious ships (LHA/LHD/LPD/LSD) and inform the Navy’s strategic approach to amphibious force structure. Resourcing decisions will be reflected in future budget submissions.

52. Senator SULLIVAN. General Berger, how would having only 25 amphibious warships degrade our ability to deter and if necessary defeat an adversary?

General BERGER. The primary deployed formation of America’s crisis response force is a Marine Expeditionary Unit (MEU) aboard a Navy Amphibious Ready Group (ARG). The ARG consists of 3 amphibious warfare ships; 1 LHA/LHD and either 2 LPDs or 1 LSD and 1 LPD. Removing 7 amphibious warfare ships reduces the battle force inventory by one-third, or over two ARGs worth of expeditionary warfare capacity.

With our current inventory of 32 amphibious warfare ships we can produce an annual global presence of 1.7 deployed ARG/MEUs to support theater campaign objectives. This includes our 1.0 ARG/MEU deployed contribution to the Immediate Response Forces, as well as a .7 patrolling presence from our Forward Deployed Naval Forces. This readiness allows for consistent campaigning activities that do not cede key areas of the global commons to the enemy, making it difficult to retake that terrain after a conflict has commenced. This same formation enables joint force maneuver during the early stages of conflict—a key factor in denying the enemy's ability to achieve fait accompli objectives as observed in campaign analyses.

With 25 ships and based on historical readiness rates, the Marine Corps will be unable to maintain a reliable, consistent, and enduring forward deployed ARG/MEU presence. Gaps between the consecutive ARG/MEUs and our forward presence will become pronounced and are likely to increase substantially over time due to a proportionally higher demand on a smaller set of aging platforms. Moreover, if a Combatant Commander requires the capability to conduct an amphibious assault in a formation larger than an ARG/MEU, our war planning requirements dictate 15–20 amphibious warfare ships. The Marine Corps estimates that with an inventory of 25 ships, a significant effort by our already weakened industrial base would be required to assemble an amphibious task force of that size—with risk to responsiveness and capability, and, ultimately, risk to mission.

An inventory of 25 amphibious warfare ships reduces our Nation's forward presence that supports campaigning and limits our Nation's ability to respond to crisis. Moreover, the limited amphibious warfare ship inventory increases the time necessary to assemble assets in conflict. Lastly, an inventory of 25 amphibious warfare ships poses a significant risk for training and readiness as substantiated by the KEARSARGE ARG's inability to deploy inside of 30 days prior to its scheduled departure, despite the fact that today's battle force inventory includes 32 L-class ships.

LIGHT AMPHIBIOUS WARSHIP

53. Senator SULLIVAN. Secretary Del Toro, Admiral Gilday, and General Berger, the Navy announced recently that the Light Amphibious Warship would be delayed again, this time until fiscal year 2025. In your annual update to Force Design you said the Marine Corps would use Expeditionary Transfer Docks (ESBs), Expeditionary Fast Transports (T-EPF), Landing Craft Utility (LCUs), and leased ships to bridge the gap until the Light Amphibious Warship (LAW) begins delivery. In your estimate, how close is the Marine Corps to validating the LAW requirements for production and delivery?

Secretary DEL TORO and Admiral GILDAY. The Light Amphibious Warship analysis of alternatives (AOA) and final report is complete. Next actions include AOA sufficiency analysis by the Office of the Secretary of Defense, Cost Assessment and Program Evaluation, a Joint Staff Review, a Joint Requirements Oversight Council (JROC) review, and JROC memorandum publication. These actions are scheduled to complete in fiscal year 2022. This process, coupled with inputs from industry, will inform the writing of the Capabilities Development Document (CDD), planned to be approved in fiscal year 2023. Prior to CDD publication, concept and preliminary design efforts are proceeding with industry partners.

General BERGER. The Landing Ship Medium (LSM), formerly known as the Light Amphibious Warship (LAW), analysis of alternatives (AOA) and final report is complete. Next actions include AOA sufficiency analysis by the Cost Assessment and Program Evaluation office, a Joint Staff Review, a Joint Requirements Oversight Council (JROC) review, and JROC memorandum publication. These actions are scheduled to occur between now and July 2022. This process, coupled with inputs from industry, will inform the writing of the capabilities development document (CDD), planned to be approved in early fiscal year 2023. Prior to CDD publication, preliminary design is expected to be complete in August 2022.

54. Senator SULLIVAN. Secretary Del Toro, Admiral Gilday, and General Berger, what else remains to be validated to move forward with the Light Amphibious Warship?

Secretary DEL TORO and Admiral GILDAY. The Navy is in the material solution analysis phase of the acquisition process for the Light Amphibious Warship program. The Navy approved the Analysis of Alternatives (AOA) at a Gate 2 on 22 March 2022. The AOA concluded a purpose-built ship is best suited for the mission from a cost and effectiveness perspective. The AOA is currently undergoing sufficiency review at the Office of the Secretary of Defense, Cost Assessment and Program Evaluation, and will then enter Joint Requirements Oversight Council staffing.

The Navy awarded the Concept Study (CS)/Preliminary Design (PD) effort to five industry partners in June 2021: Austal, Bollinger, Fincantieri, VT Halter, and TAI Engineers. These industry partners completed the CS phase in October 2021. The Navy exercised the PD options with all five industry partners in January 2022. The program is incorporating the AOA results and feedback from the five industry preliminary designs into the Capabilities Development Document (CDD) to support endorsement by the Navy as part of the Gate 3 Program Review targeted for 4th quarter fiscal year 2022.

The Navy is on track to have an approved CDD to support the acquisition timeline to procure the lead ship in fiscal year 2025.

General BERGER. The Landing Ship Medium (LSM), formerly known as the Light Amphibious Warship (LAW), analysis of alternatives (AOA) final report is complete. Next actions include AOA sufficiency analysis by the Cost Assessment and Program Evaluation office, a Joint Staff Review, a Joint Requirements Oversight Council (JROC) review, and JROC memorandum publication. These actions are scheduled to occur between now and July 2022. This process, coupled with inputs from industry, will inform the writing of the capabilities development document (CDD), planned to be approved in early fiscal year 2023. Prior to CDD publication, preliminary design is expected to be complete in August 2022.

55. Senator SULLIVAN. General Berger, I understand the Marine Corps plans to lease two commercial stern-ramp landing vessels starting in late summer 2022 to experiment with the LAW concept. Is this a preliminary effort to validate the LAW's requirements or is it a parallel effort to give Marine Littoral Regiments platforms to experiment with while they wait for the LAW to be built?

General BERGER. The Marine Corps, through Military Sealift Command, is chartering an existing civilian Offshore Support Vessel, modified with a stern beach landing capability, to support service level experimentation over the next 5 years. While experimentation is the primary purpose, the Marine Corps anticipates these actions will help inform and validate Light Amphibious Warship requirements.

56. Senator SULLIVAN. Admiral Gilday and General Berger, some DOD officials and commentators have questioned the survivability of these Light Amphibious Warships given their comparative lack of defensive systems. Can you explain why and how these ships are survivable across the conflict spectrum?

Admiral GILDAY. The Light Amphibious Warship (LAW) is designed to operate in a highly contested environment. The Navy is in the process of defining the requirements for the LAW with the approval of the Capability Development Document (CDD) expected in the beginning of fiscal year 2023. The specific systems that the Navy is considering as options to achieve the required level of survivability are classified; however, the Navy is working closely with our industry partners to ensure the design of the LAW meets all operational requirements.

General BERGER. A comprehensive analysis of alternatives was conducted to examine the Landing Ship Medium (LSM), formerly known as the Light Amphibious Warship (LAW), survivability. The findings reveal that by improving design, employing proper operational methods, and applying technological means the LSM can significantly reduce the probability of detection and intercept, which in turn drastically improves survivability. To operate effectively in key maritime terrain littoral maneuver is a primary function to enable success. The survivability of the entire Stand-in Force is enhanced when they can be delivered to a shoreline, a littoral transition point, at the time and place of our choosing and execute the functions outlined in expeditionary advanced base operations. The unit's survivability is further enhanced when the unit can rapidly displace from key maritime terrain and reposition via LSM.

NMESIS TESTING

57. Senator SULLIVAN. General Berger, in his opening statement before the Seapower Subcommittee last month, Lieutenant General Karsten Heckl stated, "[i]n this budget request, the Navy/Marine Corps Expeditionary Ship Interdiction System (NMESIS) continues to be the Marine Corps' top modernization priority and is the critical lethality component to our anti-ship capability." Continuing later in his statement, he writes, "the Marine Corps has successfully tested NMESIS twice, once in November 2020 and more recently in August 2021." What did these two operational tests show you that allowed the Marine Corps to request \$345 million for the program in the fiscal year 2023 budget?

General BERGER. Guided Flight Tests, Characterization Tests, and Early User Evaluations for the Navy/Marine Corps Expeditionary Ship Interdiction System

(NMESIS) have been ongoing since 2020 with positive results, leading to a planned fiscal year 2022 3rd Quarter Operational Assessment that includes Ballistic Flight Tests. Characterization Testing has assessed leader/follower operations, cross country movements, road movement, and deep water fording. Early User Evaluation has reported positive results in execution of three different mobility field exercises and two raid missions utilizing KC-130s with simulated firing missions and 11th Marines continues to evaluate the system. Additionally, testing and certification for transport via helicopter (externally), landing craft air cushion, and KC-130 has been completed.

Based on the NMESIS program's positive trend, the Service has request \$345.054 million to procure 24 NMESIS systems and 115 Naval Strike Missiles. These procurements will build on the initial fiscal year 2022 procurement, increasing inventory levels to support operational requirements.

LOGISTICS

58. Senator SULLIVAN. General Berger, in your most recent update to Force Design 2030, you write, “[o]ur capstone Service game EXPEDITIONARY WARRIOR 21, informed the Distributed Maritime Logistics Operations concept currently in development in partnership with the Navy and shaped our logistics experimentation campaign plan.” Could you provide a report on the findings of this capstone service game as it relates to contested logistics?

General BERGER. The wargame explored the organization and concept of operational logistics in INDOPACOM in order to inform the development of concepts required to posture and sustain a naval force-in-readiness (in this case the Marine littoral regiment) executing expeditionary advanced base operations in a contested environment. The game examined aspects of force closure, time critical resupply, and continuity of operations in both contact and blunt layers. The following findings related specifically to contested logistics.

The USMC and Navy need to establish a functional concept for advanced naval bases (ANB). An ANB is not the same as an expeditionary advanced base. It is a temporary base established in or near an operational area (but generally outside the enemy weapons engagement zone) whose primary mission is to support fleet operations, to include expeditionary advanced based operations, during the conduct of a naval campaign. The draft Distributed Maritime Logistics Operations (DMLO) specifically mentions the development of policy and codification of processes for advanced naval base operations. Moving forward the USMC will seek opportunities to examine the evolving ANB concept in wargames.

Prepositioning will be critical to successful operations in the INDOPACOM area of operations. The draft DMLO discusses the criticality of prepositioning and need for wargaming, experimentation and exercises. The USMC is evaluating its current concept for prepositioning (Maritime Prepositioning in Support of Distributed Maritime Operations, June 2020) and exploring other prepositioning options. The USMC will seek opportunities to refine these concepts through an integrated planning team in September 2022, future logistics wargames, analytical studies, and live force experimentation.

Further analysis is required to integrate installations and operational units in the Western Pacific in order to achieve unity of command and effort in a contested environment. Our draft Logistics Experimentation Campaign Plan supports analyzing advance base concepts and operational logistics integration. We executed a follow-on game analyzing the Fleet Marine Force Logistics Command in May of 2022 and will conduct a game in August of 2022 to assess advance base concepts. These games will build on each other and feed into the October 22 Naval Services Game, which will have an operational logistics focus. Additionally, wargames will leverage ongoing studies, such as the Operations Analysis Directorate's Marine Logistics Support Group Transformation Study.

In addition to the relationship with the Navy, USMC relationships and activities with other joint and interagency counterparts are key to conducting successful logistics operations in a contested environment. The draft DMLO discusses the need for greater integration with the Navy and other joint and interagency counterparts in contested logistics environment. Both the August 2022 logistics game and the Naval Services Game in October 2022 are being designed to include joint, interagency, alliance and coalition partners to the maximum extent possible.

59. Senator SULLIVAN. General Berger, how is the Marine Corps experimenting with or testing ways to reduce the logistical demand signal from MLRs or other task-organized Marine Corps units deployed inside an adversary WEZ?

General BERGER. The Marine Corps has developed a service-level Logistics Experimentation Campaign Plan (LECP) for execution during fiscal years 2022–2025. The plan is aligned to the objectives and learning demands identified during the service's "campaign of learning" process. The Marine Corps will conduct extended experimentation simultaneously across multiple lines of effort. Units from the Fleet Marine Force, Marine Forces Reserve and the supporting establishment will conduct experiments during exercises and wargames sponsored by the Naval Services, Combatant Commands and Joint Staff. Experimentation focus on demand reduction and logistical sustainment across the phases of conflict in a contested environment. The experimentation will also examine the reorganization of support units, their command relationships and how best to leverage operational and strategic logistics support mechanisms.

Logistics experimentation will include field user evaluations of equipment focused on small power and water production, renewable and hybrid systems, batteries/power storage, and improved fuel efficiency in a variety of legacy manned and unmanned mobility platforms. Experimentation will also include the introduction of new and innovative distribution platforms. The Marine Corps will continue participation in ongoing DON and OSD energy demand reduction working groups and will produce a service energy strategy that addresses both operating force units and activities aboard bases and stations located within the weapons engagement zone (WEZ). Experimentation will also examine evolving the current pre-positioning program into a Global Positioned Network that incorporates afloat and ashore resources with theater-specific supplies, equipment and service capabilities.

Lastly, the Marine Corps will experiment with an enhanced logistics IT system that will be employed to support maneuver elements. This system will provide the commander a common operational picture showing near-real time status of supply and support (service capacities, location, and inventories). This system will increase decision-making accuracy and the operational reach of logistics information, ultimately increasing lethality.

60. Senator SULLIVAN. General Berger, General Eric Smith appeared on the USNI Proceedings Podcast on May 4, 2022, stating, "[l]ogistics is hard for everybody, and that remains the pacing challenge ... a gallon of gas still weighs almost seven pounds, gallon of water weighs 8 pounds, you still got to move it. So what's the answer? Don't need it ... forage it." Do you believe locally sourcing food, water, and fuel is viable in locations where the government and population do not support a U.S. presence?

General BERGER. The Marine Corps sustains its marines in accordance with Department of Defense (DoD) nutritional guidelines; when overseas, this is often accomplished by leveraging host nation contracts that have been vetted through Army Public Health Command and are on the DoD-approved sources list. Any opportunity to locally source food, water, or fuel requires a feasibility assessment that is conducted during a logistics preparation of the operating environment or a physical network analysis. Local sourcing is one way to increase our sustainment web while reducing a unit's footprint in order to provide flexibility and redundancy to a commander. An unsupportive government and/or population is part of that feasibility analysis, and could reduce some of those opportunities to locally source capabilities. Marines are also currently taught basic survival concepts during entry-level schools to provide appropriate field-craft skills should marines find themselves low on resources with uncertain resupply timelines.

61. Senator SULLIVAN. General Berger and Admiral Gilday, how are the Navy and Marine Corps coordinating and collaborating on unmanned systems development to overcome the logistical challenges associated with implementing EABO, SIF, and Distributed Maritime Operations?

General BERGER. The Navy and Marine Corps assume that our logistics will be contested in future conflicts. Consequently, the development and incorporation of unmanned systems and capabilities is part of an overall effort to ensure we will be able to provide the Fleet and warfighters the required logistical support. The two services continue to work together at multiple levels and lines of effort in mutual support of fighting as a unified team and a key component of the Joint Force.

Some specific lines of effort where Navy and Marine Corps are coordinating and collaborating on unmanned systems development to overcome logistical challenges include:

- OPNAV N95 is sponsoring, in coordination with other Navy and Marine Corps representatives, a Center for Naval Analysis study to determine potential LPD upgrades for Launch/Recovery and tendering of unmanned systems.

- T-EPF 13 is being built with a unique Autonomous Prototype on board, and the ship will be tested to autonomously navigate in open waters. This coordinated USN and USMC effort based on the T-EPF intra-theater transport vessel will further our understanding of how to apply autonomy not only in this class of logistic support ship but potentially to other vessels.
- U.S. Pacific Fleet (PACFLT) and U.S. Marine Corps Forces, Pacific (MARFORPAC) have jointly submitted Rapid Defense Experimentation Reserve (RDER) proposals and a Naval Innovative Science and Engineering (NISE) proposal for furthering the use of remotely operated logistic surface platforms in support of expeditionary advanced bases.
- The Marine Corps has developed a prototype of an unmanned landing craft, the Autonomous Littoral Connector (ALC.) Funded by the Marine Corps Warfighting Laboratory, ALC has been tested in Europe as part of the NATO Joint Logistics Over-The-Shore exercise (JLOTS.) This was the first time an autonomous landing craft was deployed as part of a NATO exercise outside the continental United States and included autonomously transporting a load from ship to pier.
- In accordance with Force Design 2030, the USMC has funded and is executing a robust Unmanned Logistics System-Air (ULS-A) program to meet a formal small and medium category airborne battalion-level and below tactical supply requirement. The Small Tactical Resupply UAS (TRUAS) has completed competition and demonstration and is currently engaged in Extended User Evaluations (EUE with a fielding decision planned early fiscal year 2023. The Medium ULS-A (MULS-A) will commence prototyping in fiscal year 2023 with delivery of initial prototypes fiscal year 2024. The initial prototypes will be evaluated by end users for follow-on prototyping or fielding. Though the initial TRUAS and MULS-A systems focus on ashore operations; future iterations with technological maturation, will include ship-to-ship, ship-to-shore, and shore-to-ship capabilities.
- Further testing of this capability is scheduled during the Office of Naval Research's Navy/Marine Corps SCOUT experiment event in SOUTHCOM AOR on USNS BURLINGTON in October 2022. The Chief of Naval Air Training (CNATRA) is establishing a dedicated undergraduate unmanned Air Vehicle Operator (AVO) training pipeline to serve all Navy and Marine Corps AVOs, and the Navy's first class of undergraduate AVOs began training in March 2022.

Admiral GILDAY. The Navy and Marine Corps assume that in future conflicts our logistics will be contested, and the development and incorporation of unmanned systems and capabilities is part of an overall effort to ensure we will be able to provide the Fleet and warfighters required logistical support. The two services continue to work together at multiple levels and lines of effort, all in mutual support of fighting as a unified team and a key component of the Joint Force.

The Navy and Marine Corps are working together to develop unmanned capabilities in support of logistics in a contested environment to include:

- Conducting Navy/Marine Corps Mothership analyses/studies to support all UxS domain launch/recover/tender and maintenance demands.
- Developed an experimentation plan for concept exploration/development between the Stern Landing Vessel and EPF-13 which has been upgraded for autonomous surface navigation.
- The use of remotely-operated logistic surface platforms in support of EABs.
- Autonomous landing craft to autonomously transport loads from ship to pier.
- The Unmanned Logistics System-Air (ULS-A) program to support Battalion level and below tactical supply requirement.
- Established a dedicated undergraduate unmanned Air Vehicle Operator (AVO) training pipeline to serve all Navy and Marine Corps AVOs.

62. Senator SULLIVAN. General Berger, when discussing the modernization of the Marine Corps logistics portfolio in your statement submitted to the Committee, you write, "[t]he most visible platforms will be a family of uncrewed logistics air systems, the smallest of which are already in prototyping and live experimentation." Has the use of unmanned systems, whether aerial, surface, or subsurface, show enough promise to become a significant provider of joint force logistics?

General BERGER. The Marine Corps is currently assessing the future role of unmanned systems in providing logistics support. For example, the Marine Corps has funded and is executing a robust Unmanned Logistics System-Air (ULS-A) program

to meet a formal small and medium category airborne battalion-level and below tactical supply requirement. The Small Tactical Resupply UAS (TRUAS) has completed competition and demonstration and is currently engaging in Fleet field assessments and maturing down selected prototypes via an Other Transaction Authority contracting strategy. Further testing of this capability is scheduled during the Office of Naval Research's Navy/Marine Corps SCOUT experiment event in SOUTHCOM AOR on USNS *Burlington* in October 2022.

63. Senator SULLIVAN. General Berger, will you provide an update or briefing to this Committee on the validation of unmanned systems in support of joint force logistics?

General BERGER. The Marine Corps is currently assessing the future role of unmanned systems in providing logistics support. For example, the Marine Corps has funded and is executing a robust Unmanned Logistics System-Air (ULS-A) program to meet a formal small and medium category airborne battalion-level and below tactical supply requirement. The Small Tactical Resupply UAS (TRUAS) has completed competition and demonstration and is currently engaging in Fleet field assessments and maturing down selected prototypes via an Other Transaction Authority contracting strategy. Further testing of this capability is scheduled during the Office of Naval Research's Navy/Marine Corps SCOUT experiment event in SOUTHCOM AOR on USNS *Burlington* in October 2022.

FIRES

64. Senator SULLIVAN. General Berger, the Force Design 2030 Annual Update lists actions that the Marine Corps plans to undertake in the upcoming year. Some issues were identified as "requiring further analysis", such as to "conduct a holistic study of MAGTF [Marine Air-Ground Task Force] fires to enable sound prioritization for future resource decisions..." and, specifically, Directed Action 20, to "conduct a holistic MAGTF fires study to identify any gaps in all-weather fire support coverage." What fires studies were completed before the Marine Corps decided to divest itself of a significant portion of its cannon artillery?

General BERGER. A robust body of analysis, framed by existing strategic guidance, has informed each step of the Force Design (FD) 2030 iterative process. Within that process, a fundamental principle is that the Marine Corps will not ask Congress to increase its total budget. Instead, we will judiciously divest of legacy systems in order to invest in modernized capabilities that most contribute to gaining relative warfighting advantage over potential adversaries. Below is an unclassified summary of key fires-related contributory efforts that led to the initial direction in the Commandant's Planning Guidance (July 2019) and objective force investment decisions published in the FD2030 Phase I & II Report (March 2020):

- *Future Ground Combat Element Fires for MAGTF Operations Study* (Operations Analysis Directorate, 2018): Holistic gap analysis of M777 (cannon), M142 (rocket), and TPS-80 (G/ATOR) across multiple scenarios and force structures. The study objective was to quantitatively understand artillery gaps from the time of the study through fiscal year 2025 based on the Marine Corps Operating Concept and multiple recent (at the time) qualitative wargames indicating potential artillery shortfalls. Gaps identified include: range of cannon artillery vs. adversary precision munitions, timeliness of counter-fire capabilities, availability of preferred M777 munitions limiting both its lethality and volume of fires, and survivability based on mobilization time. M142 gaps were fewer than those of M777 across all assessed cases.
- *Study on Countering Anti-Access Systems with Longer Range and Standoff Capabilities: Assault Breaker II* (Defense Science Board, 2018): A joint examination of emergent pacing threat capabilities and objectives. Recommendations included the requirements of the U.S. joint force to respond in a timely manner to deny adversary theories of victory without undue escalation or large scale deployment of U.S. manned forces. Denying or deterring adversary strategic objectives requires long-range and/or pre-positioned short range weapons with dedicated, persistent, and survivable intelligence, surveillance, and reconnaissance to hold adversary command and control and power projection assets at risk.
- *Provident Stare: USMC Force Design 2030 Integrated Planning Team* (Combat Development and Integration, 2019): A multi-domain mission analysis of Marine Corps tasks per 2018 National Defense Strategy and Title X responsibilities against the framework of the Distributed Maritime Operations, Littoral Operations in a Contested Environment, and Expeditionary Advanced Base Operations concepts. This Integrated Planning Team (IPT) compared an unconstrained baseline force against two comparative force structures using different

priorities to identify the most significant contributory units and systems. IPT outputs included recommendations on quantities of these units and associated systems.

- *Sea Control MEU – MEU Composition Study* (Center for Naval Analyses, 2020): A focused exploration of Marine Expeditionary Unit (MEU) composition in light of emergent peer adversary capabilities and objectives. Key findings are classified, but did address specific trade-offs between cannon and rocket efficacy. All MEU missions were assessed to identify and understand trade-offs and limitations of modernized vs. traditional capabilities in both high-end and day-to-day operations.

Summary: The common theme across these analytic efforts is that the Marine Corps needed more and better longer-range fires capabilities in order to meaningfully contribute to future Joint deter, deny, and defeat objectives. In a zero-sum fiscal environment, that meant divesting of cannon to invest in rocket artillery.

The above represents a snapshot of the collective FD2030 Campaign of Learning that includes dozens of discrete IPTs, wargames, modeling & simulation, and analyses that informed original and subsequent FD2030 decisions. Additional insights and contributory efforts are available at higher classification levels.

65. Senator SULLIVAN. General Berger, is the Marine Corps integrating Unmanned Aerial Systems into cannon artillery or HIMARS batteries to generate an organic target acquisition capability?

General BERGER. In establishing and executing effective kill chains, sensors in all domains—particularly airborne, but not exclusively—are being integrated with the most direct ties to fires elements. The fusion of sensor data will generate target-quality tracks available to all elements of the Marine Air-Ground Task Force and the Fleet. The persistent surveillance of organic sensors layered with theater and national capabilities will also provide battle damage and combat assessments to complete the kill chain to determine if desired effects have been achieved or re-attack is required.

66. Senator SULLIVAN. General Berger, it is my understanding that cannon artillery batteries across the Active Component and Reserve Component will grow from six guns to eight guns under Force Design 2030. When will this transition start and when will it finish?

General BERGER. Correct. The plan to transition to eight guns per artillery battery will be executed in fiscal year 2025.

67. Senator SULLIVAN. General Berger, how are personnel in cannon artillery batteries being retrained to operate HIMARS and NMESIS?

General BERGER. During the initial training phase, existing Field Artillery Cannoneers were trained to operate HIMARS via New Equipment Teams as the systems arrived to their units. Currently, Field Artillery Marines in ranks E1–E5 that are slated to serve in HIMARS-equipped units attend entry-level HIMARS Operator training at Fort Sill. This course provides students with the knowledge, skills, and abilities to function as a member of the HIMARS section. Fort Sill also provides intermediate and advanced level training. Intermediate level training consists of the Section Chief Course and is available to Artillery Marines between the ranks of E4 to E6, enhancing their military occupational specialty (MOS) knowledge to effectively serve as cannoneers/HIMARS operators in the artillery battery at section chief levels. The Cannoneer Advanced Course is available to Artillery Marines between the ranks of E6 to E–8, further enhancing their MOS knowledge to effectively serve as senior cannoneers in the artillery battery at chief levels. All Artillery Officers receive formal instruction on HIMARS at the Basic Artillery Officers School in Fort Sill. NMESIS training will occur in two phases: Initial Training and Future Training at Formal Learning Centers (FLCs). Initial training is anticipated to conclude in fiscal year 2026, followed by formal training at Marine Corps FLCs and/or the Naval Strike Missile Schoolhouse in fiscal year 2027.

TRAINING RANGES

68. Senator SULLIVAN. General Berger, in your prepared statement for the Department of the Navy posture hearing you noted the opportunities the Joint Pacific Alaska Range Complex (JPARC) affords the Marine Corps to train in degraded, denied, or disrupted electromagnetic spectrum operations (EMSO) environment. How will the Marine Corps use JPARC to exercise the new capabilities and concepts you are developing in an EMSO environment?

General BERGER. The ability to sense and make sense of the operating environment is rapidly changing with advances in electromagnetic capabilities; meanwhile the services are limited by available training areas to explore with existing and emerging electromagnetic spectrum operations (EMSO) capabilities. I cannot get into much detail in an unclassified setting, but the JPARC is especially promising in that it offers electromagnetic spectrum, maritime, and littoral training areas.

69. Senator SULLIVAN. General Berger, in your 2022 annual update to Force Design 2030 you noted that the Marine Corps' "current range and training infrastructure does not adequately support the combined-arms integration of the new systems we are fielding." In your prepared statement for the Department of the Navy posture hearing you stated the need for the Marine Corps to develop a littoral maritime training range akin to Range 400 in Twentynine Palms. You also stated that the Marine Corps will "require a maritime training site with suitable seaward and landward ranges where we can train with the full range of our multi-domain weapon systems, to include unscrewed systems." JPARC provides the capabilities you have identified. How does the Marine Corps plan to use JPARC to exercised combined-arms integration with the full range of your multi-domain weapon systems?

General BERGER. Use of our current ranges face several limitations. Within CONUS, our Open Air/Live Ranges have limitations due to FAA/FCC/First Responder network interference. Overseas, use of our ranges are subject to additional host nation and international agreements which limit usage of jammers and certain transceivers. Events on our ranges are also under constant adversary surveillance as a means of looking at our systems, observing our tactics, techniques, and procedures, and examining our efforts to mitigate adversary degrade, deny, and disrupt (D3) capability. The Marine Corps needs to better determine what training we do on Open Air/Live ranges and what we will do in closed loop simulation systems. While we may dedicate use of live ranges to practice our networking and integration of command and control and data sharing between forces/units/services, we may also create garrison facilities that allow teams, platoons, and companies to play simulations and war-games which emulate dynamic D3 environments. Our goal is to provide operators with the ability to practice systems operations, learn how to identify issues and create solutions to problems in dynamic environments, and reinforce teamwork needed to maneuver in the electromagnetic operating environments (EMOE).

AIR DEFENSE

70. Senator SULLIVAN. General Berger, what counter-Unmanned Aerial System (UAS) capabilities does the Marine Corps currently field that would be effective against the variety of UAS currently used in combat by Ukraine and Russia?

General BERGER. All counter Unmanned Aerial Systems (C-UAS) capabilities currently deployed by the USMC are in support of Urgent Needs. The systems fielded are Light Marine Air Defense Integrated Systems (L-MADIS), Expeditionary MADIS (E-MADIS), Installation CUAS (I-CUAS), and the Compact Laser Weapon System (CLaWS).

L-MADIS is a mobile C-UAS system. One L-MADIS system is fielded on each Marine Expeditionary Unit (MEU) via the Low Altitude Air Defense (LAAD) Detachment. When not deployed, each system goes through maintenance in preparation for the next rotation. The L-MADIS provides a non-lethal defeat of UAS via jamming of the radio frequency and/or GPS.

E-MADIS is a fixed/semi-fixed C-UAS capability deployed to PACOM defending critical assets on key installations. The E-MADIS provides a non-lethal defeat of UAS via jamming of the radio frequency and/or GPS.

I-CUAS is a fixed/semi-fixed C-UAS capability deployed to various USMC installations in the Continental United States (CONUS). The I-CUAS provides a non-lethal defeat of UAS via jamming of the radio frequency and/or GPS.

CLaWS is a lethal directed energy weapon system deployed in CENTCOM. Originally operated by the USMC, the CLaWS became Theater Provided Equipment and is now operated by the U.S. Army. Although deployed by the U.S. Army, the Joint Rapid Acquisition Cell (JRAC) directed the USMC to sustain the CLaWS.

71. Senator SULLIVAN. General Berger, what counter-UAS capabilities is the Marine Corps developing to counter the types of UAS currently used in combat by Ukraine and Russia?

General BERGER. The Marine Corps is currently in various stages of developing the Marine Air Defense Integrated Systems (MADIS), Light Marine Air Defense Integrated Systems (L-MADIS), Installation Counter Unmanned Aerial System (I-CUAS), and man-portable CUAS Programs of Record. Testing and evaluating of fu-

ture technology is consistently being updated to increase the lethality and effectiveness of all components.

The MADIS Program of Record will be deployed on a pair of Joint Light Tactical Vehicles (JLTV). Currently, MADIS is going through System Integrated Testing and will begin fielding to the Fleet Marine Force in fiscal year 2024. The MADIS will be able to defeat UAS both lethally and non-lethally.

The L-MADIS Program of Record will be deployed on a pair of Ultra-Light Tactical Vehicle (ULTV). The Critical Design Review will be complete this month. L-MADIS Program of Record will begin fielding to the FMF in fiscal year 2024 and complete in fiscal year 2028. The L-MADIS will be able to defeat UAS non-lethally. The I-CUAS Program of Record will primarily be used to defend critical assets aboard CONUS installations; however, these systems could be operationally employed in support of fixed and semi-fixed sites. The I-CUAS will only provide a non-lethal defeat of UAS until U.S. Policy dictates otherwise.

Man-Portable CUAS requirements are in the initial stages of development. The system will provide all units down to the Squad level the ability to detect, track, identify and defend themselves against Group 1 and 2 UAS. The system will be light weight, easy to train and operate. Currently the Warfighting Lab is conducting experiments that will inform the future weapon system.

The Mobile All-Domain Observation and Sensing System (MA-DOSS) is a developmental effort. MA-DOSS will be a part of the networked force protection capabilities available to both the expeditionary force and installations. MA-DOSS is being developed with the ability to integrate with the MADIS, L-MADIS and I-CUAS PoRs through software commonality and open architecture design, providing additional capability for sensing, early warning, and targeting data to the kill web(s). MA-DOSS is not designed to counter UAS (e.g. through kinetic or non-kinetic means) on its own, but rather adds a layer of sensing that supports tactical early warning across multiple domains: air, land and sea.

The Marine Corps Warfighting Laboratory (MCWL) is currently working with industry to develop overlapping methods of detection and defeat of UAS. MCWL is testing radio frequency (RF) detection, persistent cameras, and AI/ML software to identify airborne threats. The lab is developing multiple sensors and systems through a modular open system architecture to collect data across a wide spectrum of detection means and ingest the data into a single command and control (C2) structure that will consolidate and fuse the data into a target quality track. MCWL is exploring both kinetic and non-kinetic means of defeating adversary UAS after positive identification. These systems range in size and capabilities to address emerging threats. MCWL is evaluating a wide range of technologies to enhance the warfighter at the tactical small unit level to close with and immediately destroy opposing UAS as well as directed energy methods, such as high powered microwave, that can be used to defend bases in standard or austere environments from single or swarming attacks. Work in developing this enhanced counter-UAS kill chain will also apply to countering crewed or uncrewed systems in other domains.

BUDGET AND FORCE DESIGN

72. Senator SULLIVAN. General Berger, if your budget increased, would you be able to field any of your planned capabilities sooner?

General BERGER. Yes; with a budget increase, items listed on the unfunded priority list would be funded. This would accelerate the procurement of future capabilities required to modernize the force.

73. Senator SULLIVAN. General Berger, if more money would allow you to field capabilities sooner, which capabilities do you view as the most critical?

General BERGER. First and foremost, those listed on the unfunded priority list. Those items near the top that are not funded equal strategic risk. Simply put, they are the parts of Force Design required to ensure our capabilities are the same or better than our pacing threat. Systems like ground based anti-ship missiles, manned and unmanned expeditionary platforms, and communications. All of these capabilities enable your Marine Corps to move forward, in a contested environment, in a way that supports Naval and Joint Force kill chains.

74. Senator SULLIVAN. General Berger, in your statement submitted to this Committee, you wrote, “[a]s I have stated in the past, the Marine Corps does not seek any additional resources for modernization. Rather, we seek your oversight and assistance in ensuring that the resources the Service generates through divestments, reorganization, and redesign are reinvested in our Corps’ modernization priorities.”

How would additional resources reduce the risk of Force Design 2030 implementation?

General BERGER. If left unfunded, all of our unfunded requirements equal risk. We are learning as we go with Force Design. We did not know 2 years ago exactly what the Marine Corps would need to look like a decade out. We have a much clearer picture now. In order to give the Committees a larger menu to select from—with a clear picture of where the Marine Corps is going—we added to the unfunded priority list. Those items near the top that are not funded equal strategic risk.

75. Senator SULLIVAN. Secretary Del Toro, Admiral Gilday, and General Berger, would additional funds allow you to increase your Research, Development, Test, and Evaluation and experimentation efforts to solve the contested logistics problems as you currently understand it?

Secretary DEL TORO and Admiral GILDAY. The Department of the Navy (DON) established a Naval Contested Logistics Working Group in fiscal year 2022 to coordinate and align logistics (supply) and weapon systems and platform (demand) development, in support of the Office of the Secretary of Defense's Contested Logistics and Operational Energy Working Group. The working group developed a list of future Research, Development, Test, and Evaluation efforts that would help solve the contested logistics problem, which highlights an increase in overall logistics demand and energy logistics complications as a result of Distributed Maritime Operations, Littoral Operations in Contested Environments, and Expeditionary Advanced Base Operations concepts and an increase in force size and tempo.

The list includes efforts such as:

- Development of more adaptive distribution systems that allow for modularity and point of need refueling capability beyond traditional logistics.
- Energy command and control including monitoring and planning technologies to provide closer to real time data on energy needs to enable adaptable and optimized logistics.
- Studies and analysis to develop more adaptive and responsive systems to operate within a contested logistics environment.

Funding in these areas would address the studies and analysis, research and engineering, and experimentation necessary to enable the movement and support of military forces across multiple domains/environments in a contested environment, and will be evaluated for inclusion in future budget requests.

General BERGER. Yes, additional Budget Activity (BA) 6.3/6.4 RDT&E funding would increase experimentation and prototyping efforts related to secure logistics communication, autonomous and unmanned distribution (air, surface, sub-surface, and ground), renewable energy, enhanced maneuver to and from seabases/expeditionary advance bases in the littorals, and enhanced survivability/sustainment of a highly distributed force. Any increase in funding will enable assessment of these technologies and their ability to overcome future contested logistics challenges.

76. Senator SULLIVAN. Secretary Del Toro and Admiral Gilday, I have tremendous concern about the shrinking size of our fleet resulting from the anemic budget put forth by the President. The fiscal year 2023 Presidential Budget request provides for a 4.1 percent increase over the amount enacted the fiscal year 2022. Even if the inflation estimates of 2.6 percent used by the Department were an accurate depiction of economic conditions, this would only be 1.5 percent real growth, far below the bi-partisan Nation Defense Strategy Commission recommendation of three to five percent real growth. If current levels of inflation persist into next fiscal year (latest figures showing 8.3 percent), the Navy would be facing a 4.2 percent inflation-adjusted cut. Given these economic conditions, do you believe the fiscal year 2023 budget in its current form is adequate for sustained capability and capacity growth?

Secretary DEL TORO and Admiral GILDAY. The President's Budget 2023 provides the right balance of capacity, lethality, modernization, and readiness needed to field the globally engaged and dominant naval force required by the National Defense Strategy. This budget will maximize the efficiency and effectiveness of each dollar entrusted to us by the American taxpayer, ensuring sufficient resources for today's challenges, while building future overmatch. Should additional resources or flexibility be needed to deliver the capability the Nation needs, the Department of the Navy will work with the President and Congress on those issues.

77. Senator SULLIVAN. Admiral Gilday, attending the WEST 2022 Conference in February of this year, you stated, "I've concluded—consistent with the analysis—that we need a naval force of over 500 ships." In your statement submitted to this

Committee, your write, “... the Navy’s size—our capacity—ultimately will be dictated by the budget’s top line. We will not field a fleet larger than we can sustain.” Given that the President’s fiscal year 2023 budget provides for a fleet of 280 ships by the year 2027—a decrease of 5 ships from present day—do you believe the budget puts our Navy on the path of meeting the requirements you have outlined?

Admiral GILDAY. The fiscal year 2023 President’s Budget delivers a combat-credible Navy designed to deter conflict and help win our Nation’s wars as we maintain a global posture to assure our prosperity. Today’s fiscal environment requires careful investments in capabilities and capacity that offer the most significant payoff and warfighting value for strategic competition, including focusing on capable capacity and not retaining platforms that are decreasingly relevant in modern warfare. To simultaneously modernize and build the capacity of our fleet, the Navy would need sustained budget growth at three to five percent above actual inflation.

78. Senator SULLIVAN. Secretary Del Toro, while attending the WEST 2022 Conference in February of this year, Admiral Gilday, stated, “I’ve concluded—consistent with the analysis—that we need a naval force of over 500 ships.” In Admiral Gilday’s statement submitted to this Committee, he wrote, “... the Navy’s size—our capacity—ultimately will be dictated by the budget’s top line. We will not field a fleet larger than we can sustain.” As you are aware, the President’s fiscal year 2023 budget provides for a fleet of 280 ships by the year 2027—a decrease of 5 ships from present day. Do you support a budget that fails to put our Navy on the path to meet the requirements outlined by the Chief of Naval Operations?

Secretary DEL TORO. The Chief of Naval Operations has clearly stated that his priorities are funding *Columbia*, readiness, capability, and then capable capacity only. The new era of strategic competition requires a modernized, capable, global, forward, and multi-domain Navy. In the fiscal year 2023 budget, the Navy prioritized promising technologies that need to be fielded quickly and at-scale to be operationally relevant in the coming years to ensure that the Navy meets Joint Force operational requirements, and made difficult choices to divest of ships that do not meaningfully support warfighting requirements. The President’s Budget 2023 only grows warfighting capacity at a rate supported by the fiscal guidance and our ability to sustain that capacity in the future. Consistent with the Defense Planning Guidance, this plan does not resource any capacity beyond what can be sustained—manning, training, operations, and future modernization. Within the Future Years Defense Program, this careful prioritization in the near-term, in accordance with the Interim National Security Strategic Guidance and National Defense Strategy, will result in a Navy battle force that is more ready, more sustainable, and more lethal.

79. Senator SULLIVAN. Secretary Del Toro, did you advocate in private for a higher budget for the Department of the Navy?

Secretary DEL TORO. I have consistently advocated for the President’s Budget request as the right balance of capacity, lethality, modernization, and readiness needed to field the globally engaged and dominant naval force required by the National Defense Strategy.

80. Senator SULLIVAN. Secretary Del Toro, the Marine Corps has had to make significant divestitures to fund its force modernization. With these divestitures comes risk. Do you agree that the Marine Corps, and by extension, the Department of the Navy, would be assuming less risk if the President’s fiscal year 2023 budget were more robust?

Secretary DEL TORO. I fully support the Marine Corps divestitures General Berger identified in Force Design 2030 and the President’s Fiscal Year 2023 Budget Request. I work closely with other senior leaders to manage risk across the defense program.

NAVY SUPPORT FOR EXPEDITIONARY ADVANCED BASE OPERATIONS AND STAND-IN FORCES

81. Senator SULLIVAN. Admiral Gilday, at the May 11, 2022 hearing before the House, Representative Moulton asked you in regard to Force Design, “[h]ow is the Navy preparing to support this concept and its implementation?” To which you responded, “We are doing it right now. I talked to the Naval Forces Europe Commander yesterday, and his headquarters has about 30 marines in their Joint Forces Maritime Component Cell, the Deputy Commander is a marine, the concept of operations signed by his 3-star fleet commander, Commander of U.S. Sixth Fleet, is also signed by the Commander of II MEF ...” While the collective buy-in between the headquarters is great, could you provide a few concrete examples of what that looks

like in exercises and experimentation between operational elements that demonstrate this commitment?

Admiral GILDAY. There are two primary examples that are currently underway in the European theater; Task Force (TF) 61/2, and experimentation in support of the Commandant's Reconnaissance/ Counter reconnaissance (RXR).

TF 61/2 is led by a Marine Corps General Officer and a Marine Corps Headquarters staff under tactical control of U.S Commander SIXTH Fleet (C6F). This task force is responsible for command and control of amphibious and Fleet Marine Forces task organized to C6F conducting operations, activities and investments (OAI)s within NAVEUR's area of operations. TF 61/2 is charged with enhancing C6F's Maritime Domain Awareness (MDA) while remaining capable of conducting crisis response operations. TF 61/2 successfully participated in five integrated exercises to date in 2022 improving the fleet's ability to employ naval, amphibious, and expeditionary forces in concert with our allies and partners. Operationally, Marine Corps Forces Europe are integrated with the C6F intelligence section and are directly contributing to expanding maritime domain awareness and intelligence security cooperation with our allies and partners.

Incorporating multiple aspects of the Commandant's Force Design 2030, the RXR elements in EUCOM provide C6F a stand-in Force, enhancing naval integration, and partner nation interoperability. While coordinating with multiple elements across the area of responsibility, the RXR marines tested and validated the ability of the Fleet Marine Forces to provide flexible, efficient, scalable, and task-organized forces to the Fleet Commander to enhance MDA and facilitate the kill chain within the littoral environment.

The RXR forces conducted numerous exercises including a Force Reconnaissance Visit Board Search and Seizure (VBSS) interoperability event across a variety of C6F platforms aimed at executing multiple mission sets that focused on integrating, experimenting, and validating the Navy and Marine Corps sensor interoperability and maritime strike capabilities.

82. Senator SULLIVAN. Admiral Gilday, in response to my questioning at the hearing, you stated that it would be hard to judge the Navy's commitment to Stand-in Forces because "[m]ost of what has been written about publicly about Stand-in Forces, has been produced after the release of both those documents [the CNO NAVPLAN and Surface Warfare: The Competitive Edge]." The Triservice maritime Strategy was released in December 2020, the CNO NAVPLAN was released in January 2021, and Surface Warfare: The Competitive Edge was released on January 2022. Force Design 2030 was released in March 2020 and The Concept for Stand-In Forces was released in November 2021. There seems to have been ample time and opportunity for the navy to more explicitly address its roles and responsibilities in EABO and SIF. I was glad to hear that your upcoming strategy documents would more explicitly address the Navy's role in EABO and SIF. Will you commit to doing so in all relevant Navy documents released hereafter?

Admiral GILDAY. Yes.

83. Senator SULLIVAN. Secretary Del Toro, in your statement submitted to this Committee, you write, "[s]uccessful implementation of the concepts within the Navigation Plan and Force Design 2030 will be pursued through a unified, integrated effort at every echelon." Building on the recently agreed upon amphibious warship requirement, as Secretary of the Navy, how will you continue to ensure this unity of effort at the fleet level, as well as before Congress?

Secretary DEL TORO. The Department of the Navy is improving integration through complementary operating concepts, an integrated POM development process, and wargaming efforts. Together with the Service Chiefs, I am committed to prioritizing unity of effort, at all levels, in order to sustain and advance naval strength and resilience.

84. Senator SULLIVAN. General Berger, once the seizure of advanced naval bases is complete, do you assess the marines maintain sufficient combat power to go on the offensive in an extended land campaign?

General BERGER. Yes; the ongoing modernization efforts within the Marine Corps do not negate or detract from its ability to execute Title X responsibilities as the Nation's "force in readiness." The capabilities of the current and future Marine Corps will enable to it conduct offensive operations, regardless of theater, from land, sea, and the littorals.

85. Senator SULLIVAN. General Berger, Force Design 2030 significantly reduces the assets of marine aviation by nearly 30 percent. How will the remaining aviation

assets support current global force management operations, as well as the combatant commander's operations plans?

General BERGER. The Marine Corps continues to provide high-end aviation capabilities globally. In the past year, the Marine Corps forward deployed 5th Generation TACAIR in INDOPACOM in support of integrated deterrence, 4th Generation TACAIR to assure our allies and deter our adversary in EUCOM, and MV-22s in support of crisis-response in AFRICOM. Additionally, the Marine Corps maintains the full suite of aviation capabilities found aboard our forward deployed ARG / MEUs which are afloat 24 hours a day, seven days a week, and 365 days a year. Our aviation transition process and reductions have been carefully balanced with the Service's Global Force Management requirements to continue to supply the Combatant Commanders with the required platforms while staying above the Department's 1:2 deployment to Dwell (D2D) threshold. Through a deliberate planning process, we can forecast that our pilots and crews will be able to maintain the targeted 1:2.7 D2D in even our most stressed communities (e.g., MV-22).

86. Senator SULLIVAN. General Berger, will you commit to providing this Committee both classified and unclassified updates and briefings regarding the continued validation of Force Design?

General BERGER. Yes; my staff, my Deputy Commandants and their staffs, and I stand ready to provide updates and briefings, as requested by the Committee.

LESSONS LEARNED FROM UKRAINE

87. Senator SULLIVAN. General Berger, when discussing preliminary lessons learned from the conflict in Ukraine in your statement submitted to this Committee, you write, "[i]f you are located on a modern battlefield saturated with sensors, you will be targeted. Signature management, maneuver, deception, and tempo are playing an increasingly important role on the modern battlefield." How will the Marine Littoral Regiments effectively manage their signature to maintain survivability in an environment saturated with PRC C5ISR?

General BERGER. The Marine Corps concept of operations is as a stand-in force that has the ability to gain and maintain custody of adversary targets—and hold some of those targets at risk continuously in support of targeting for the naval and joint force. We recognize that our value, largely, is in daily competition, building a strong coalition of partners, and being ready at a moment's notice to hold the adversary to task. In the realm of the defense, we recently finalized a functional concept which addresses integrated air and missile defense and force protection. These concepts reinforce the employment of systems which enable forces to leverage deception, mobility, and early detection in order to provide an additional layer of defense within the weapons engagement zone. While this functional concept—and its suggested force multiplying capabilities—require further development, planning, resourcing, training and a unified effort across the Naval Expeditionary Force, this concept will greatly strengthen our defensive and force protection capabilities. Meanwhile, we are also developing logistic capabilities to move small forces quickly and constantly in order to overcome the adversary's ability to find, fix, target and track us. Through enhanced signature management and decoy/deception capabilities, combined with high-mobility, we believe adversary weapons effects can be overcome.

88. Senator SULLIVAN. General Berger, what specific lessons have you taken away from the Russia-Ukraine conflict that validate Force Design 2030?

General BERGER. Although the situation in Ukraine is dynamic and concrete lessons will take time to develop, one lesson is clear. The quality of small unit leadership and the individual soldier is critical to tactical unit success. Force Design 2030 and annual updates are a portion of the overall Marine Corps' force modernization efforts. These modernization efforts include additional initiatives such as Talent Management 2030 and soon to be released Training and Education 2030. These modernization efforts prioritize individual marines and their leadership and establish specific initiatives to mature the force and increase individual and team effectiveness.

Everything starts and ends with the individual marine. While much of the Force Design 2030 conversation revolves around materiel, modernization efforts are focused on training, educating and equipping the individual marine to succeed in competition and conflict.

89. Senator SULLIVAN. General Berger, what specific lessons have you taken away from the Russia-Ukraine conflict that necessitate a course correction of Force Design 2030?

General BERGER. Although the situation in Ukraine is dynamic and concrete lessons will take time to develop, one lesson is clear. The quality of small unit leadership and the individual soldier is critical to tactical unit success. Force Design 2030 and annual updates are a portion of the overall Marine Corps' force modernization efforts. These modernization efforts include additional initiatives such as Talent Management 2030 and the soon to be released Training and Education 2030. These modernization efforts prioritize individual marines and their leadership and establish specific initiatives to mature the force and increase individual and team effectiveness.

Everything starts and ends with the individual marine. While much of the Force Design 2030 conversation revolves around materiel, modernization efforts are focused on training, educating and equipping the individual marine to succeed in competition and conflict.

90. Senator SULLIVAN. Admiral Gilday, what is the Navy learning from Ukraine's attempts to execute sea denial or otherwise strike Russian naval assets in the Black Sea?

Admiral GILDAY. Commanders must understand the capabilities of their adversary, their own vulnerabilities, and the operating environment. This is not a new lesson; one in which war at sea rapidly provides a harsh reminder. The Russian Federation Navy places a premium on capacity over readiness; their experience in the Black Sea illustrates this unbalanced investment in capacity to the detriment of force readiness or modernization results in failure.

In contrast, and as I have stated on many occasions, I am fully committed to ensuring we maintain our readiness balance.

The U.S. Navy plans for approximately 70 percent of the current force will still be in service a decade from now. Toward the Navy's goal of balancing investments between readiness and modernization, the USN Research and Development budget focuses on offensive technologies such as hypersonics, on the offensive and defensive benefits of quantum computing, on defensive directed energy, and high-power microwave capabilities to protect the fleet.

If desired, we can have further discussions about Ukraine's sea denial or naval strike measures in a classified setting.

ALLIES AND PARTNERS INTEGRATION

91. Senator SULLIVAN. General Berger, do our allies and partners around the globe support the concept for Stand-in Forces and the role they'd play in its execution?

General BERGER. Many allied nations have expressed strong support for the concept for Stand-in Forces (SIF) and the role they would play in execution. Allies are actively working to ensure that they remain interoperable as we develop the concept and they transform their own forces for the future. As could be expected, partner nations are less committal about the SIF concept in terms of practical implementation, but they are usually receptive to the overall idea. We continue to interact with both allied and partner nations regarding the SIF concept via military-to-military engagement and capability development. This interaction stresses that interoperability with U.S. forces is critical to successful application of the SIF concept, and this ability to conduct combined operations enhances all nations' territorial defense.

92. Senator SULLIVAN. General Berger, how is the Marine Corps working with our allies and partners globally to ensure their seamless integration into the concept for Stand-in Forces?

General BERGER. Marine Forces Pacific, works with Allies, particularly in the first island chain and Australia, through several Joint and service exercises (e.g. TALISMAN SABRE, CCPT, BALIKATAN, KEEN EDGE, KEEN SWORD, KAMANDAG, and RIMPAC) to address integration with the concept of the SIF. Countries in the second island chain and beyond are increasingly the focus of integration into the concept of the Stand-in Forces (SIF). In regions with limited USMC posture, our forward-deployed headquarters, such as Task Force 51/5th Marine Expeditionary Brigade in Bahrain, and Task Force 61/2nd Marine Expeditionary Brigade in Italy, are stand-in elements, postured to rapidly transition to support crisis and contingency operations. These headquarters regularly interact with the allies and partners that operate every day as SIF in their regions. Additionally, our deployed Marine Air Ground Task Forces, such as the Marine Expeditionary Units that are in a contin-

uous cycle of deployments world-wide, work closely on interoperability with a number of allies and partners during each deployment.

The Marine Corps has formal interoperability roadmaps with several key allies and stresses interoperability enhancement in a broad array of interactions, to include exercises, staff talks, military-to-military events, and personnel exchanges. These interoperability activities focus on SIF as an area of bilateral and military security cooperation against common threats.

VERTICAL LAUNCH SYSTEM (VLS) CAPACITY

93. Senator SULLIVAN. Secretary Del Toro and Admiral Gilday, when you appeared before the House Armed Services Committee on May 10, 2022, Rep. Elaine Luria (D-VA) expressed her concerns to you both over the fleet's shrinking VLS capacity. I share the concerns she outlined. The charts included in your 30-year ship-building plan are on a scale of zero to twelve thousand and hides the actual decrease in about 1,980 VLS cells through 2035. This is a significant decrease in our VLS capacity in a time of increased danger regarding a potential Taiwan scenario. How does the Navy plan to mitigate the risk associated with this decrease in VLS capacity?

Secretary DEL TORO. The new era of strategic competition requires a modernized, capable, global, forward, and multi-domain Navy. The National Defense Strategy (NDS) underscores the need for the Department of Defense to move away from systems that provide less capability and do not significantly support our strategy and ability to win in a future fight.

In the fiscal year 2023 budget, the Navy prioritized promising technologies that need to be fielded quickly and at-scale to be operationally relevant in the coming years to ensure that the Navy meets Joint Force operational requirements, and made difficult choices to divest of ships that do not meaningfully support warfighting requirements.

Admiral GILDAY. There is a reduction in the number of Vertical Launching System (VLS) cells and it's a risk-reward decision. The Navy had to make a value decision of what it is going to take to get these older platforms with less capable combat systems forward versus what investments that we need to make that deliver a more capable, more lethal Navy in the future. This is also in the context that the United States Navy fights from the seabed to space; our submarines, our surface ships, and our aviation assets all contribute to the fight in addition to those platforms hosting VLS cells.

Future fights against near-peer competitors require us to integrate the all-domain power of the fleet with the Joint Force and our allies and partners. Our fleet staffs are already fully integrating information warfare, space, cyber, and special operators, both Active and Reserve, into their teams to leverage the full power of our Navy.

BULK FUEL STORAGE

94. Senator SULLIVAN. Secretary Del Toro and Admiral Gilday, given the Secretary of Defense's recent order to shut down the Red Hill Bulk Fuel Storage Facility on Oahu, Hawaii within the next 12 months, the Joint Force will need to find a way to replace the 250 million gallons of fuel storage capacity lost. While not well advertised, the Aleutian Island chain in Alaska is actually closer to many of our allies in the Indo-Pacific region than Hawaii, and should warrant serious consideration for additional bulk fuel storage capacity. What is your assessment of the potential utilization of the Alaska, specifically the Aleutian Island chain, for bulk fuel storage?

Secretary DEL TORO and Admiral GILDAY. Senator, as you know, the Commander of United States Indo-Pacific Command is responsible for determining the operational and support requirements for his area of responsibility. My understanding is that INDOPACOM is currently shifting their posture to the west in order to more effectively compete with and deter China. The Navy, working through the Pacific Fleet, will continue to work with INDOPACOM and the Defense Logistics Agency to ensure its bulk fuel needs to support the combatant commander are met.

95. Senator SULLIVAN. Secretary Del Toro and Admiral Gilday, will you commit to look into the feasibility and strategic implications of bulk fuel storage in Alaska to augment joint force logistics?

Secretary DEL TORO and Admiral GILDAY. Senator, as you know, the Commander of United States Indo-Pacific Command is responsible for determining the operational and support requirements for his area of responsibility. My understanding is that INDOPACOM is currently shifting their posture to the west in order to more

effectively compete with and deter China. The Navy, working through the Pacific Fleet, will continue to work with INDOPACOM and the Defense Logistics Agency to ensure its bulk fuel needs to support the combatant commander are met.

AUKUS

96. Senator SULLIVAN. Secretary Del Toro and Admiral Gilday, what are the most significant opportunities you see for the U.S. Navy resulting from the AUKUS agreement?

Secretary DEL TORO and Admiral GILDAY. The Australia-United Kingdom-United States partnership, or AUKUS, is foremost committed to providing Australia with military capabilities. Through the partnership, the three nations reaffirmed their commitment to a free and open Indo-Pacific and more broadly to an international system that respects human rights, the rule of law, and the peaceful resolution of disputes free from coercion. Through ongoing trilateral consultation to determine the optimal pathway for an Australian conventionally armed, nuclear-powered submarine capability, the U.S. Navy has enhanced relationships with British and Australian counterparts at leader, program, and force development levels. Other regional posture decisions or naval operations will continue through standing U.S. authorities and agreements.

QUESTIONS SUBMITTED BY SENATOR MARSHA BLACKBURN

SEA-LAUNCHED CRUISE MISSILE

97. Senator BLACKBURN. Admiral Gilday, what are the short- and long-term implications of eliminating SLCM-N? What additional risk do you take on without the capability SLCM-N would provide?

Admiral GILDAY. Commander, USSTRATCOM owns the operational risk to his POTUS assigned missions based on capabilities the Services provide. The gap in current and future nuclear capabilities between the United States and Russia is in regional nuclear capabilities, those capabilities not governed by New START, the “non-treaty accountable weapons” or tactical nuclear weapons.

For our deterrent to be effective, it must have sufficient capability, capacity, and credibility to give the adversary pause. We do not have to match one-for-one or enter a new arms race, but we must have the tools to make Russia, and any other adversary, carefully consider their actions. The risk of mission failure belongs to the STRATCOM commander. The Services must provide the tools so he can provide the President options across the spectrum of potential nuclear escalation.

98. Senator BLACKBURN. Admiral Gilday, you referenced a “particular gap” in capabilities that SLCM-N would fill. Specifically, please articulate this “particular gap.”

Admiral GILDAY. When I refer to a particular gap that the SLCM-N capability could fill, I am referring to capabilities our adversaries possess along the escalation ladder where we have limited or no corresponding capability. The U.S. has a very limited number of nuclear weapons not governed by New START. Our key nuclear adversary has significant capability in the area of “non-treaty accountable” nuclear weapons. Our emerging nuclear adversary, while not restrained by a similar treaty, continues to develop a spectrum of capabilities with a wide range of yields and delivery options.

SLCM-N is not the single solution to this gaps, but if it is developed into a credible and deployable capability it could integrate with other capabilities, both conventional and nuclear, to provide an effective spectrum of deterrence options for the President.

NAVY TACTICAL CYBER TEAMS

99. Senator BLACKBURN. Admiral Gilday, what is the status of the development of the “small tactical cyber teams” created under your direction?

Admiral GILDAY. Though not yet funded, I am developing this capability internally by aligning requirements, capabilities and doctrine in preparation for future investment. Specifically, the Naval Information Warfighting Development Center (NIWDC) published TACMEMO 6-03.5-21 Maritime Enabled Cyberspace Operations (MECO), describing the tactics, techniques, and procedures for cyberspace missions conducted by naval forces for the completion of tactical-level actions or tasks in support of commanders’ desired end state. With this doctrine as a backdrop, I initiated a working group of stakeholders and subject matter experts to develop

and refine the manpower, capabilities, command and control, and resources needed to deliver this capability.

100. Senator BLACKBURN. Admiral Gilday, how specifically is the Navy working towards the desired end state of providing cyber operators to support the fleet mission?

Admiral GILDAY. Navy cyber operators are trained utilizing the joint training standards of USCYBERCOM and USSOCOM, then provided to USCYBERCOM and USSOCOM in support of joint force requirements, including Cyber Mission Force (CMF). Navy requirements for cyber operators are satisfied through a Request for Forces (RFF) process to the joint force. Question 99 addresses Navy efforts towards Navy tactical cyber teams.

CONTESTED LOGISTICS

101. Senator BLACKBURN. General Berger, to successfully operate within the first and second island chains, how is the Marine Corps adequately sustaining, moving, and maneuvering forces in this environment?

General BERGER. With an increasingly contested operational environment, our logistics efforts from the tactical edge to the homeland will have to fundamentally change. We are pursuing a range of material capabilities to diversify and modernize our logistics portfolio that are all aligned to a contested littoral environment. At the tactical level, we are testing and assessing several platforms that will enable us to transition to a diverse collection of crewed and uncrewed air and ground platforms. These platforms are smaller and cheaper while collectively resulting in a more resilient distribution network of platforms and connectors. In addition to our efforts to generate, store, and distribute renewable energy forward, these platforms will exploit rapidly moving technologies that the Department and our industry partners are pursuing. We will decrease our dependence on vulnerable fuel supply chains while delivering critical commodities via the naval and joint logistics enterprise across the Pacific, despite enemy sensing and targeting capabilities. The most visible platforms will be a family of uncrewed logistics air systems, the smallest of which we are already prototyping and conducting live experimentation. Our experimentation is yielding exciting results that underscore the need to expand into large and medium uncrewed logistics systems. Additionally, we will explore options to replace our ground logistics fleet with a smaller, lighter, fuel-efficient replacement. We are now exploring emerging technologies to deliver capable, yet affordable vehicles that reduce our reliance on fossil fuels.

102. Senator BLACKBURN. General Berger, how can unconventional inter-theater connectors such as commercially available ships be part of sustaining, moving, and maneuvering forces?

General BERGER. Commercially available ships can provide flexibility and redundancy to our sustainment and distribution networks. Leveraging these capabilities strengthens our relationships with commercial partners and provides additional capacity.

SHIPBUILDING

103. Senator BLACKBURN. Secretary Del Toro, as the Navy navigates lessons learned from working within its share of the defense budget rather than assessing how many ships it needs to determine the budget, what risks do these gaps highlight that the industrial base can create?

Secretary DEL TORO. The Navy recognizes the importance of a secure and solid industrial base, and we are collectively working to capitalize on the gains and partnerships that are being fostered across government, industry, and academic spheres as we look to preserve our capability to innovate and execute faster and better than anyone else. Expanding infrastructure and the capabilities of suppliers results in greater stability, cost savings, and improved efficiency as production increases to build. The Navy continues to assess and make strategic investments to address risks, establish second sources, and minimize disruptions in key market areas using resources such as Defense Production Act Title III, capital expenditure investments, and supplier development funding.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

104. Senator HAWLEY. Secretary Del Toro, A Cooperative Strategy for 21st Century Seapower directed the sea services to “employ the global reach, persistent pres-

ence, and operational flexibility inherent in U.S. seapower.” It also found that “[t]here is a tension, however, between the requirements for continued peacetime engagement and maintaining proficiency in the critical skills necessary to fighting and winning in combat.” What is the tension between requirements for peacetime presence and readiness for warfighting?

Secretary DEL TORO. Both “A Cooperative Strategy for 21st Century Seapower” (2007) and the more recent “Tri-Service Maritime Strategy, Advantage at Sea: Prevailing with Integrated All-Domain Naval Power” (2020) reference a tension between near-term presence demand and warfighting readiness. Day-to-day presence strengthens alliances and partnerships and demonstrates U.S. capabilities and global reach, but with finite resources and time available to train, operating forward can often come at the expense of joint warfighting training. This tension is manifested in competing time demands: The more time spent training and making ready, the more powerful the force, but with less time available for showing the force through presence. I recognize the importance of both and am committed to achieving balance between these two national security imperatives.

105. Senator HAWLEY. Admiral Gilday, Admiral Conn acknowledged last week that the Navy is “taking risk in VLS [strike capacity] between now and about 2030.” But when I asked him how the Navy plans to manage that risk, he couldn’t offer any specifics. Why is the Navy choosing now to accept all this risk in strike capacity as opposed to waiting until we’re through what DOD leaders agree is a period of significantly increased risk of Chinese aggression?

Admiral GILDAY. There is a reduction in the number of VLS cells and it’s a risk reward decision. The Navy had to make a value decision of what it’s going to take to get these older platforms with less capable combat systems forward versus what investments that we need to make which deliver a more capable, more lethal Navy in the future. This is also in the context that the United States Navy fights from the seabed to space, our submarines, our surface ships and aviation assets all contribute to the fight in addition to those platforms hosting VLS cells.

The new era of strategic competition requires a modernized, capable, global, forward, and multi-domain Navy. The National Defense Strategy (NDS) underscores the need for DOD to move away from systems that provide less capability and do not significantly support our strategy and ability to win in a future fight.

In the fiscal year 2023 budget, Navy prioritized promising technologies that need to be fielded quickly and at scale to be operationally relevant in the coming years to ensure that Navy meets Joint Force operational requirements, and made difficult choices to divest of ships that do not meaningfully support warfighting requirements.

106. Senator HAWLEY. Admiral Gilday, how does this loss of VLS strike capacity impact the Navy’s ability to meet operational requirements for DOD’s pacing scenario between now and 2030?

Admiral GILDAY. This new era of strategic competition requires a modernized, capable, global, forward, and multi-domain Navy. The National Defense Strategy (NDS) underscores the need for DOD to move away from systems that provide less capability and do not significantly support our strategy and ability to win in a future fight. The Navy made difficult choices to divest of ships that do not meaningfully support the warfighting requirements.

In the fiscal year 2023 budget, Navy prioritized promising technologies that need to be fielded quickly and at scale to be operationally relevant in the coming years to ensure that Navy meets Joint Force operational requirements.

Future fights against strategic competitors require us to integrate the all-domain power of the fleet with the Joint Force and our allies and partners. Our fleet staffs are already fully integrating information warfare, space, cyber, and special operators, both Active and Reserve, into their teams to leverage the full power of our Navy.

107. Senator HAWLEY. Admiral Gilday, there’s a consensus that we’ve got to be able to quickly sink large numbers of Chinese ships in and around the Taiwan Strait if we’re going to be able to deny a Chinese fait accompli against Taiwan, and the U.S. Navy’s going to be a key part of that effort. Will the Navy’s ability to sink Chinese ships in the Taiwan Strait increase or decrease over the next 7 years? Please provide an explanation for your response.

Admiral GILDAY. The Navy’s ability to sink PLA(N) ships in the Taiwan Strait will increase in both count and efficiency by developing and procuring more effective and appropriate kill chains and munitions for the expected threats. The Navy is investing in increased combat lethality through more advanced payloads, such as Mar-

itime Strike Tomahawk, Long Range Anti-Surface Missile, hypersonics, torpedo advancements, and Standard Missile Block 1B. The Navy will improve overall kill chain performance with the realization of Maritime Targeting Cell capability and Naval operational Architecture in the middle of this decade, as well as an array of counter-C5ISR capabilities. F-35 and F/A-18 E/F modifications will improve aircraft survivability and combat effectiveness. MQ-25 Unmanned carrier-based aircraft will increase the strike range, capability, and lethality of the Carrier Air Wing. The Extra Large Unmanned Undersea Vessel will achieve initial capability in 2025 and will be capable of multiple missions, including mine warfare. Three mining programs—Clandestine Delivered Mine (CDM), Hammerhead Encapsulated Effector, and the Quickstrike Extended Range (QS-ER)—will all be fielded in the next 7 years.

108. Senator HAWLEY. Admiral Gilday, you said in February that “I’ve concluded—consistent with the analysis—that we need a naval force of over 500 ships” to execute the National Defense Strategy. Does it remain your opinion that the Navy needs a force of 500 ships to implement the National Defense Strategy? Please provide an explanation for your response.

Admiral GILDAY. Yes, based on past and ongoing force structure analysis, it is my best military advice that the size of the Navy grow to a 500-ship hybrid fleet by 2045. America needs a modern strategic deterrent; greater numbers of undersea capabilities; more distributable surface combatants; a host of manned, unmanned, and optionally-manned platforms—under, on, and above the seas; and a resilient logistics enterprise to sustain our distributed naval force. Integrated with the Joint Force and interoperable with our allies and partners, this all-domain, hybrid fleet will ensure our maritime superiority.

However, I have consistently said that the Navy’s size—our capacity—ultimately will be dictated by the budget’s top line. We will not field a fleet larger than we can sustain. We also will not grow the Navy at the expense of building the *Columbia*—our top acquisition priority. Nor will we increase capacity by failing to modernize and sacrificing our combat credibility. Therefore, our focus is on delivering *capable* capacity.

109. Senator HAWLEY. General Berger, the Force Design Annual Update also acknowledges that the Marine Corps previously “focused the Marine Littoral Regiment too much on lethality and not enough on sensing, the ability to make sense, maneuverability, and deception.” Can you elaborate on this lesson learned?

General BERGER. To be clear, lethality will always be important. A credible capability to hold an adversary’s high value assets at risk is an essential ingredient of deterrence. That being said, our Campaign of Learning over the past 2 years has steadily reinforced the importance of other capabilities we are providing to our Stand-in Forces. Such forces, positioned well forward and in close proximity to an adversary, can gain and maintain custody of targets, sharing information with other elements of the Joint force, as well as coalition partners, thus enabling the closing of kill webs in such a way as to significantly enhance the versatility and lethality of all forces.

Similarly, our Campaign of Learning has provided insights regarding the value of maneuver and deception. First, Stand-in Forces must be able to move rapidly, so as to gain and maintain positional advantage against an adversary that is likewise mobile. Second, our Stand-in Forces must leverage deception capabilities that will confuse the enemy’s detection and targeting assets, thus providing us an advantage in the “hider-finder” competition.

110. Senator HAWLEY. General Berger, what are some of the other key lessons learned thus far in the Force Design 2030 campaign, and how can Congress help you to adjust course as you identify and incorporate these lessons?

General BERGER. First, we believe have established an enduring process to responsibly modernize. By instituting a campaign of learning around a threat informed, concept based approached to capability development allows for continuous refinement of the force. Second, feedback from the fleet operating forces is a critical element in our historical combat development process and is integral to our Force Design approach today. As part of the May 2022 Force Design Annual Update, the Marine Corps will be updating the Service Level Experimentation Campaign Plan and publish an unclassified version no later than 30 June 2022. Lastly, the National Defense Strategy recognizes the military must be ready for a 21st century conflict against a near peer adversary. The Marine Corps is grateful for the support from Congress and will continue to ask the same as we modernize at speed to meet the current threat.

111. Senator HAWLEY. Admiral Gilday, last year the Navy testified to the Seapower Subcommittee that it is developing a capability to reload VLS at sea. What is the status of that program?

Admiral GILDAY. We currently employ Expeditionary Reload Teams (ERT) to perform the Surface VLS Reload mission in austere or non-traditional locations. CRUDES VLS demonstrations to rearm pierside and at anchor by an Offshore Support Vessel are anticipated in late fiscal year 2022; a T-AKE Rearm effort will start in fiscal year 2023 and continue into fiscal year 2024 to develop and demonstrate a capability to rearm CRUDES VLS and submarine heavyweight torpedoes.

From the Navy Expeditionary Combat Command (NECC)'s Navy Expeditionary Logistics Support Group (NAVELSG) we employ ERT to perform the Surface VLS Reload mission in austere or non-traditional locations (where minimal or no infrastructure support exists). The ERTs will play an important role in the Rearm-at-Sea initiative, specifically operating the Strike-Up/Strike-Down (SUDS) system being developed by the Office of Naval Research (ONR) and Naval Surface Warfare Center, Carderock Division (NSWC CD) for VLS Reload at anchorage or potentially underway, as well as other skin-to-skin evolutions (T-AKE-DDG/CG) which blends with the Navy Cargo Handling Battalion (NCHB) Surface Cargo handling capability.

The Next Generation Logistics TTP Ship (NTS or MV Ocean Valor) was chartered starting in fiscal year 2021 and will demonstrate many logistics missions for refuel, rearm, and resupply. For VLS rearm demonstration to date, a pierside and at anchor VLS rearming event was planned for May 2022 but subsequently postponed due to CRUDES scheduling conflicts. Efforts are underway to reschedule. In fiscal year 2023, the project is currently funded at \$0.0 million for VLS rearm. Future VLS rearm events may occur with additional funding. Charter for MV Ocean Valor concludes fiscal year 2025.

T-AKE Rearm research and development efforts commence in fiscal year 2023 and continue into fiscal year 2024. The R&D efforts will determine the feasibility and material solutions for a T-AKE to successfully rearm CRUDES VLS and submarine heavyweight torpedoes. In fiscal year 2023, the project is funded at \$3.3 million.

112. Senator HAWLEY. Admiral Gilday, do you continue to believe a VLS reload capability is desirable for the surface Navy, given a disadvantage in strike capacity vis-à-vis the Peoples Liberation Army Navy?

Admiral GILDAY. Yes, Vertical Launch System (VLS) reload is a highly desirable capability for the Surface Navy.

We currently employ Expeditionary Reload Teams (ERT) from Naval Cargo Handling Battalions (NCHB) to perform the Surface VLS Reload mission in austere or non-traditional locations. CRUDES VLS demonstrations to rearm pierside and at anchor by an Offshore Support Vessel by the ERT are anticipated in late fiscal year 2022; a T-AKE Rearm effort with the ERT will start in fiscal year 2023 and continue into fiscal year 2024 to develop and demonstrate a capability to rearm CRUDES VLS.

113. Senator HAWLEY. Admiral Gilday, the press reports that the Navy rejected a 2020 proposal for a fifth shipyard in the Great Lakes region and remains concerned about a revised proposal. Given a shipyard capacity shortfall, why did the Navy evaluate this unfavorably, and does the Navy intend to pursue any further options for a fifth shipyard?

Admiral GILDAY. The Department of the Navy is committed to ensuring its public shipyards have the resources needed to execute the submarine and aircraft carrier sustainment and modernization missions. The Navy is making a once-in-a-century investment with the Shipyard Infrastructure Optimization Program (SIOP) that will fully update and upgrade the dry docks, infrastructure, and capital equipment at the Navy's four public shipyards that conduct depot-level maintenance on the Navy's submarines and aircraft carriers. The Navy is executing the Shipyard Performance-to-Plan and Naval Sustainment System—Shipyard efforts to better define and analyze current performance gaps, better predict operational readiness, drive efficiencies into shipyard processes, and eliminate barriers to productivity. While the current Los Angeles and *Virginia*-class submarine maintenance backlog is impacting current overall readiness, the above efforts are critical to ensuring future maintenance execution supports Navy readiness needs.

I am confident that these efforts, along with continued collaboration and partnership with industry, will provide the capacity and capability at the four Naval shipyards necessary to execute submarine maintenance to meet or exceed the oper-

ational needs of the Fleet. Therefore, I do not foresee the need in the mid or long term for establishing additional nuclear submarine capable shipyards.

The Navy has not conducted any recent studies focused on executing nuclear submarine maintenance at new shipyards. Instead, we are utilizing SIOP and Performance-to-Plan and Naval Sustainment System—Shipyard to upgrade the four naval shipyards so that they can execute maintenance availabilities on time every time.

114. Senator HAWLEY. Admiral Gilday, how confident are you that we will retain our advantage in undersea warfare vis-a-vis the Chinese? Please provide an explanation for your response.

Admiral GILDAY. I am very confident in the United States Navy's undersea advantage against strategic competitors such as the People's Republic of China. Our Submarine Force and Undersea Warfare programs continue to represent the most technologically advanced systems in the world. From our *Virginia*-class submarines with Acoustic Superiority upgrades, our modern P-8 Maritime Patrol Aircraft, or our multi-purpose Arleigh Burke Destroyers, the United States Navy continues to modernize and advance our undersea capabilities. However, one of our greatest advantages that our adversaries cannot match is the operational excellence and experience of our sailors that operate these platforms and systems.

115. Senator HAWLEY. Admiral Gilday, under what conditions would you begin to worry that the Chinese might be seriously eroding our advantage in the undersea domain?

Admiral GILDAY. The PRC has stated their desire to improve their undersea warfare capabilities. Over the last 5 years, we have seen evidence of their efforts through an increase in the number and quality of sensors, weapons, and platforms capable of exploiting this domain. The strength of People's Liberation Army-Navy, PLA(N), is their ability to rapidly produce weapon systems and supporting sensors and platforms. They still have key gaps, most notably their sailors lack the proficiency and experience to exploit their maritime capabilities to a level that would threaten our undersea dominance. For the PLA(N) to seriously erode our advantage would require improvements in all of their systems (sensors, weapons, and platforms) and a demonstrated, consistent proficiency with command and control and tactical exploitation using those systems.

Every advancement that PLA-N makes has the potential to erode our advantage in the undersea domain unless we match or exceed it. It is vital that we maintain the commitment to our plans, programs, and operations to ensure we do not cede the advantages we currently have. We should be constructively dissatisfied with any potential loss of overmatch, and are committed to maintaining our dominance in the undersea domain giving us an asymmetric advantage over the PLA(N).

I welcome the opportunity to brief you at the classified level with more specifics, if you desire.

QUESTIONS SUBMITTED BY SENATOR TOMMY TUBERVILLE

SHIP MAINTENANCE

116. Senator TUBERVILLE. Secretary Del Toro and Admiral Gilday, I understand that there is a debate over whether the industrial base has the capacity to support our ship maintenance workload. Is there currently a maintenance backlog for ships needing repairs in the U.S.?

Secretary DEL TORO and Admiral GILDAY. Yes, the Total Backlog for the surface ships needing repair is \$2.3 billion across the Future Years Defense Program, \$535 million of this Total Backlog is based on known deferred maintenance and is executable as it was loaded into the Navy's forecasted workload in the Port Loading Charts. The remaining \$1.8 billion of this Total Backlog applies to ships proposed to decommission (as of 1 June 2022).

117. Senator TUBERVILLE. Secretary Del Toro and Admiral Gilday, recent Department of Defense budgets have included funds to upgrade the public naval shipyards, but have not invested in needed upgrades to private shipyards, who are essential partners in maintaining our ships and ensuring fleet readiness. What are your thoughts on encouraging the expansion of private shipyards to be ready for the future fleet?

Secretary DEL TORO and Admiral GILDAY. Investment in private sector shipyards is required to repair and maintain the future fleet. These necessary investments range from shore power upgrades to dry dock procurement.

In an effort to expand and evolve the repair industrial base to meet the needs of the future fleet, the Navy seeks to promote growth through a series of tiered levers. These levers could include communication of demand for private investment, Navy-industry partnership, or Navy investment. The approach to any given requirement varies based on a number of factors including port specific considerations, stability of demand, future growth, project risk, and barriers to entry.

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

THURSDAY, MAY 19, 2022

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

**THE DEPARTMENT OF ENERGY AND NATIONAL NUCLEAR
SECURITY ADMINISTRATION ON ATOMIC ENERGY DE-
FENSE ACTIVITIES**

The Committee met, pursuant to notice, at 9:30 a.m. in room SD-G50, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Committee) presiding.

Committee Members present: Senators Reed, Shaheen, Gillibrand, Blumenthal, Kaine, King, Warren, Peters, Kelly, Inhofe, Wicker, Fischer, Rounds, Ernst, Tillis, Sullivan, Scott, Blackburn, Hawley, and Tuberville.

OPENING STATEMENT OF SENATOR JACK REED

Chairman REED. Good morning. The Committee meets today to receive testimony on the Department of Energy's Atomic Energy Defense programs in review of the Fiscal Year 2023 President's Defense Budget Request.

I would like to welcome our witnesses, Secretary of Energy Jennifer Granholm and Administrator of the National Nuclear Security Administration Jill Hruby. Thank you for joining us. I also want to thank your Department's workforce for their dedicated service to our nation. Please relay that to them.

The fiscal year 2023 budget request for the defense functions of the Department of Energy is \$29.7 billion. This figure accounts for about 61 percent of the Department of Energy's overall \$48 billion request. Given the share of the defense function of the Department's budget, it is important for this committee to continue its oversight of the Department's defense activities, which span items like maintaining our nuclear stockpile to cleaning up former Cold War defense production sites.

Within this defense proposal, the National Nuclear Security Administration, or NNSA, is requesting \$21.4 billion, a 3.2 percent increase over last year's level of \$20.6 billion. I would also note that the amount for the defense portion of environmental cleanup increased by 3 percent to \$6.9 billion.

The Strategic Forces Subcommittee held a hearing 2 weeks ago on the Nuclear Weapons Council, a statutory body that was created in the 1946 Atomic Energy Act to bridge the civilian-military relationship over the manufacturing and employment of nuclear weapons. By all accounts the message conveyed to the subcommittee was that the relationship between the Department of Defense and the National Nuclear Security Administration was healthy and productive.

However, with respect to the Department's requirement to increase production of plutonium pits to a rate of 80 pits per year by 2030, the subcommittee found several issues. Significantly, the costs for converting the Mixed Oxide Fuel plant at the Savannah River Site have risen significantly from \$4 billion to between \$6 and \$11 billion. Further, the project timeline stretched from the 2030 target to between 2032 or 2035. We need to understand what has driven these overruns and how we can hold the Department of Energy accountable to this longstanding Department of Defense requirement.

I understand that the NNSA is experiencing its highest workload since the 1980s as it manages five major warhead programs while rebuilding nuclear infrastructure that dates back 70 years to the Manhattan Project. This original infrastructure held up well through the first two cycles of triad modernization in the 1960s and 1980s, but it has essentially aged out for the third cycle that we are currently undertaking. I would like to know how NNSA is managing this workload while simultaneously modernizing its production facilities.

Finally, I hope our witnesses will update us on efforts to continue cleaning up former defense production sites, particularly at the Hanford Nuclear Reservation. These are commitments made to local communities that we cannot walk away from. The Hanford site has 177 million gallons of radioactive waste stored in underground tanks, some which are leaking. Your Department is starting operations to remove the first 40 percent of low-activity radioactive waste from these tanks, which accounts for 90 percent of the waste, and I commend you on this important milestone. I understand you are also holding discussions with the State of Washington on how to next remove the high-activity radioactive waste in the tanks. I would ask that you share how you are working with the state and local communities on these efforts.

Again, I want to thank our witnesses for appearing today. I look forward to your testimonies.

Now let me recognize the ranking member, Senator Inhofe.

STATEMENT OF SENATOR JAMES INHOFE

Senator INHOFE. Thank you Mr. Chairman. I also want to welcome our witnesses. We have had the privilege of being with our witnesses on other issues in the past, and I am honored to have them here today.

One of the things I have been proud of over the past few years is this committee's focus on rebuilding the foundation of United States national security, our nation's nuclear deterrent. We have made a lot of progress in this area over the past several years, but

even that progress is just the first step in a long journey to make up for decades of neglect.

A third of NNSA's facilities date back to World War II, and we have buildings where concrete has fallen from the ceiling. It has hit some of the workers. People are shocked when they hear of these things. We have to do better, and I think we all understand that.

In contrast, our adversaries clearly see value in prioritizing their nuclear programs. Our lack of focus on competing in the nuclear arena puts us in danger of falling even further behind, and puts our nation and our allies at risk.

China is expanding its military capabilities faster than any country in history. Its investments are shifting the global balance of power, and based on recent testimony, China's nuclear modernization continues to outpace even our worst predictions.

Putin's unprovoked invasion of Ukraine and his reckless threats of nuclear escalation have shattered the security of Europe, and for the first time in decades, forced Americans to face the possibility of a nuclear attack.

Not to be outdone, North Korea is on a record pace for missile testing, and is reportedly preparing for another nuclear test.

Unfortunately, the Administration's fiscal year 2023 DoD budget does not give DoD and NNSA the real growth they need to meet the National Defense Strategy. While we agreed on real growth last year, inflation has completely destroyed that.

In fact, I have a letter from the administrator that says our plutonium pit production project is underfunded by \$500 million. This is the letter, and I want to make this a part of the record at this point.

Chairman REED. Without objection.

[The information follows:]



Department of Energy
Under Secretary for Nuclear Security
Administrator, National Nuclear Security Administration
Washington, DC 20585



April 12, 2022

The Honorable Jack Reed
 Chairman
 Committee on Armed Services
 United States Senate
 Washington, DC 20510

Dear Mr. Chairman:

This letter is in response to 50 USC 2756, which requires the Department of Energy's National Nuclear Security Administration (DOE/NNSA) to provide an annual report on priorities not funded in each respective year's President's Budget Request.

The fiscal year (FY) 2023 President's Budget Request for DOE/NNSA continues the strong support provided for more than a decade to modernize the nuclear stockpile, rebuild and revitalize DOE/NNSA's infrastructure, advance nonproliferation and the reduction of nuclear threats, and deliver nuclear propulsion that meets the U.S. Navy's operational requirements. The FY 2023 Request also supports the science and technology needed in the near- and long-term for DOE/NNSA missions.

The FY 2023 President's Budget Request for NNSA provides \$21.4 billion, an increase of 3.65 percent from the FY 2022 Enacted Level. This budget supports meeting FY 2023 Department of Defense requirements and other NNSA deliverables. However, the budget is \$500 million below the requirements-based budget submitted by DOE. This \$500 million would allow activities to be started as early as possible for the Savannah River Plutonium Processing Facility. Recognizing the \$500 million will not allow the NNSA to meet the requirement of 80 pits per year by 2030, the request supports meeting the requirement as close to 2030 as possible. NNSA commits to funding as many as these activities as possible within our FY 2023 budget allocation, but we assess our efforts will be at least \$250 million short of the submitted requirements budget.

If you have any questions, please contact Mr. Jason Miller, Acting Associate Administrator for Congressional and Intergovernmental Affairs, at (202) 586-0176.

Sincerely,

Jill Hruby

cc. The Honorable James Inhofe
 Ranking Member

Senator INHOFE. In fact, we feel that this tells the whole story. I look forward to your testimony on these issues and the rest of the Department of Energy's national security priorities. Thank you, Mr. Chairman.

Chairman REED. Thank you very much, Senator Inhofe. Secretary Granholm, please.

**STATEMENT OF THE HONORABLE JENNIFER GRANHOLM,
SECRETARY OF ENERGY**

Secretary GRANHOLM. Thank you so much, Chairman Reed and Ranking Member Inhofe. My thanks also to the members of the committee. It is a privilege to be before you once again on behalf of the Department of Energy and with Jill Hruby, our NNSA Administrator and the Under Secretary of Nuclear Security.

As the 16th Secretary of Energy, I have the responsibility of leading this Department at a pivotal time. Putin's invasion of Ukraine, the outbreak of armed conflict on the European continent has underscored the absolute importance of the Department's national security mission. We appreciate the consistent, bipartisan support that the Senate Armed Services Committee has long given the Department when it comes to this mission, and we believe this committee will see in this latest budget request our resolute commitment to advancing that national security mission.

I am pleased to note that the partnership between the Department and our NNSA, our National Nuclear Security Administration, is strong, it is collaborative, and likewise, we continue to work closely with our colleagues at the Department of Defense through the Nuclear Weapons Council.

As security risks rise around the world, we know we must ensure that the nation's ability to respond to threats remains unmatched. At the same time, we know that our focus on responsiveness must be paired with one of responsibility. Our efforts begin, of course, with maintaining the safety, security, reliability, and effectiveness of the nuclear weapons stockpile. This is the cornerstone of our deterrent. It is critical to our ability to protect the American people and reassure our allies.

Relatedly, our work to provide the U.S. Navy with safe and effective nuclear propulsion technology is essential to ensuring that our military is equipped to carry out their operations.

Ultimately, though, we know that the nation is safer, and our deterrent is stronger, and our military is more effective when facing lower nuclear risks, and that is why we invest in nonproliferation and arms control and in efforts to counter the threat of nuclear terrorism. As the 2022 Nuclear Posture Review makes clear, each of these stock—stockpile management, naval propulsion, and nuclear risk reduction—are all top priorities for the Biden administration. Our budget request for fiscal year 2023 echoes this Administration's dedicated support for each.

Let me just spend a minute to highlight a few other areas that are reflected in the budget request. First is taking care of the communities that have supported the nation's nuclear weapons programs and nuclear research. The Department's Office of Environmental Management is home to the world's largest environmental cleanup program. The program has completed operations at 92 of

107 cleanup sites over the past 30 years, and our environmental management team reached important milestones even this past 2 years, with contending with challenges posed by the COVID-19 pandemic. Our budget request will equip them with the resources they need to continue building on that track record.

Second, infrastructure modernization and workforce development. As my colleague, Jill Hruby, will explain in greater detail, the NNSA is focused on mission delivery in a timely and cost-effective manner. Infrastructure and workforce are essential this goal. Approximately 60 percent of NNSA facilities are beyond their 40-year life expectancy, some, as has been noted, date back to the Manhattan Project. But our ability to execute our mission depends on a modern, flexible, and resilient nuclear security infrastructure, and that is why that means we have to continue to bring more of these facilities into the 21st century.

We also have to make sure that we have top-notch talent to staff those facilities, by recruiting and training a new generation of employees across our national security portfolio. That is why we have requested investments in both our infrastructure and our workforce needs.

I am mindful of the trust that this committee and the rest of Congress has placed in the Department, and I am proud to lead this team as we reduce nuclear risk while navigating an increasingly complex global environment. I thank you for your partnership in keeping the United States safe and secure, and we look forward to your questions.

Chairman REED. Thank you, Madam Secretary.
Administrator Hruby, please.

STATEMENT OF THE HONORABLE JILL HRUBY, ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

Ms. HRUBY. Thank you, Chairman Reed, Ranking Member Inhofe, and members of the committee for the opportunity to appear before you. As Secretary Granholm said, we appreciate the committee's consistent, bipartisan support for the Department of Energy's enduring national security missions.

Today we face a shifting geopolitical environment, rapidly evolving technological capabilities and modernization needs that are expanding our mission requirements. Meeting these challenges on behalf of the American people requires us to act in a responsive and responsible manner.

To reach our objectives we are simultaneously executing our largest weapon modernization program in decades, while recapitalizing our infrastructure and investing in cutting-edge scientific, engineering, and technical capabilities. We are also providing critical resources to our nonproliferation, counterproliferation, and naval nuclear propulsion programs that play an important, complementary role to our weapons programs. We feel a sense of urgency in achieving our objectives and will act to meet our goals in a timely and cost-effective manner.

The challenges ahead are significant, but I am confident in the Department's ability to rise to the occasion, in partnership with Congress and our colleagues in the Departments of State, Defense, Homeland Security, and around the world.

Thank you, and I look forward to your questions.
 [The joint prepared statement of Secretary Jennifer M. Granholm
 and The Honorable Jill M. Hruby follows:]

JOINT PREPARED STATEMENT BY SECRETARY JENNIFER M. GRANHOLM AND THE
 HONORABLE JILL M. HRUBY

Chairman Reed, Ranking Member Inhofe, and esteemed Members of the Committee, it is an honor for us to appear before you today on behalf of the Department of Energy (DOE) and National Nuclear Security Administration (NNSA). We recognize and appreciate the Committee's consistent support for DOE's enduring national security missions.

As the 16th Secretary of Energy and the 8th Under Secretary for Nuclear Security, we have the privilege and responsibility of leading the Department at a pivotal time. We recognize the importance of moving decisively to strengthen America's nuclear security through its defense modernization, nonproliferation, naval propulsion, and environmental cleanup efforts. As the solutions department we are ready to overcome the challenges and deliver results.

The nation's nuclear weapons stockpile remains the cornerstone of our deterrent and a key tool in reassuring our allies. We must remain committed to the safety, security, reliability, and effectiveness of the nuclear weapons stockpile through sustainment and modernization efforts, infrastructure recapitalization, and the rigorous application of cutting-edge science and technology. We recognize that our deterrent is more effective when nuclear risks are reduced. Therefore, the Department works diligently to prevent the proliferation of nuclear weapons and prevent terrorist and other non-State actors from acquiring nuclear and other radiological material. Additionally, the Department provides the U.S. Navy's submarines and aircraft carriers with militarily effective nuclear propulsion plants and continues to test and provide for their safety, reliability, and longevity. The Department recognizes the Administration's strong support for these programs as outlined in the 2022 Nuclear Posture Review and the President's Fiscal Year 2023 Budget.

The Fiscal Year 2023 Budget reflects the Administration's commitment to protecting our national security, cleaning up legacy pollution from historic nuclear activities, and transitioning the U.S. to clean energy.

NNSA FISCAL YEAR 2023 BUDGET OVERVIEW

Fully informed by the 2022 Nuclear Posture Review (NPR), the Fiscal Year 2023 Budget reflects a commitment to:

- a safe, secure, reliable, and effective nuclear weapons stockpile
- nonproliferation, and counterproliferation and counterterrorism response to reduce global nuclear threats
- the design, production, and provisioning of naval nuclear propulsion capabilities.

NNSA continues to execute its largest stockpile modernization program in decades; develop and recapitalize an adaptive, resilient, and modern infrastructure; and advance cutting-edge science and engineering programs to oversee stockpile assessment and certification activities. In all NNSA programs, we implement exceptional physical and cybersecurity systems to guard critical assets.

The President's Fiscal Year 2023 Budget for NNSA is \$21.4 billion, an increase of \$1.0 billion, and the largest request in NNSA history.¹ While the nuclear stockpile is safe, secure, reliable, and effective, NNSA is aware that legacy infrastructure is well beyond its intended life designs and incapable of providing all the capabilities needed to deliver on the modernization efforts, especially with the demanding production schedules. With consistent, sustained, bipartisan support from the Administration and Congress, NNSA will make the necessary investments to maintain a safe, secure, reliable, and effective nuclear weapons stockpile; modernize the nuclear security infrastructure; reinvigorate American leadership in arms control and nonproliferation; and provide safe and effective nuclear propulsion systems for the U.S. Navy.

Also, NNSA must grow its human capital and is recruiting a top-tier, next generation workforce, developing talent, and creating more competitive benefits and compensation programs to help retain people with requisite skills during the 'Great Res-

¹Funding does not reflect the mandated transfer of \$92.75 million in fiscal year 2022 to the Office of Nuclear Energy for operation of the Advanced Test Reactor.

ignation' occurring nationwide. Together, the people, the facilities, the equipment are the best way to provide a resilient and adaptive Nuclear Security Enterprise for the future.

NNSA understands the urgency to deliver and is thankful for the trust and support of Congress and the American people.

WEAPONS ACTIVITIES

The fiscal year 2023 budget request for the Weapons Activities account is \$16.5 billion, an increase of \$566 million, or 3.7 percent, over fiscal year 2022 enacted levels. This request will be supplemented with prior year balances of \$396 million. This budget request supports the Administration's commitment to modernize all three legs of the nuclear triad supported by a flexible, resilient infrastructure and protected by highly capable physical, and cyber security.

The request underscores delivering for our partners at the Department of Defense (DoD) while retaining the highest safety standards and proceeding in a cost-effective manner. It provides for the maintenance and refurbishment of nuclear weapons to maintain confidence in their safety, security, reliability, and military effectiveness without resuming explosive nuclear testing; infrastructure revitalization; investment in scientific, engineering, and manufacturing capabilities; and greater resources for physical and cybersecurity to foster responsiveness and resilience.

Stockpile Management

For Stockpile Management, the fiscal year 2023 budget request is \$4.9 billion, an increase of \$291 million, or 6.3 percent, over the fiscal year 2022 enacted level. Funding in this portfolio fully supports all five ongoing stockpile life extension and modernization programs; stockpile maintenance, surveillance, and assessment activities; and the safe dismantlement and disposition of excess nuclear weapons and components. The fiscal year 2023 request also includes funding to support the current production capabilities required for the above activities, as well as Nuclear Enterprise Assurance (NEA)—a new effort that helps prevent, detect, and mitigate adversarial subversion risks to the nuclear weapons stockpile.

W88 Alteration (Alt) 370: NNSA is requesting \$162 million in fiscal year 2023 for the W88 Alt 370 program. The Program is expected to enter Phase 6.6, *Full Scale Production* in July 2022. Production is currently on schedule to meet requested DoD deployment schedules.

B61-12 Life Extension Program (LEP): NNSA is requesting \$672 million in fiscal year 2023 for the B61-12 LEP. The Program is expected to enter Phase 6.6, *Full Scale Production* in June 2022. The First Production Unit (FPU) was completed in November 2021 and production is currently on schedule to meet DoD deployment schedules.

W80-4 LEP: NNSA is requesting \$1.1 billion in fiscal year 2023 for the W80-4 LEP. The program is currently in Phase 6.3 *Development Engineering*, and plans to enter Phase 6.4, *Production Engineering* in fiscal year 2023. The FPU date is currently being re-evaluated due to COVID-19 impacts, hiring issues, and component technical challenges. An updated schedule will be developed by mid-2022. NNSA remains confident in meeting schedule requirements to support the U.S. Air Force's (USAF) schedule for the Long-Range Standoff (LRSO) cruise missile Initial Operating Capability.

W87-1 Modification Program: NNSA is requesting \$680 million in fiscal year 2023 for the W87-1 Modification Program. The W87-1 will replace the aging W78 warhead and deploy new technologies that improve safety, address obsolete design and materials, and streamline manufacturability. The funding request supports plans for a FPU in fiscal year 2030 to field the warhead on the USAF Ground-Based Strategic Deterrent (Sentinel) missile system in the Mk21A reentry vehicle. NNSA plans to enter Phase 6.3, *Development Engineering*, in fiscal year 2022.

W93/Mk7: NNSA is requesting \$240.5 million in fiscal year 2023 for the W93 program. In February 2022, the NWC voted to authorize the W93's entry into Phase 2, *Feasibility Study and Design Options*. The W93 incorporates modern technologies that will allow the U.S. to keep pace with future threats and allow for operational flexibility during the Navy's transition from the *Ohio* to *Columbia*-class ballistic missile submarines. All W93 key nuclear components are based on currently deployed and previously tested designs and so will not require nuclear explosive testing to certify.

Production Modernization

The fiscal year 2023 budget request for Production Modernization is \$4.64 billion, an increase of \$484 million, or 11.6 percent, over the fiscal year 2022 enacted level.² Activities covered by this funding include both primary and secondary capability modernization as well as non-nuclear components.

Primary Capability Modernization includes the plutonium pit, high explosive, and energetics programs. NNSA's most intense recapitalization need in this area is the reconstitution of plutonium pit production fabrication operations. NNSA is required to produce no fewer than 80 plutonium pits per year (ppy) during 2030. NNSA is committed to reaching that goal as close to 2030 as possible utilizing a two-site pit production strategy at Los Alamos National Laboratory (LANL) and the Savannah River Site (SRS). The fiscal year 2023 budget request boosts funding for pit production and associated efforts by 26 percent compared to fiscal year 2022. At LANL, fiscal year 2023 funds will be used for equipment installation activities, including adding equipment in Plutonium Facility 4 to support 30 ppy by fiscal year 2026. At SRS, NNSA is currently executing design activities for the Savannah River Plutonium Processing Facility, which is funded according to NNSA's independent cost estimate in the Fiscal Year 2023 Budget, as it moves toward Critical Decision (CD-2). CD-2 will be achieved once 90 percent of design is complete in early fiscal year 2024. A two-site approach provides sufficient capacity to meet program requirements and resiliency in the event of unanticipated issues at one site.

Secondary Capability Modernization includes uranium, lithium, and tritium processing efforts. Each of these programs support stockpile sustainment and modernization efforts and are currently facing degraded capabilities and insufficient capacity to meet future mission requirements. NNSA is undertaking significant, long-term infrastructure investments to address the situation. For example, the Uranium Processing Facility (UPF) at the Y-12 National Security Complex will reduce mission dependency on Building 9212, which is currently over 75 years old, while increasing safety and efficiency. UPF is one of the largest construction projects in NNSA history and at its peak will support a construction workforce of over 3,000. Ongoing supply chain issues and delays associated with the COVID-19 pandemic will result in a short extension beyond the scheduled completion date of December 2025, however, there are no anticipated impacts to warhead deliverables as the legacy site will remain operational throughout the transition. NNSA is also continuing investments in the Depleted Uranium (DU) Modernization Program initiated at Y-12 in fiscal year 2021. Depleted Uranium is a key component for the manufacturing of radiation cases for weapons systems and current capabilities cannot meet reliability or capacity requirements.

To ensure adequate quantities of lithium, NNSA is in the process of creating a Lithium Processing Facility (LPF). LPF will replace current capabilities housed at Y-12. Current capabilities can provide sufficient supply through 2035 but take place in an aging facility with significant infrastructure challenges. LPF will alleviate those infrastructure issues while providing expanded capacity to meet demand beyond 2035.

To provide adequate quantities of tritium, NNSA is in the process of creating a Tritium Finishing Facility (TFF) at Savannah River Site. TFF will replace a 1950's-era facility and will house finishing, packing, and shipping functions for gas reservoirs. Doing so will meet an important mission need and assist the program in meeting current safety standards. Construction of the site preparation subproject is scheduled to begin in fiscal year 2024. NNSA also supports continued research and development for a future Domestic Uranium Enrichment capability to provide enriched uranium for national defense purposes including tritium production.

Non-nuclear components (NNCs) include a wide array of parts that weaponize the nuclear explosive package. NNCs account for over half the cost of weapon modernizations due to the number of components, their complexity, and their need to withstand extreme conditions over the life of the warhead. The fiscal year 2023 request includes funding to: provide equipment for increased manufacturing capacity at the Kansas City National Security Campus; reconstitute thermal spray capability for weapon modernization; recapitalize radiation and major environmental test facilities at Sandia National Laboratories (SNL) used to design and qualify NNCs; and tools and equipment at the Microsystems Engineering, Science and Applications (MESA) Complex at SNL, which serves as the only approved source of trusted, strategically radiation hardened microelectronics.

²The change from fiscal year 2022 enacted is made on a comparable basis using the budget structure proposed for the fiscal year 2023 request.

Stockpile Research, Technology, and Engineering

The fiscal year 2023 budget request for Stockpile Research, Technology, and Engineering (SRT&E) is \$2.89 billion, a decrease of \$83 million, or 2.8 percent below the fiscal year 2022 enacted level.³ The decrease results from the use of carryover balances to continue construction of the U1a Complex Enhancement Project at the Nevada National Security Site (NNSS). Funding across the remainder of the SRT&E request is in-line with the fiscal year 2022 enacted level. This portfolio covers activities which support science-based stockpile assessments and warhead modernization program certifications without needing to resume underground nuclear testing. We remain fully confident in our unmatched scientific and technical capabilities and are committed to their continuous improvement. The fiscal year 2023 budget request will provide significant investment in several short and long-term programs which reflect that commitment.

The Enhanced Capabilities for Subcritical Experiments (ECSE) will produce experimental data at NNSS that will enable assessments of the current stockpile and certification of the future stockpile without returning to underground nuclear-explosive testing. ECSE experiments will remain subcritical throughout the experiment to comply with U.S. “Zero Yield” policy. NNSA is requesting \$277 million for this program in fiscal year 2023, an increase of \$61.6 million, or 28 percent, over the fiscal year 2022 enacted level.

The Stockpile Responsiveness Program (SRP) is responsible for exercising and enhancing capabilities that improve responsiveness to future threats, trends, and developments not already covered by existing life extension programs. Significant resources in this program are devoted to addressing issues in manufacturing, digital engineering, component and system prototyping, and testing. The funding request for SRP in fiscal year 2023 is \$68.7 million.

The Inertial Confinement Fusion (ICF) Program supports stockpile assessment and certification efforts by providing the conditions necessary to collect data in the extreme conditions of nuclear weapon operation. The ICF Program also conducts experiments related to thermonuclear fusion with the goal of creating high fusion yield in a laboratory setting. The fiscal year 2023 request is \$544 million, a decrease of \$36 million, or 6 percent, compared to the fiscal year 2022 enacted level. This decrease reflects an fiscal year 2022 congressional appropriation \$51 million above the requested amount. NNSA will also participate, where aligned to our stewardship mission, in a new, cross-Departmental initiative in fusion energy with the Office of Science (SC) Office of Fusion Energy Sciences, the Advanced Research Projects Agency Energy, the Office of Nuclear Energy, and the Office of the Under Secretary for Science and Innovation that is aimed at advancing the technology to realize fusion energy on the grid in a decadal timeframe.

NNSA’s Exascale Computing Initiative (ECI)—a joint program with the DOE’s Office of Science (SC)—will provide NNSA with next-generation simulation capabilities to support weapons design, stockpile stewardship, and stockpile certification. NNSA continues its strong partnership with SC in achieving the goals for exascale computing. The NNSA’s fiscal year 2023 budget request for ECI is \$160 million, a decrease of \$44 million, or 21.5 percent, compared to the fiscal year 2022 enacted level. This decrease reflects NNSA plans to bring the exascale high performance computing system, El Capitan, online in fiscal year 2023 at Lawrence Livermore National Laboratory—the third of three exascale computers planned for deployment by DOE (including Frontier at Oak Ridge National Laboratory and Aurora at Argonne National Laboratory). The fiscal year 2023 request will continue funding maturation and transition of the next-generation simulation and computing technologies for production use. Finally, NNSA continues to partner with the SC Office of Advanced Scientific Computing Research to support the DOE Computational Science Graduate Fellowship, which contributes to development of and increasing the availability and diversity of skilled computational scientists, mathematicians, and engineers needed to meet the needs of the Department’s missions.

The growing needs of NNSA’s mission require a diverse base of a highly skilled, technical workforce. NNSA’s Academic Programs are designed to foster, attract, and retain such a workforce. The fiscal year 2023 budget request for these programs is \$100.5 million, a decrease of \$11.4 million, or 10 percent, compared to the fiscal year 2022 enacted level. This decrease reflects Congress’ strong support during the fiscal year 2022 appropriations cycle in which NNSA’s Academic Programs were given a significant uplift compared to the requested amount. NNSA remains thankful for congressional recognition and support for this important program. Funding will sup-

³The change from fiscal year 2022 enacted is made on a comparable basis using the budget structure proposed for the fiscal year 2023 request.

port the implementation of the Administration's Executive Order on Advanced Racial Equity and Support for Underserved Communities through increased engagement between the Nuclear Security Enterprise and Historically Black Colleges and Universities, Tribal Colleges and Universities, and other Minority Serving Institutions. It will also foster greater engagement with students from diverse backgrounds through internships, apprenticeships, and fellowship opportunities, in coordination with other DOE offices.

IMPROVING INFRASTRUCTURE AND OPERATIONS

A resilient, flexible, and scalable infrastructure is the foundation of a modern nuclear security enterprise. Approximately 60 percent of NNSA facilities were beyond their 40-year life expectancy at the end of fiscal year 2021 with multiple facilities dating back to the Manhattan Project. Consistent congressional support and sustained funding have enabled NNSA to make progress on some of its most pressing infrastructure needs and is vital to ongoing efforts to fully recapitalize facilities, office buildings, power grids, roads, and equipment.

The fiscal year 2023 budget request for Infrastructure and Operations is \$2.63 billion, an increase of \$144 million, or 5.8 percent, over the fiscal year 2022 enacted amount.⁴ This increase will enable NNSA to incorporate lessons learned from the Infrastructure Modernization Initiative that will help streamline construction practices to save time and money on low-risk, non-nuclear, construction projects. NNSA remains grateful for congressional support that raised the minor construction authority from \$10 million to \$20 million in fiscal year 2018. Since fiscal year 2018, NNSA has completed 16 minor projects valued between \$10 and \$20 million. NNSA intends to build on these accomplishments and the additional authority granted by Congress in the Fiscal Year 2022 National Defense Authorization Act (NDAA) which raised the cap to \$25 million to accelerate the pace of recapitalization.

Across the enterprise, NNSA is using data-driven, risk informed tools and initiatives to accelerate the delivery and reduce the cost of commercial-like construction projects. In fiscal year 2019 NNSA established the Enhanced Minor Construction & Commercial Standards (EMC2) pilot program to explore and challenge NNSA's execution of low-risk construction projects. There are currently 10 projects in the pilot, including the Lawrence Livermore National Laboratory's Emergency Operations Center (EOC) which was the first pilot project to be completed earlier this year. In the four projects currently underway, estimated cost savings range between approximately 12–31 percent. Another six projects in the pipeline are expected to realize savings between 17–38 percent.

As DOE/NNSA confront climate change, we recognize that more frequent and higher intensity storms, wildfires, and extreme temperatures have the potential to disrupt NNSA's mission and pose a national security risk. NNSA currently utilizes a prioritization methodology for infrastructure recapitalization that takes sustainability and resilience into account along with measures such as safety and mission risk. In fiscal year 2023 NNSA will increase its emphasis on climate resiliency through the Energy Resilient Infrastructure and Climate Adaptation (ERICA) initiative. ERICA utilizes direct-and indirect-funded infrastructure programs and alternative financing to address adaptation and resilience.

DEFENSE NUCLEAR SECURITY EFFORTS

The Office of Defense Nuclear Security (DNS) provides protection for NNSA's infrastructure, personnel, and critical assets necessary for the successful execution of important national security missions. The fiscal year 2023 budget request for Defense Nuclear Security is \$882.3 million, an increase of \$38.2 million, or 4.5 percent, over the fiscal year 2022 enacted level. DNS has experienced increased program requirements recently that require additional resources to maintain sufficient capabilities. This includes additional allocations for plutonium pit production efforts, preparation for UPF operations, and other projects. DNS remains focused on recapitalization and improvement of physical security with several new projects and the deployment of new systems. Efforts are also underway to counter unmanned aircraft systems. The first such counter-platform was deployed at LANL in December 2017. Deployment at other facilities is expected to reach completion near the end of fiscal year 2022.

⁴The change from fiscal year 2022 enacted is made on a comparable basis using the budget structure proposed for the fiscal year 2023 request.

CYBERSECURITY AND INFORMATION TECHNOLOGY

The fiscal year 2023 budget request for information technology and cybersecurity is \$445.7 million, \$39.1 million, or 9.6 percent, over the fiscal year 2022 enacted amount. This request funds ongoing operations and invests in improvements across NNSA to modernize both classified and unclassified systems, improves information management and data governance, implements critical aspects of a zero-trust architecture in our networks and systems, and allows for the execution of a robust cybersecurity program.

To strengthen oversight of the cyber program, the budget request includes a recategorization of certain Cybersecurity program investments into the Information Technology program. As a result, the request more clearly reflects investments in cybersecurity tools and services provided to the enterprise, maintains core cyber operations at the labs, plants, and sites, and improves management and transparency of these funds.

DEFENSE NUCLEAR NONPROLIFERATION

For decades, the Office of Defense Nuclear Nonproliferation (DNN) has served as a source of innovative solutions and technical expertise to fulfill one of NNSA's primary missions of reducing nuclear risk. Working with international organizations, partner countries, and the private sector, DNN seeks to eliminate proliferation sensitive materials and prevent the spread of technologies, expertise, and components that would enable the creation of a nuclear or radiological device. The fiscal year 2023 budget request for the DNN account is \$2.3 billion, an increase of \$274 million, or 13.2 percent, over the fiscal year 2022 enacted level. When the use of prior year balances is considered, the account funding increases by \$397 million, or 19.2 percent. The use of prior year balances will allow DNN programs to supplement new budget authority across its programs. This account funds all nonproliferation in the offices of Defense Nuclear Nonproliferation, Emergency Operations, and Counterterrorism and Counterproliferation.

DNN continues to deliver on its objectives and confront current and anticipated proliferation challenges. This includes the growing Russian and Chinese nuclear programs, the invasion of Ukraine, risks related to the Iranian and North Korean nuclear programs, and disruptive new technologies that lower the barrier to proliferation. Globally, DNN has to date eliminated 7,270 kilograms of weapons-usable nuclear material from 48 countries and Taiwan; removed the need to utilize weapon-grade materials at over 108 civilian research reactors and isotope production facilities; converted a cumulative total of 1,201 kilograms of plutonium into an oxide form for disposition; and worked with domestic producers to secure a sufficient global supply of the critical medical isotope molybdenum-99 (Mo-99), which is used in over 40,000 procedures every day in the United States, without the use of highly enriched uranium, to meet the needs of patients in the U.S.

DNN's Nonproliferation and Arms Control Program also continues to cooperate closely with the International Atomic Energy Agency (IAEA) to provide subject matter expertise, implement safeguards, and develop new policies and technologies for the peaceful use of nuclear energy. This is especially important as nuclear power use grows and new reactor technologies are developed as a means for combating climate change. New nuclear safeguards and monitoring and verification technologies are needed to secure materials and to detect proliferation activities early.

DNN also sustains a robust research program that provides space-based sensors to monitor nuclear activities as well as supports efforts to detect proliferation early in the process. Our DNN R&D program additionally sustains expertise in labs and universities, including people and test beds, and develops ways to get ahead of emerging threats.

NUCLEAR TERRORISM AND INCIDENT RESPONSE

The fiscal year 2023 request for the Nuclear Counterterrorism and Incident Response (NCTIR) Program is \$439 million, an increase of \$68 million, or 18.4 percent, over the fiscal year 2022 enacted amount. NCTIR supports two subprograms: Counterterrorism and Counterproliferation (CTCP) and Emergency Operations (EO).

CTCP is tasked with countering nuclear terrorism and proliferation, responding to nuclear incidents and accidents around the world, and building domestic and international partner capacity for emergency preparedness and nuclear incident response. CTCP's unique operational capabilities and highly knowledgeable experts provide a strong defense against the possibility of a terrorist nuclear attack and broader nuclear proliferation, making the office a key element of the U.S. Government's layered defense against nuclear threats. NNSA's "Capability Forward" initia-

tive is an example of this posture. Working with the Federal Bureau of Investigation, NNSA, through CTCP, provides equipment, training, and technical advice to regional counter-weapons of mass destruction teams in 14 major U.S. cities to accelerate life-saving responses to nuclear incidents.

CTCP also manages the Nuclear Emergency Support Team (NEST), a group of highly trained technical specialists able to respond to nuclear incidents and accidents worldwide. NEST's missions include both national security and public health and safety components. NEST capabilities include an extensive nuclear forensics repertoire and advanced sensors to locate and neutralize nuclear threats. Throughout the Ukraine crisis, NEST personnel have been closely involved in United States efforts to analyze potential radioactive threats resulting from military activity in Ukraine, including the monitoring safety and security in and around nuclear power plants and other nuclear facilities. NEST personnel are prepared to rapidly provide information following the use of nuclear or radiological weapons if they are employed in the region.

EO provides both the structure and methods to deploy a comprehensive and integrated approach to all-hazards emergency management, improving the readiness and effectiveness of the DOE Emergency Management System. The fiscal year 2023 budget request supports, among other items, 24/7/365 Consolidated Emergency Operations Center communications and coordination to support the DOE/NNSA Emergency Management Enterprise and Departmental Senior Leadership.

NAVAL REACTORS

The Office of Naval Reactors provides the Nation's submarines and aircraft carriers with unmatched mobility, flexibility, and endurance thanks to its exceptional handling of the Nation's naval nuclear propulsion technologies. The ability to maintain robust fleet capabilities on long-term missions is essential for the security of global trade and our allies. Our ability to maintain a technological edge in this field provides the U.S. Navy with a decisive edge in naval warfare and provides for the security and reliability of the sea-based leg of the nuclear triad.

The fiscal year 2023 budget request for Naval Reactors is \$2.08 billion, an increase of \$163 million, or 8.5 percent, above the fiscal year 2022 enacted level. Funding supports Naval Reactors' three major projects: the *Columbia*-class ballistic missile submarine reactor systems development; construction of the Naval Spent Fuel Handling Facility in Idaho; and the refueling and overhaul of the S8G Prototype land-based reactor in New York to support sailor training and technology testing. Naval Reactors is committed to supporting the safe and reliable operation of the nuclear-powered fleet and advancing technological development to bring improvements in performance, manufacturability, and affordability—for current and future warships.

The Department is an active participant in the AUKUS trilateral security partnership. The Australian, UK, and United States Governments are currently in an 18-month consultation period to establish the best path forward for the delivery of a conventionally armed, nuclear-powered submarine capability to Australia as quickly as possible. As part of the international working group developing non-proliferation and safeguards aspects of the AUKUS program, NNSA will provide technical advice to the interagency and our AUKUS partners on the full suite of requirements that underpin nuclear stewardship to achieve our objective of upholding the highest nonproliferation standards. This cooperation is fully consistent with each partner's respective obligations under the Nuclear Non-Proliferation Treaty. We remain heavily focused on the Administration's long-standing commitment to promoting nonproliferation where possible.

NNSA WORKFORCE

To manage this broad portfolio, NNSA depends upon recruiting, training, and retaining a highly technical Federal and M&O workforce. The NNSA Federal workforce consists of a diverse team of scientists, engineers, project and program managers, foreign affairs specialists, and support staff that perform program and project management and appropriate oversight of the national security missions related to Weapons Activities and Defense Nuclear Nonproliferation. The fiscal year 2023 budget request for Federal Salaries and Expenses (FSE) is \$496.4 million, an increase of \$32 million, or 7 percent, above the fiscal year 2022 enacted level.

NEW ERA OF PROGRESS FOR ENVIRONMENTAL MANAGEMENT MISSION

As important as the missions of today and tomorrow are, the cold war left an indelible mark on America. It is the mission of the Office of Environmental Management (EM) is to address the legacy of nuclear weapons development and govern-

ment-sponsored nuclear energy research that has played a significant role in domestic security and prosperity.

As the largest environmental cleanup program in the world, EM plays a key role in the Department's overarching mission to protect the planet. The Department's fiscal year 2023 budget request of \$7.6 billion will help EM continue to make progress in fulfilling the government's responsibility to clean up the environment in communities that supported nuclear weapons programs and government-sponsored nuclear energy research.

Over the last 30 years, EM has significant progress for the environment, completing cleanup at 92 out of a total of 107 sites. Despite a global pandemic, the program has continued to achieve a set of impactful accomplishments at sites across the country.

Deactivation and demolition work at the Oak Ridge National Laboratory and the Y-12 National Security Complex is reducing environmental risks and enabling research and national security missions. At the Hanford site in Washington State, EM is treating radioactive and chemical waste from large underground tanks for the first time ever on a large scale. At the Savannah River Site in Aiken, South Carolina EM is processing record amounts of tank waste and recently broke ground on the Advanced Manufacturing Collaborative facility which will help meet the needs of the Department's cleanup mission and create an environment to develop a diverse and talented next generation workforce. The EM team in Idaho recently completed buried waste remediation, helping to protect the Snake River Aquifer. More than 200 transuranic waste shipments were received last year at the Waste Isolation Pilot Plant in New Mexico. Cleanup activities at the Brookhaven National Laboratory in New York are complete, as well as environmental remediation work at the Tonopah Test Range in Nevada.

The fiscal year 2023 request for EM, which builds on recent progress, reflects the Department's strong commitment to protecting the environment, enabling national security and scientific research missions, and delivering for communities most impacted by the legacy of the past. The request supports a ramp up in EM's ability to tackle tank waste—one of the Department's largest environmental challenges and financial liabilities. The request will also enable continued progress in infrastructure improvements at the Waste Isolation Pilot Plant and support an increased rate of waste shipments from across the EM program. In addition, EM will continue to advance facility demolition and risk reduction projects across the program.

The fiscal year 2023 request include \$6.9 billion for defense environmental cleanup activities, which covers most major EM sites and includes the Uranium Enrichment Decontamination and Decommissioning Fund contribution. The request of \$1.6 billion for the Office of River Protection will enable EM to remain on track to initiate vitrification of Hanford tank waste by the end of 2023 through the Direct Feed Low Activity Waste (DFLAW) approach. Also at Hanford, the request of \$913 million for the Richland Operations Office will enable continued risk reduction activities including placing another former production reactor into interim safe storage, advancing the transfer of cesium and strontium capsules to dry storage and treating another 2 billion gallons of contaminated groundwater.

At the Savannah River Site, the request of \$1.7 billion supports utilization of capabilities to accelerate the tank waste mission. The request will also maintain a high State of readiness for H Canyon, the only chemical separations facility remaining in operation in the United States.

At the Idaho Cleanup Project, the request of \$379 million supports operations of the Integrated Waste Treatment Unit which will ultimately treat about 900,000 gallons of liquid waste by turning it into a granular solid. The Department will also meet another key commitment to the State of Idaho by completing the transfer of EM-owned spent nuclear fuel to onsite dry storage.

Along with providing for continued Waste Isolation Pilot Plant operations, the budget request supports key modernization and infrastructure recapitalization priorities. Shipments of legacy transuranic waste to the Waste Isolation Pilot Plant will progress from sites across the DOE complex, including the Los Alamos National Laboratory in New Mexico, where deactivation and decommissioning of NNSA's Ion Beam Facility will be initiated in fiscal year 2023. The request also includes \$12 million to support continued D&D efforts for excess facilities at the Lawrence Livermore National Laboratory where the removal of the Livermore Pool Type Reactor was recently completed.

EM's fiscal year 2023 budget also facilitates the Department's broader national security and scientific research missions. The request includes \$499 million for Oak Ridge, which will enable EM to continue cleanup operations at the Oak Ridge National Laboratory (ORNL) and Y-12 National Security Complex excess facilities.

The request also enables EM to advance progress on the disposition of the remaining uranium-233 inventory at ORNL and address transuranic debris and sludges.

In addition to enabling impactful progress at EM sites, the fiscal year 2023 request reflects a planning approach that will boost the Department's ability to complete its cleanup mission and deliver for impacted communities.

The Department is leveraging the expertise of the Savannah River National Laboratory to develop innovative solutions in the fields of environmental cleanup, national security and science and energy security that will benefit EM, the NNSA and other DOE missions.

The fiscal year 2023 request invests in building a workforce for the future that promotes diversity, equity, inclusion, and accessibility. That includes high-quality jobs in environmental cleanup where workers from all backgrounds can make a living and make a difference. The budget request includes \$56 million for EM's newly expanding Minority Serving Institutions Partnership Program. This program will be primarily focused on Historically Black Colleges and Universities and other Minority Serving Institutions with research specialties needed to advance the EM mission.

EM is prepared to put resources to work to enhance environmental protections and remediate sites so they can be transitioned to future uses in local communities that helped the Nation win the cold war and maintain peace for decades. The fiscal year 2023 request represents a significant investment in helping the communities grow and thrive in the future. The cleanup mission itself is aligned with broader environmental justice goals that lead to a vibrant future in all communities.

The budget request further boosts support for the Tribal Nations, Alaska Native communities, and communities near EM sites ensuring they are safe, providing opportunities for local input into clean up priorities and helping build a vibrant future. The request includes Payment in Lieu of Taxes funding for communities near Hanford and Savannah River to support schools, roads and other local priorities. A \$40 million investment is included to establish a new Community Capacity Building initiative. In addition, the EM Los Alamos Field Office was selected as one of five DOE pilot programs for the cross-cutting Justice40 Initiative. This whole-of-government effort will continue to grow in fiscal year 2023 to support the goal that 40 percent of the overall benefits from certain Federal investments, including the remediation and reduction of legacy pollution, flow to disadvantaged communities.

The Department will continue to work hand-in-hand with workers, unions, Tribal Nations, local communities, and Congress to plan for the future of environmental cleanup.

ENHANCING CYBERSECURITY

Geopolitical tensions in Eastern Europe following Russia's invasion of Ukraine have heightened the importance of energy sector cybersecurity and collaboration with energy industry partners. Sophisticated cyber threats from state-sponsored actors such as Russia require updated approaches to enable near-real time situational awareness of malicious cyber activity, including threats to industrial control systems (ICS) that manage physical processes to help operate our Nation's energy system, as well as to awareness of critical information technology systems.

As this committee knows well, DOE has tremendous expertise both at headquarters and across the 17 National Laboratories to help us tackle cyber threats to the U.S. energy sector. DOE, through the Office of Cybersecurity, Energy Security, and Emergency Response (CESER) with the help of these labs, leads numerous efforts ranging from deploying cybersecurity sensors at utilities to partnering with manufacturers to testing their equipment for malicious code. Today, I would like to share three new initiatives that CESER is working on that will help enhance cybersecurity: 1) the Energy Threat Analysis Center (ETAC) pilot efforts; 2) Energy Cyber Sense; and 3) Integrating Cybersecurity in Clean Energy Systems.

1) Energy Threat Analysis Center (ETAC)

In April 2021, the White House launched an effort to address cybersecurity in ICS. The first sprint, which DOE led in partnership with DHS, focused on the electricity sector. We worked with the industry on deploying cyber sensors in the complex operational technology (OT) environment. The goal of this work is to gain near-real time situational awareness of the cyber threats across industry and government. DOE has long had sensors deployed in information technology (IT) networks of energy sector networks through our Cybersecurity Risk Information Sharing Program (CRISP), but as a part of this important initiative, we are now turning our focus to the OT network. Ultimately, we are headed toward establishing what we are calling our Energy Threat Analysis Center (ETAC). The ETAC will enable us to jointly collaborate with industry, CISA's JCDC, and the Intelligence Community to jointly analyze threats and determine the relevant mitigation measures for en-

ergy systems. We recognize that it will take all of us coming together to address these complex and ever-increasing threats to energy infrastructure.

2) Energy Cyber Sense

There is a clear recognition that not only do we need to work with energy sector owners and operators to address cyber threats, but we also need to work with manufacturers and suppliers. To that end, DOE has been working on numerous efforts to address supply chain security issues in the energy sector. Following the passage of the Infrastructure Investment and Jobs Act (IIJA), we are bringing those efforts together and looking to expand them in fiscal year 2023 under the “Energy Cyber Sense” banner, which was created pursuant to Section 40122 of IIJA. This program will be focused on addressing cyber threats to critical hardware and software used in the energy sector. To date, we have already gotten commitments from three of the largest ICS manufacturers to work with us—Schweitzer, Schneider, and ABB/Hitachi—and we are working to bring others to join us on tackling supply chain threats. Additionally, we are also committed to leveraging policy tools such as promoting domestic manufacturing to build critical equipment right here in the U.S., where there is less of a risk of adversaries manipulating hardware or software.

3) Integrating Cybersecurity into Clean Energy Systems

While it is important to address the risks to the energy systems of today, it is equally important for us to be thinking about where the U.S. energy sector is headed 5, 10, and 20 years from now. In fact, we have a strategic opportunity like never before: while we are tackling the impacts of climate change by deploying next generation wind, solar, hydrogen, and nuclear systems, we can build in cybersecurity.

I’ve asked CESER to lead a cross-departmental effort to coordinate cybersecurity across the applied energy and science offices ensure that cybersecurity is a core component of those systems. To that end, DOE just launched a new initiative focused on vehicle-to-grid charging infrastructure and cybersecurity will be component of that effort. Separately, we are engaging closely with clean energy companies on cybersecurity like never before and we’ll be developing cyber training specific to their systems. Finally, we are working on a strategy called “Cyber-Informed Engineering” that we will be releasing soon that will call upon energy companies of all sizes and shapes, academia, standards bodies, manufacturers, and others to come build cybersecurity into energy systems from the point of ideation.

I would also like to take this opportunity to acknowledge the hard work NNSAs labs, plants, and sites for providing subject matter expertise in cybersecurity and critical infrastructure. Their leadership has provided both DOE and NNSA with the ability to leverage shared resources and capitalize on critical subject matter expertise in support of the national security mission.

In the current threat environment, the Department cannot afford to neglect its cybersecurity capabilities, which serve as frontline assets that protect the information, systems, and networks necessary to execute its mission.

I can assure you that cybersecurity will remain a top priority for the Department, and these investments will posture DOE to defend against an ever-evolving landscape of cyber threats.

CONCLUSION

At DOE, new breakthroughs in climate science, engineering, physics, cyber security, and other fields help advance the enduring goal of enhancing American national security. NNSA’s weapons activities, nonproliferation and counterterrorism programs that help reduce global threats, and naval reactors programs all support the continued reliability of our nuclear deterrent which remains the cornerstone of our national defense. Through the rigorous application of nuclear safeguards, safety and environmental standards and cutting-edge engineering and technology, we remain steadfast in reducing nuclear risk and navigating an increasingly complex global environment. We are mindful of the resources and trust that has been placed with DOE and are thankful for the continued support of the Committee and the rest of Congress.

Chairman REED. Well thank you very much, Administrator Hruby. Let me begin with a question for you.

I had the opportunity to participate in the subcommittee hearing and I have some concerns that NNSA does not have a full picture of the effort to produce 80 pits a year, both Los Alamos and Savannah River, which leads me to the question, does NNSA have an integrated schedule of milestones and costs for achieving this? If we do, I would very much like to see it.

Ms. HRUBY. Thank you, Chairman Reed. I think, as we talked before, we have an integrated schedule for each facility that is quite complete. We are in the process of integrating those schedules so that we have a master schedule for the entire plutonium project, including all the peripheral things like security that goes with that, and we are committed to provide you that this year.

Chairman REED. Well, thank you very much. One of the aspects of this that is complicated is that if something happens in one location it would obviously affect the other. It is not just structural. It is also personnel and getting ahead of that would be very important, not only for us but for us. So thank you.

Secretary Granholm, on April 12th, the Administrator wrote to this committee that it had an unfunded shortfall of \$250 million for converting the mixed oxide fuel plant at the Savannah River site for production. Can you tell the committee what this shortfall consists of and whether the Nuclear Weapons Council has validated this shortfall as they committed to do so at the May 11th Strategic Forces Subcommittee hearing?

Secretary GRANHOLM. The \$500 million that is being requested through the letter that Jill Hruby sent is to really fulfill what this committee would like to see happen, I believe, many on this committee, which is to accelerate to the extent we can the production of pits. We will not be able to get to the 2030 goal. We know that. But what this letter does is acknowledge that there are some long-lead items, like gloveboxes, et cetera, that take time, that we know we are going to need, that we can now begin to procure.

With supply chain crunches, et cetera, we believe that we would be in a better position to be able to purchase those now so that when we get to the point where the facility is complete—and, of course, as you know, we are in the middle of a design of that redesign, and that is about 90 percent complete—that we will be able to get people into the building and begin to deal with the plutonium pit issue right away. So that is what the letter really intends to do is to accelerate, to the extent we can, even though it will not get us to the 2030—

Chairman REED. Well, Madam Secretary, that is a very good explanation of the letter. It is very accurate. But a few days later the Nuclear Weapons Council issued a letter indicating that they did not agree with the money. That is my understanding. What is the position of the Nuclear Weapons Council, is essentially the question?

Secretary GRANHOLM. Yes, and I will Under Secretary Hruby speak to this, but it is my understanding the Nuclear Weapons Council will be supportive of that, or is supportive of that.

Ms. HRUBY. Chairman Reed, we are meeting tomorrow as the Nuclear Weapons Council to discuss this budget request. As you heard in the hearing last week, the members of the Nuclear Weapons Council are supportive of this need to bring money up to do the equipment pre-buy so that we can make sure we can construct SRPPF [Savannah River Plutonium Processing Facility] as quickly as possible. You will hear from the Nuclear Weapons Council soon.

Chairman REED. Thank you very much. We would appreciate that, Administrator Hruby.

Madam Secretary, you pointed out how your environmental team has done an extraordinary job over the years. There is still, as I mentioned, the Hanford site and other sites. But at Hanford you are making progress on the low-level radioactive waste, but have you started planning for the high-activity waste in these tanks?

Secretary GRANHOLM. Yes, Mr. Chairman. The budget supports the beginning of the effort on the high-level waste. We also note that this committee had asked for an assessment of alternatives as well. That study is being undertaken right now in parallel with the National Academies' study, both of which should be complete before the fall so that we will have an assessment of what the other pieces are, even as we know that we will still be treating some of that high-level waste on site, perhaps to move to vitrification as well.

Chairman REED. Thank you very much, Madam Secretary.

Senator Inhofe, please.

Senator INHOFE. Thank you, Mr. Chairman. Madam Secretary, you answered the question I was going to address adequately, so let me just mention to Administrator Hruby that in the past NNSA officials argued for real sustainable annual growth to keep modernization on track. Now how significantly will our programs be delayed if NNSA faces annual shortages of a half-billion dollars? What is that going to do to us if that continues?

Ms. HRUBY. Senator Inhofe, the \$500 million request is to assure that we do not get more behind by moving money up and making purchases earlier, based on information that we have learned as we have completed our large construction project, the Uranium Processing Facility, and other projects at Los Alamos and around the complex.

So we are totally synced up with the Department of Defense on all of our weapons programs, our deliveries of the modernization programs. It is challenging but we stay in close contact and we are completely synced up. We are just trying to keep, with this request, our infrastructure programs in a way that we can execute those as quickly as possible.

Senator INHOFE. In my opening statement I talked about the condition of some of the facilities that we have there. Do you have any comments on that? Have you looked into that and see what that path forward would be appropriate at this time?

Ms. HRUBY. Yes, Senator Inhofe, since I have been confirmed into this position I have visited the complex, every place in the complex and most of them many times, and, in fact, we have a lot of infrastructure work to do, as you noted in your opening statement. We are developing a long-term infrastructure plan. We have some large projects going right now, and I think they are the right projects, not only the big projects in uranium and plutonium but also projects in explosives and tritium and lithium and depleted uranium and other activities.

But we have so many needs that will go out for a long time, and we are working on a long-term infrastructure plan that includes not only our production complex but also our science and technology facilities.

Senator INHOFE. In other words, you are on it, okay?

Ms. HRUBY. Well, this is going to be long term.

Senator INHOFE. I know it is. I was saying that as a compliment. So go ahead.

Ms. HRUBY. Okay. Well, I will take the compliment. Thank you.

Senator INHOFE. Okay, good. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Inhofe.

Senator Shaheen, please.

Senator SHAHEEN. Thank you, Mr. Chairman. Good morning to both of you. Thank you both for being here this morning and for your work on behalf of the country.

Administrator Hruby, you talked about what we are doing to modernize facilities. Can you also talk about our progress on addressing any potential for cyber hacking to affect our facilities and our nuclear program?

Ms. HRUBY. Thank you, Senator. The cyber issue is very real and very much on our minds all the time. So once Frank Rose and I, my principal deputy, assumed these positions we asked for an independent review of our cyber capabilities. That review was conducted by the Institute for Defense Analysis, and it will be published this summer.

We also have increased our budget for our cybersecurity programs, and we have created a line item in our defense program's budget that looks at digital assurance of the weapons enterprise.

Senator SHAHEEN. So are you comfortable that today we would not be hacked successfully?

Ms. HRUBY. Look, the answer is I think we are doing everything that we can. This is a tricky business, so we have to be prepared in the event that there is a successful hack that we did not anticipate, we do not anticipate, and know how to respond to that. We are working on both sides of this, honestly, both a defensive but what would happen, you know, how quickly, what would we do and what would happen in the event of an attack. But we prevent, you know, many attacks a day in our complex, and we hope to continue to be successful at doing that.

Senator SHAHEEN. Secretary Granholm, do you share the view that we are doing everything we can in the Department of Energy to address potential hacking that could affect our nuclear program?

Secretary GRANHOLM. Thank you, Senator, for the question, because it is so important, especially in the global context that we are in. Obviously, there are thousands of attempts per day, and we have been successful at not being successfully penetrated. The bad guys are morphing all the time, and they are continuing to enhance their capabilities, which is why when the Administrator says they did an assessment, I mean, part of the challenges in that assessment are making sure that we have got the IT professionals that are able to continually keep us on the cutting edge. I know they have engaged in a program to do recruiting, and we have also not just in cyber but across the NNSA complex increased pay because we want to make sure we can retain and attract the professionals that the private sector is also vying for.

The Department and the NNSA I know have continually installed next-generation technology to monitor, to detect, to address, to be able to make sure we know what is happening on the system. But it is a continuous battle, and we will be vigilant all the way.

Senator SHAHEEN. Well, thank you both very much for that. As you point out, it is critical and it is not at all clear in this environment what the next threat is going to be.

Certainly Russia's unprovoked war in Ukraine, in particular, underscores the urgent need for modernization of our nuclear efforts. Obviously, it also underscores the challenge that we are facing with energy. Secretary Granholm, to get off the budget a little bit and talk about what is happening with Russia's weaponization of energy, can you talk about what we are doing to work with our partners to address Russia's efforts to cut off Europe? Earlier this week they cut off Finland. Last week it was Bulgaria. What are we doing with our allies to try and address the energy concerns that they have as the result of the war in Ukraine?

Secretary GRANHOLM. Yes, thank you, Senator. As you have noted, this has really caused an alliance of our allies to make us stronger than we have ever seen. It is clear that everyone needs to become independent of Russian oil and gas, and, of course, for those allies that have been significantly reliant upon it is a great challenge.

So we have been, the Department of Energy and our allies—in fact, I have a ministerial today with the U.K.—everyone is looking at next-generation technologies for making sure we do not see this again, whether it is next-generation nuclear or hydrogen, et cetera. But we also are looking at the today. So, of course, the United States is doing what it can to permit the export of liquified natural gas to Europe to make sure that they have the ability to wean themselves off of Russian gas.

The oil situation is really challenging because Russia's actions have pulled 1.5 million barrels a day off of the global supply. The President's release of 1 million barrels a day from the Strategic Petroleum Reserve is set to try to stabilize those prices.

But the bottom line is we are working with our allies on all manner of being able to help make them and help make ourselves independent from the volatility of fossil fuels, especially from countries that have petro-dictators that weaponize energy, and ultimately, many of these countries, most of these countries see the movement to clean energy as a way to, in the medium and long term, pursue energy independence, since no country has ever been held hostage to access to the wind or access to the sun.

Senator SHAHEEN. Thank you very much.

Chairman REED. Thank you, Senator Shaheen.

Senator Rounds, please.

Senator ROUNDS. Thank you, Mr. Chairman. Secretary Granholm, Administrator Hruby, thank you to both of you for your service to our country. I would like to begin with a question for Administrator Hruby.

The W80-4, which is the nuclear weapon itself that would be on the Long Range Standoff weapon, the new LRSO, the integration between those two will be key in terms of developing the weapon system that would be carried by our bomber force, both the B-52 and eventually the B-21 stealth bomber. The timeline and integration with the B-21 and the B-52 is crucial to modernizing our nuclear deterrent.

The W80-4 appears to be continually slipping to the right in terms of its development. We have got some concerns about that timeline, and specifically that the individual components in the development of this system just simply do not seem to be meeting up with the timelines that had been earlier developed in terms of getting it all put together.

To the extent that you can in this open forum, can you explain the integration efforts between the W80-4, the weapon itself, and the LRSO, the system that is going to carry it, and the individual platforms such as the B-21 that are being developed in order to deliver this weapon, and are the first production units of the W80-4 still slated to be delivered in 2025?

Ms. HRUBY. Thank you, Senator Rounds. Let's see. We work continuously with the military to make sure the W80-4 and the LRSO missile are aligned. The LRSO missile initial operating capability is in 2030. We had initially put the W80-4 first production unit in 2025 as a way to have space between all of the systems that we are working on today. There are a few components, a handful of components on the W80-4 which will have difficulty making that FPU, but we are completely synced up on being able to produce the W80-4 for the LRSO initial operating capability.

Senator ROUNDS. The GAO [Government Accountability Office] had reported that the NNSA would enter phase 6.4, which is the production engineering, in late 2021. However, the NNSA now projects entry into phase 6.4 in June of 2022. We are 15 days away from that. Are you going to make that goal?

Ms. HRUBY. We will, this summer, lay out a new schedule for the W80-4 that has an updated FPU that the military will be, again, completely approved and synced up with.

Senator ROUNDS. Thank you. Also for Administrator Hruby, according to statute—and I think the chairman alluded to this in his opening questions to you—according to Federal statute in law now, if DOE does not certify that it can meet plutonium pit production requirements the Nuclear Weapons Council chairman is required, by law, to submit a plan to enable the nuclear security enterprise to meet these requirements. Again, according to statute this plan shall include the identification of DOE resources that the chairman determines should be redirected to support the plan to meet the requirements.

Administrator Hruby, to the best of my knowledge such as a plan has never been sent to the Congress defense committees. As a statutory member of the Nuclear Weapons Council, can you tell me are you aware of that statute, do you intend to comply with that statute, or do you need to get back to us on what your plans will be?

Ms. HRUBY. The Nuclear Weapons Council has looked extensively at the ability to make 80 pits per year and determined that money was not enough.

Let me just say a little bit more about the idea of having a plan to use additional resources. You know, I am an engineer. I spent time with blueprints of the Savannah River pit production facility, trying to find every angle that we could accelerate the design and the construction and then the ability to produce pits there. There is no path to produce pits. There is no way to do that that would not sacrifice our long-term need to produce the minimum 50 pits

per year at Savannah River forever more, or at least as far as we can see into the future.

So anything we do now actually puts at risk the longer-term need. It would delay our ability right now if I redirected resources to look at this issue of what does it take to get to 2030. I believe, and the Nuclear Weapons Council believe, a better path is to figure out how we meet the needs—and we think there is a path—to maintain safe, secure, reliable, credible deterrent and the Sentinel without the pits in 2030.

Senator ROUNDS. My concern, Administrator Hruby, is that under the statute there is a redirection that is required, and if that is the case that hurts other programs that are equally as important within DOE. This is the time of the year in which allocations are made and budgets are developed and appropriations are planned for, and if there needs to be additional direction or additional appropriations made, I am simply stating that this needs to happen now and that we should not be waiting another year or delaying another year if there are items that should be appropriated, or at least the Congress should be doing to make sure that DOE has the resources necessary to accomplish all of those items that DOE has been authorized to move forward on.

I simply think that the statute, in particular, was designed to make sure that Congress was aware if you did not have the resources to meet the necessary minimum requirements in terms of the nuclear production capabilities. It seems to me that what you are telling us is that we are so far down the line that you simply do not see a path forward in which we are going to meet those minimum requirements.

Ms. HRUBY. That is correct. The 2030 requirement, the Nuclear Weapons Council, and I am a member, has agreed that we cannot meet that requirement, and it is not resource dependent. The request for the additional money, the \$500 million, was aimed at getting as close to that requirement as possible.

Senator ROUNDS. Thank you. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Rounds.

Senator Warren has arrived. Are you ready, Senator Warren?

Senator WARREN. Always ready. Thank you. So thank you, Mr. Chairman.

The cryptocurrency market has exploded over the last few years, driven by the popularity of Bitcoin, which amounts for about 40 percent of the entire crypto market. Bitcoin's network is secured through a proof-of-work algorithm which involves miners using powerful computers to guess a random string of numbers in order to verify transactions and win a Bitcoin reward. The computational work required is deliberately inefficient, and it requires increasing amounts of energy consumption as more minors compete.

Now today, Bitcoin consumes more electricity than countries like Sweden and Pakistan. That is a country with more than 220 million people. In fact, a single Bitcoin transaction uses the same amount of power as the average U.S. household uses in 72 days, and a single large crypto mining facility, typically a warehouse filled with rows and rows of servers, can consume as much energy as a quarter of a million houses in the same period of time.

So Secretary Granholm, one of your key responsibilities is to address energy challenges facing our country. Does the Federal Government currently know how many crypto miners are operating in the United States and how much energy they are consuming?

Secretary GRANHOLM. No. The DOE does not explicitly track electricity consumption associated with cryptocurrency operations, and I would love to work with you on making sure that this happens.

Senator WARREN. Well I am glad to hear that because I am really concerned if we are not tracking this information, because the one thing we do know is that more and more Bitcoin mining operations are moving offshore. Between 2019 and 2021, the United States' share of global mining increased from 4 percent to 35 percent, meaning that over a third of the global computing power dedicated to bitcoin mining is now drawn from computers in the United States that are spitting out random numbers around the clock.

Mining is increasing emissions from coal and natural gas generation, especially when miners bring old, polluting, fossil fuel plants around the country online. It also is driving up electricity prices for consumers and small businesses in those same communities. That is why I have written to several of the largest crypto miners in the United States, asking them for information about the environmental impacts of their operations. But I think that our agencies can do more here as well.

So Secretary Granholm, I know that you are working with other agencies on a report on crypto's climate impact as part of the President's Executive order on digital assets. Do you think it would be valuable if we had additional information about the impact of cryptocurrencies on our environment and on our energy grid?

Secretary GRANHOLM. Absolutely.

Senator WARREN. You want to elaborate on that?

Secretary GRANHOLM. I mean, it is critical to understand the strains upon the grid, especially as we face increased use of the grid for other purposes. I mean, the Bipartisan Infrastructure law gave us funding to be able to expand the capacity of the grid, but the projections of the expansion of the capacity of the grid that most modelers use have not taken into full account the huge energy suck that cryptocurrency represents.

While we add electric vehicles to the grid, for example, we have also got to take a look at these other uses because that will require significant additional resources to be able to respond to if we do not do something else.

Senator WARREN. Thank you. You know, addressing crypto's risks is not just a job for financial regulators. It is a job for climate regulators as well. Crypto mining could undermine our progress to fight climate change, and I look forward to working with you to keep that from happening.

Before I close I would just like to turn to you very quickly, Ms. Hruby. We have gone over this in previous hearings but I want to reiterate to my colleagues that I remain deeply concerned about our pit production plans. Many of these problems I know predate your tenure, but let us be clear here. NNSA does not know how much this program will cost, the costs we do know about have doubled in a matter of months, and now your office is already asking for a half a billion dollars more than the budget request, even

though the Nuclear Weapons Council has said it will not bring us any closer to reaching our production goals by 2030.

NNSA has had a terrible record of mismanagement and it seems too likely that this will be another case study in wasting billions of dollars in taxpayer money.

So I am out of time but I just want to register that concern.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Warren.

Senator Tuberville, please.

Senator TUBERVILLE. Thank you, Mr. Chairman. Thank you for being here today.

Secretary Granholm, approximately 20 percent of our grid is nuclear. Correct?

Secretary GRANHOLM. Correct.

Senator TUBERVILLE. How many of our nuclear plants will reach the end of their lifespan in the next 20 years?

Secretary GRANHOLM. That is our concern, is that a good number of them, whether they reach the end of their lifespan or there may be communities that decide that they want to go in a different direction. We want to keep our nuclear fleet afloat, which is why we just issued a civilian nuclear credit to be able to do that. We want to make sure that we have got additional nuclear opportunities.

Senator TUBERVILLE. So basically a major of them in the next 20 years—

Ms. HRUBY. It is a good—

Senator TUBERVILLE.—running their last. Thank you.

Next-generation energy. So we are going to try to double our energy capacity, keep it carbon neutral, and retire 20 percent of the cleanest energy sources on the grid. That is what we are going to try to do. That is our plan.

Secretary GRANHOLM. I would not say that we are going to try to retire 20 percent. We want to be able to replace those. We want to be able to add additional advanced nuclear opportunities.

Senator TUBERVILLE. You know, many Americans are fearful of nuclear power. They have a right to be. Most of us grew up in this era. You know, decisions made by the Atomic Energy Commission and Congress in the 1960s and 1970s prioritized economics and building nuclear weapons over safety. It was not very safe.

Are you familiar with the thorium molten salt breeder reactor that Oak Ridge successfully tested in the '60s?

Secretary GRANHOLM. I am familiar that they did, yes.

Senator TUBERVILLE. Yes. Thank you. Alvin Weinberg, who was the director of Oak Ridge and worked on the original Manhattan Project, called the thorium reactor, quote, "only a little less important than the discovery of fission," end quote. That is pretty important. It is one of the safest designs ever tested. In fact, a molten salt breeder reactor based on a thorium cycle cannot melt down—it is not like the reactors that we use nowadays—and it actually consumes nuclear waste.

At its heart, this reactor contains uranium-233. We have the world's largest supply of uranium-233 right in Oak Ridge, Tennessee. I think you are familiar with this. But your Department was tasked to irreversibly destroy our supply of U-233. Is that correct?

Secretary GRANHOLM. Yes. We are diluting and disposing of it.

Senator TUBERVILLE. Down-blending it. Yes. Thank you very much.

So we are spending \$50 million a year to down-blend and destroy this resource when, in fact, in 2008, the Department of Energy issued reports cautioning that we should not destroy uranium-233. Have you read these reports?

Secretary GRANHOLM. I have not read that one from 2008.

Senator TUBERVILLE. Okay. In fact, in 2008, the report calls U-233 an irreplaceable natural resource. Congress has asked ranchers on this. Are you familiar with that, we have asked ranchers? Okay, and appropriations bill in 2021 required the DOE to inform Congress about the potential of 233. Do you know when this report was due, Ms. Granholm?

Secretary GRANHOLM. When was it due?

Senator TUBERVILLE. 2021. I do not know why, but this report is still not finished, and to me it is a very important report. If we are going to do away with gas and we are going to try to cut back on our oil supply, we have got to find some way to generate more power in this country, clean power. We are all for that.

My colleague, Senator Warren, and I do not see eye to eye on a lot of things, but we do agree on how egregious the mismanagement and disregard for civilian oversight is within our Department of Energy. We have got to pay attention to facts, and these are facts that our scientists—we all want to follow science—this is facts that scientists have come up with. We have a national treasure that could solve our nation's clean energy problems and also have been proven invaluable in the fight of cancer, and we are destroying it. It's by our own admission the Department of Energy says destroying U-233 is a terrible, terrible mistake, and we just seem to be overlooking it.

Yesterday, Senator Marshall and I introduced a bill to save U-233 called the Thorium Energy Security Act, and I hope and pray that this body will halt the Department of Energy from down-blending this to give us an option to making clean energy for our kids' future, for our grandkids' future, and all of us in the future, because we see what is happening as we speak with all the problems that we are having with cutting off our energy supply and oil supply all at one time. We have to have a plan to make amends for that that we are not using.

Thank you very much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Tuberville.

Senator KAINE, please.

Senator KAINE. Thank you, Mr. Chair, and thank you to the witnesses. It is great to be together with both of you.

Last week I co-chaired a Seapower and Readiness Subcommittee hearing, together with Senators Hirono, Cramer, and Sullivan, and we talked about the challenges facing implementing the Shipyard Industrialization Optimization Program, this long-term modernizing and recapitalization of the Navy's century-old public shipyards. In a similar vein, the origins of many of our nuclear Federal research labs and development facilities—Sandia, Los Alamos, Lawrence Livermore—date back to World War II.

Last year we had testimony by Admiral Caldwell, and he noted, quote, "Without recapitalization of our facilities we will be unable to effectively support nuclear fleet operations and advanced research and development (R&D) efforts at the level required by this complex technology."

Does the Department have a master plan that would be an equivalent to the SIOP [Shipyard Industrialization Optimization Program] on the shipyard side for the recapitalization and modernization of our facilities?

Ms. HRUBY. Let me address the naval reactors part of that. As you know, there is more than one organization that takes care of those. We do not take care of the shipyards but we do take care of the propulsion capabilities in the Naval Reactors Program with NNSA. We are putting a lot of money into doing just what you say, to making sure we are building test facilities so that they are modern and consistent with the new propulsion systems that are coming online. We are building the spent fuel handling facility that will allow us to deal with the larger reactors that are used in our fleet today. We are increasing our R&D budget in Naval Reactors. As Admiral Caldwell says, we can no longer assume that we will have the best systems in the world if we do not invest in R&D.

So I feel that the fiscal year 2023 budget for naval reactors is paying a lot of attention to the research and the facilities that we need for naval propulsion going forward.

Senator KAINE. Ms. Hruby, let me just follow up on that. I appreciate that we are making investments. I guess the thing about the SIOP that interests me, on the Navy side, is there is this 20-year master plan and every year they make investments against it, and we can measure against the plan. Are we proceeding according to the plan? Are we making the progress? We hope.

So I understand we are making investments in the infrastructure you described but are those investments pursuant to a 10-year master plan or a 20-year master plan that would enable us to measure how the investments we are making will get us to the endpoint that we want?

Ms. HRUBY. Senator Kaine, I would like to talk to Admiral Caldwell some more about this and get back with you.

Senator KAINE. That would be helpful. I mean, just as an example, NNSA estimates that the reactor plant design for the Columbia-class subs will be completed by 2027, so the design will be completed by 2027. I just wonder, are we making the investments that will enable us to get to that point? So again, how the investments match up against the plan is what I am interested in.

Secretary Granholm, one question for you. There is only a handful of universities in the country that have a four-year nuclear engineering program, 17. While there are approximately 47,000 mechanical engineering graduates and 17,000 computer engineering graduates annually, there are historically less than 950 graduates from a nuclear engineering program every year.

So whether the field is nuclear engineering or applied mathematics and physics, I worry about whether the pool of talent for the important missions of your secretariat and the related agencies is potentially shallow. What are you doing, if anything, to focus on the needs of the workforce in this area?

Secretary GRANHOLM. Yes. Thank you, Senator Kaine. It is really a very large concern across all the scientific enterprise, right, including our national labs. We want to make sure we have got enough STEM [science, technology, engineering, math] graduates as well as nuclear scientists to be able to fulfill the mission. I know that Under Secretary Hruby has been taking action the NNSA side. I can tell you that we have ramped up our efforts at recruitment, at showing up at universities to directly pitch. We have engaged in new relationships with HBCUs [historically black colleges and universities] and MSIs to be able to ensure that we have a diverse pool of scientists and engineers.

The point is we want to make science, technology, engineering, math, of course, leaning into nuclear, exciting. I think that the openness now on the civilian side to look at nuclear as power, advanced nuclear reactors, et cetera, has created a great awareness. Obviously, the skills that come from the military are very prime and a lot of where we get our workforce. But we are looking at every avenue to increase recruitment and increase the pipeline of those who are interested in this as well.

I do not know if you want to say anything further, Ms. Hruby.

Senator Kaine. I am over my time, but I appreciate that answer, Secretary, and I can tell the Administrator was jumping in to say the same thing, so this is on your radar screen.

Ms. HRUBY. It definitely is.

Senator Kaine. That is very apparent. Thank you so much. I will yield back, Mr. Chair.

Chairman REED. Thank you, Senator Kaine.

Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman. Thanks to both of the witnesses for being here.

Administrator Hruby, let me start with you. As you know, we are very proud, in the state of Missouri, of the work that is done at the Kansas City National Security Campus to support the nation's nuclear enterprise. I just wonder if you can give me an update on the NNSA's efforts to ensure that the Kansas City campus has the capacity it is going to need, the additional capacity it is going to need to meet production requirements in the coming years.

Ms. HRUBY. Thank you, Senator Hawley. We are also very proud of the Kansas City National Security Campus, and I am pleased to report we are making good progress on expanding capacity and moving towards the purchase of facilities and land that could help us in the future make sure that we are right-sized at Kansas City.

Senator HAWLEY. Good. Very good.

Secretary Granholm, today in the state of Missouri the average price of gasoline, today, as of this morning, is \$4.10. The average price of diesel is \$5.18. I am sure you have seen the reporting this morning that now AAA is projecting that gas prices will hit a national average—average—of \$6 a gallon by the month of August. Is this acceptable to you?

Secretary GRANHOLM. No, it is not, and you can thank the activity of Vladimir Putin for invading Ukraine and pulling, especially those barrels—

Senator HAWLEY. Oh, nonsense. With all due respect, Madam Secretary, that is utter nonsense. In January of 2021, the average

gas price in my state was \$2.07. Eight months later—eight months later—long before Vladimir Putin invaded Ukraine, that price was up over 30 percent, and it has been going up consistently since. What are you doing to reverse this Administration's policies that are drawing down our own supply of energy in this country, that are throttling oil and gas production in the United States of America? What are you doing about it?

Secretary GRANHOLM. With respect, sir, it is not Administration policies that have affected supply and demand.

Senator HAWLEY. How can you say that when the price of gas was up over 30 percent from January—

Secretary GRANHOLM. If you could let me answer.

Senator HAWLEY. Answer my question, and it is my time, Madam Secretary. So why do you not answer my question? From January to August, the price of gasoline was up over 30 percent, in my state alone. It has been a continuous upward tick since then. Here is what your President did when he first came to office. He immediately reentered the Paris Climate Accord. He cancelled the Keystone Pipeline. He halted leasing programs in ANWR [Arctic National Wildlife Refuge]. He issued a 60-day halt on all new oil and gas leases and drilling permits on Federal lands and waters. That is nationwide. That accounts, by the way, for 25 percent of U.S. oil production. He directed Federal agencies to eliminate all supports for fossil fuels. He imposed new regulations on oil and gas and methane emissions. Those were all just in the first few days. Are you telling me that has had no effect on our energy supply?

Secretary GRANHOLM. I am telling you that 94 percent of the oil and gas executives that were surveyed by the Dallas Fed said that Administration policies had nothing to do with the increase in the price of oil, and therefore the price of gasoline.

Senator HAWLEY. I am not interested in the opinions of these people. I am interested in the facts.

Secretary GRANHOLM. Those are the people who are running—

Senator HAWLEY. Are you telling me—

Secretary GRANHOLM.—the oil and gas industry—

Senator HAWLEY.—that these policies had no effect?

Secretary GRANHOLM. I am telling you that they had no—

Senator HAWLEY. Is that your testimony—

Secretary GRANHOLM.—impact.

Senator HAWLEY.—that these policies had no effect?

Secretary GRANHOLM. I am telling you—I am telling you—

Senator HAWLEY. Are you telling me—Madam Secretary, are you telling me, under oath, that these policies had no effect?

Secretary GRANHOLM. I am telling you that 94 percent of the oil and gas industry—

Senator HAWLEY. I am not interested in their opinion.

Secretary GRANHOLM.—executives say that they had no effect.

Senator HAWLEY. I am interested in the facts.

Secretary GRANHOLM. So no, they did not. Ask Vladimir Putin—

Senator HAWLEY. That is a remarkable statement.

Secretary GRANHOLM.—about the increase in demand and the decrease in supply from pulling Russian barrels of oil off the market,

thanks to, rightly, the United States saying we are not going to take Russian oil, coming out of COVID——

Senator HAWLEY. So what explains——

Secretary GRANHOLM.—coming out——

Senator HAWLEY.—the increase between January and August of 2021?

Secretary GRANHOLM.—coming out of COVID—coming out of COVID there was an increase in demand because people were driving again. When there was no demand the prices dropped. That is a basic law of economics. The prices dropped——

Senator HAWLEY. I have to say, Madam Secretary, with all due respect, your answers are insulting, and they are insulting to the people of Missouri who are looking for action. Now you said 2 months ago your Department was on war footing. What are you doing to bring down the price of gasoline, which has been going up consistently since you took office?

Secretary GRANHOLM. The price of gasoline is derived from the price of oil. The price of oil is at \$110 a barrel, and it is trading——

Senator HAWLEY. What are you doing to decrease it——

Secretary GRANHOLM.—on a global market.

Senator HAWLEY.—is my question.

Secretary GRANHOLM. Sir, if you could let me finish.

Senator HAWLEY. If you would answer my question.

Secretary GRANHOLM. I am answering your question, sir. Oil is traded on a global market. We are paying extremely high prices today, just as they are in Japan.

Senator HAWLEY. What are you doing to get it down?

Secretary GRANHOLM. Just as they are in Germany. Just as they are in South Africa.

Senator HAWLEY. What are you doing to get it down?

Secretary GRANHOLM. We are calling for an increase in supply. We are releasing a million barrels——

Senator HAWLEY. From whom?

Secretary GRANHOLM.—a day from the Strategic Petroleum Reserve to try to balance out supply and demand.

Senator HAWLEY. Who are you calling for an increase in supply from?

Secretary GRANHOLM. It is the largest tool that we have to be able to do that.

Senator HAWLEY. Who are you calling for an increase——

Secretary GRANHOLM. Our allies are also——

Senator HAWLEY.—in supply from?

Chairman REED. Excuse me. Senator Hawley, your time has expired.

Senator HAWLEY. Could I get an answer to this question, Mr. Chairman?

Chairman REED. Senator——

Senator HAWLEY. Who are you calling for an increase in supply from?

Secretary GRANHOLM. From our domestic oil and gas manufacturers. From international oil and gas manufacturers.

Senator HAWLEY. Even as you cancelled their leases?

Chairman REED. Senator Hawley, if you want an answer you have to allow the Secretary to answer.

Secretary GRANHOLM. I said, we have called repeatedly for increases in supply from domestic oil and gas manufacturers, from international oil and gas manufacturers. We want to increase supply, and that is why the President released an unprecedented amount from the Strategic Petroleum Reserve and our international allies also released from their reserves to try to balance out supply and demand while the oil and gas companies increase supply. The Energy Information Administration has projected that they will have increased, in the United States, about a million barrels a day by the end of this year.

Chairman REED. Thank you very much.

Senator King, please. Thank you, Senator Hawley. Senator King, please.

Senator KING. Just for the record, Secretary Granholm, I was in Germany about six weeks ago and gasoline was \$8.50 a gallon. Was that President Biden's fault?

Secretary GRANHOLM. It was not.

Senator KING. Is gasoline at similar levels in Japan and in other areas of the world right now?

Secretary GRANHOLM. Yes, sir. It is traded on a global market, as you have noted.

Senator KING. As you say, it is a global market that a President of the United States has very little control over one way or another. Is that correct?

Secretary GRANHOLM. That is correct.

Senator KING. Ms. Hruby, totally different subject. The basis of our deterrent policy, which is the bedrock of our defense policy, is capacity and credibility. We have not tested, and do not test, and I am okay with that, but my question is, how confident can we be in the non-testing regime of computer modeling to maintain the credibility of our nuclear deterrent?

Ms. HRUBY. Thank you, Senator King. I think we could be highly confident. We have both a very sound science-based Stockpile Stewardship Program and an annual process to assess the reliability of our systems. Year after year our lab directors assess, very carefully, the reliability of the program of our weapons without testing and assure us we have safe, secure, and reliable systems.

Senator KING. We are assured. Are our adversaries assured? In other words, basically I am asking—my question is does the non-test regime, the non-physical, destructive test regime maintain the credibility of the deterrent in the eyes of a potential adversary? In other words, do they believe our computer models?

Ms. HRUBY. Well, it is not just computer models. The answer is I believe that the world understands that we have very safe, secure, reliable, credible nuclear weapons, and they are an effective deterrent.

I also just want to add that we do many things besides model. We do subcritical experiments. We do laboratory-based experiments, and we have a large test database to draw on, and we use that over and over again to assure ourselves—and we are skeptics. You know, that is our role is to make sure that we can be absolutely certain, and we believe ourselves, and the world should believe us.

Senator KING. Thank you. That is what I wanted to hear. That was my concern.

The second level of concern, again, to go back to deterrence, deterrence rests upon mutual rationality, if you will, that the adversary knows that they would be destroyed if they utilized a nuclear weapon. The concern is that that theory does not work with a non-state actor, and I am deeply concerned about nuclear materials falling into the hands of terrorist groups, of non-state actors.

I hope that we have a Plan B involving sensors, detection, intelligence to deal with that threat, because all the nonproliferation efforts that we make, which are positive and good, there is still the danger of nuclear material, now that we know Iran, by virtue of us having abrogated the agreement, has vastly shortened their breakout time. Talk to me about how we deal with the threat of proliferation to a non-state actor of nuclear materials.

Ms. HRUBY. Yes. We still firmly believe that eliminating threats is the best path, and we have, in our nonproliferation program, on our Defense Nuclear Nonproliferation Program, a significant effort to secure materials around the world with a large variety of countries. Of course, we work not only with allies and partners but with adversaries on those programs. In fact, the fiscal year 2023 budget has an increase in our Counterterrorism Program. We still believe we have to pay attention to that while we pay attention to Russia and China.

So we are locking up, removing, eliminating materials. That is the bread and butter of our Defense Nuclear Nonproliferation Program.

Senator KING. I hope you will have urgent attention to that question because that is a true nightmare. As I say, the theory of deterrence does not work in that case so we need to be thinking about all the other provisions, which you have mentioned.

Final quick point, and this is not really a question. But we talked earlier about cyber. A group of us here have worked a lot on cyber in the last couple of years. I have two suggestions that derive from the work that we have done. One is red-team the hell out of your systems. You really do not know how vulnerable you are until you have somebody really good try to hack it in a friendly way. That is number one.

Number two, 85 or 90 percent of successful cyber intrusions start with the desktop, with somebody hitting a phishing email, and that is an individual decision at the desktop, and all the technology in the world is not going to prevent that.

I have a friend in the energy business. In his company they send fake phishing emails to their staff. If you hit on it once you are reprimanded, twice you are in the CEO's [Chief Executive Officer] office, third you are gone. I think there has to be some real urgent pressure on staff to be careful about what they do at their own desktop.

Thank you very much. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator King.

Senator Blackburn, please.

Senator BLACKBURN. Thank you, Mr. Chairman. Ms. Hruby, I want to come to you. NNSA announced that it cancelled solicitation for the management and operations (M&O) at Y-12 and Pantex,

and then they are looking at separate management contracts, and they are going to handle these separately after they have a new M&O [management and operations] established. Then they are going to take the existing contractor and make them the overseer. Sounds complicated, does it not, and really sounds like quite a mess, does it not?

So I agree. I know you have heard today from others about the instability of the contracting processes for NNSA, and I think that we deserve better. Our nation deserves better, and they deserve more consistency. Tennesseans that are working up there want to know how this is going to affect their mission, day in and day out, and what their expectation is. They deserve some dependable, competent leadership.

So what is the timeline for awarding that for Y-12? What are you looking at?

Ms. HRUBY. Thank you, Senator Blackburn. Let me just say that I could not agree more. While this sounds complicated the intention is to get long-term stability and reward our M&O contractor workforce—

Senator BLACKBURN. Okay.

Ms. HRUBY.—which does the work of NNSA. Make no doubt about it—

Senator BLACKBURN. All right.

Ms. HRUBY.—that is the people who we count on.

Senator BLACKBURN. Then what are the local management implications of what you are doing, the path you are going?

Ms. HRUBY. Right now, Pantex and Y-12 share a field office.

Senator BLACKBURN. I know what the setup is. I am asking about the long-term implications. What are those? What are the cost implications?

Ms. HRUBY. Okay.

Senator BLACKBURN. Are you doing this and pushing back on infrastructure, because that is imperative, as you know, and there is a backlog that we are waiting to have addressed.

Ms. HRUBY. Yes. This is in order to get dedicated leadership at Y-12 and at Pantex because of the tremendous workload that we are asking of those facilities, separate dedicated leadership. It may cost a little bit more, but it is worth it because we have to make sure that we can deliver.

Senator BLACKBURN. And timeline?

Ms. HRUBY. We expect that the first RFP [request for proposal] will be out this year. We will have that awarded in 2 years, and we will then, one year later—

Senator BLACKBURN. So we are 3 years away from seeing consistency, is what you are telling me.

Ms. HRUBY. We are, but let me—

Senator BLACKBURN. Okay. Let me move on. You know that that is unacceptable, and you know that that is not fair to the Y-12 employees. But let us continue to discuss that and to work on that issue.

Secretary Granholm, Senator Tuberville mentioned uranium processing, and of course the processing facility in Tennessee is one of our largest construction projects, and, you know, it gets held up time and again with budget by indecision, and the UPF was to

come in in 2025 at \$6.5 billion. That is no longer what is estimated, and the expectation is that it will come online in August 2026. Is that when you expect to deliver UPF?

Administrator, are you wanting to answer that?

Ms. HRUBY. Yes, let me jump in. The answer is yes, that is our plan, and we are looking closely right now, independent experts, at any cost implications.

I just want to say, for \$6.5 billion project executed over 8 years during COVID and during all the supply chain issues we have, we feel this project is incredibly successful.

Senator BLACKBURN. Well, you mentioned yesterday, you told one of my colleagues that an 8-month delay was a commendable accomplishment, and I really disagree with that comment. But we are going to continue to work on it.

Madam Secretary, I want to come back to you on the issue of transportation fuel because that is a top topic. With the estimate being \$6 a gallon during January, we get asked about this every single day—every single day. So what are you doing every day to increase production, because you are eliminating leases, you are eliminating drilling on Federal land. Senator Hawley went through the litany of steps that you all have taken, and we hear from people in the oil industry about the adverse impact of your actions.

So tell me what you are doing every day to increase U.S. oil production so that we return to being energy independent and energy dominant, like we were the day that you went in as Secretary.

Secretary GRANHOLM. Yes. We agree that we want to increase supply. It is why, for example, in the first year of the Biden administration more permits have been issued than—

Senator BLACKBURN. But you do not give the drilling permit.

Secretary GRANHOLM. No, we are giving those permits. We want to, and we have called upon—

Senator BLACKBURN. How many people are working on them? Is it one?

Secretary GRANHOLM. No, it is actually across the government. It is over at the Department of Interior. It is not in my lane.

Senator BLACKBURN. Okay. All right.

Secretary GRANHOLM. But I do know that we have been increasing permitting because we want to see increased production in the United States and abroad, to be able to make up for the lost barrels that have been off the market as a result of Putin's invasion of Ukraine.

Senator BLACKBURN. Ma'am, I would encourage you to stop staying that. We are importing 670,000 barrels of oil per day. The cost of a gallon of gas, the cost of fertilizer, the cost of diesel are at all-time highs.

Secretary GRANHOLM. I know.

Senator BLACKBURN. We need your best effort.

Secretary GRANHOLM. We are working on this every day to the extent we can, given that it is a global market and oil is traded—

Senator BLACKBURN. It is.

Secretary GRANHOLM.—on a global market.

Senator BLACKBURN. Thank you, Mr. Chairman. I am over time.

Chairman REED. Thank you very much, Senator Blackburn.

Senator Kelly, please. Excuse me. Yes, Senator Kelly.

Senator KELLY. Thank you. Thank you, Mr. Chairman.

Administrator Hruby, during your confirmation hearing last year I asked you about the need to recruit the next generation of scientists and engineers to replace an aging workforce, and I highlighted the University of Arizona's relationship with the National Nuclear Security Administration through the Minority Serving Institution Partnership Program. You said that it would be a top priority moving forward, and I appreciate your commitment to that.

As the chair of the Emerging Threats and Capabilities Subcommittee on this committee, I held a hearing a couple of months back on innovation and the development of emerging technologies that will play such a critical role for our future national security. A key takeaway for me is that we cannot innovative if we do not have a highly trained and skilled and motivate workforce to do that.

So considering that your agency has now achieved its highest workforce levels in the last 9 years I have got a couple of questions. How much of that increase is attributable to new STEM-related recruits and, in your view, are this year's numbers the beginning of an upward trend, and is there any opportunity to accelerate that?

Ms. HRUBY. We do have a great need to hire in the complex. Our complex has about 57,000 employees. A great deal of those are in the STEM disciplines. We have to hire to replace retirements, and we have to hire because we are growing. As a result, we have many pipeline programs, as you mentioned, the Minority Serving Institution Programs, other grant programs and centers of excellence, and we have announced a program for apprenticeships for craftworkers and technicians that we need desperately also around the complex.

So we are very worried about the workforce but we feel like we are putting good programs in place to recruit. Like I said, both growth and attrition from retirement and voluntary attrition.

Senator KELLY. So do you feel it looks pretty good for the next 10 years? Are you on a good trajectory?

Ms. HRUBY. I think we cannot ever take our eye off this. It is close. I mean, we feel like this is a real race for talent, and we are trying to do things to improve, especially for both our Federal workforce and our M&O workforce, we are paying attention to pay, benefits, the environment that we offer, and we are stressing how important this mission is so people can feel good, as they should, about the work they do every day.

Senator KELLY. Please let us know what we can do to help there.

Secretary Granholm, so as you and Administrator Hruby know, as you both know, rare earth metals are vital in the production of many of our most complex national security systems, from missile guidance systems to night vision goggles, and the list is very long, actually, and both nuclear weapons and nuclear reactors are on that list. Much like the semiconductor industry, a very high percentage of our rare earth metals are sourced overseas, causing potentially catastrophic supply chain interruptions in our production of these complex systems.

This is, in part, what led me to sponsor the Restoring Essential Energy and Security Holdings Onshore for Rare Earth Act of 2022. I know it is a mouthful, and I sponsored that with Senator Cotton.

This legislation would create a strategic rare earth metal reserve to limit the impact of those potential interruptions.

So for either of you, first of all, how vital are rare earth metals to the production of our nuclear weapon systems and also our ship-board nuclear reactors, and what is the risk posed by reduced access to rare earths?

Secretary GRANHOLM. Yes. Thank you for your leadership on this. This is a moment where we have to look at all of the things that we used to rely upon other countries for when we have them within our geographic boundaries. Rare earth minerals are critical for the nuclear weapons cycle but it is also critical for a whole array of other things, including electric vehicles, as you know.

The President and the invoking of the Defense Production Act—and thank you for supporting the supplemental for Ukraine which funded that to the tune of \$500 million—very important for us as we move forward. We will be working with DoD to make sure that we are sourcing, doing responsible extraction, processing. Your support, for example, of the Bipartisan Infrastructure law that allowed for us to put out a funding opportunity announcement for processing, because the United States does not do any processing of critical minerals either.

So that whole chain, we need to be doing here. Thank you for your leadership on it.

Senator KELLY. I do not want to go too far over but yes-or-no answer from each of you. Do you agree it is important that we have a strategic reserve of rare earth minerals to hedge against potential supply chain issues?

Secretary GRANHOLM. Yes.

Ms. HRUBY. Yes.

Senator KELLY. Thank you. Thank you both. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Kelly.

Senator Scott, please.

Senator SCOTT. Thank you, Chairman. Secretary Granholm, as you know—I mean, you follow the news—we are hitting record gas prices each and every day. The poorest families in this country are being devastated with gas prices. They are being devastated with electricity rates, heating oil over the winter.

I always thought the purpose of the Department of Energy was to make us energy independent and hopefully get prices down. Since the Biden administration came in office they shut down the Keystone Pipeline, they have attacked the oil and gas industry, they have made it difficult to get permits. The Biden administration has gone out and attacked the oil and gas companies, saying they intentionally do not want to drill for oil here while this Administration makes it difficult to get permits.

Then the latest is they go to Iran and Venezuela and say they want oil from them, and then this week they went and relaxed sanctions on Venezuela so they can drill more oil in Venezuela but not more oil in this country.

So can you explain why your Administration makes it more difficult for us to drill more oil in this country and why you believe it is in our national security interest to get oil from Iran, clearly a dedicated enemy of this country and of our ally like Israel, and

why would you want to do business with Maduro who has committed genocide against his own citizens, and millions and millions of people have left Venezuela because he has forced starvation in his country.

Secretary GRANHOLM. Thank you, Senator. First, the United States will not be importing any oil from Iran or Venezuela. Number two, it is really important to know that this Administration is calling for increased production in the United States and has issued record number of permits for oil and gas drilling. Since this President took office, more permits issued in his first year than issued in the first 3 years of the Trump administration. We are now a net exporter of oil, which just speaks to the amount of production that we have been doing, and we will be at record production by the end of this year.

A survey was done——

Senator SCOTT. If that is true how could gas prices be at the—if that is true, why would gas prices have gone up like it has gone up?

Secretary GRANHOLM. As you know, oil—and gasoline is derived from oil—oil is traded on a global market. The global supply of oil has decreased as a result of the Russian invasion of Ukraine because they used to be one of the world's largest exporters, and countries like the United States have rightfully said we are not going to take any Russian oil because we do not want to finance Putin's war.

Consequently, there have been about 1.5 million barrels per day that have been taken off of the global market. The citizens in Florida and the citizens in South Africa and the citizens in Japan are all paying record amounts because it is traded on a global market. It is why increasing supply is so important. It is why the President has called for 1 million barrels per day to be released from the Strategic Petroleum Reserve, and our allies across the world have also called for increases in theirs, as we are asking for the oil and gas industry to increase production.

Senator SCOTT. So what you just said is not consistent with what I have been given. So if you could get me all that information about over the last, say, 10 years, of all the permits. Do you think it is appropriate that your Administration says the oil and gas companies intentionally do not want to drill for oil?

Secretary GRANHOLM. Well, I think that some are bringing rigs online, and there are some who have said, in shareholder calls, that they are holding off on investing in capital to favor shareholder buybacks. So it is not consistent across the board. But I will say——

Senator SCOTT. It has nothing to do with the fact that you guys attacked them——

Secretary GRANHOLM. No.

Senator SCOTT.—that you attacked the oil and gas industry?

Secretary GRANHOLM. Absolutely no. We are calling repeatedly. I talk to oil and gas industry members all the time. We are calling repeatedly for them to step up at this moment and increase the rig count. It is historically coming back after COVID, where there was a lot shut down, very slowly.

Senator SCOTT. Let me go to my next question. Diesel fuel prices have hit record highs. Last year it was \$3.17. Now it is \$5.63. I just heard a story from a trucker in Orlando who is reconsidering the trucking business because diesel fuel is too expensive. He said the cost of diesel has single-handedly taken us out of the game, one by one, no matter how big you are. My dad was a truck driver. I know how difficult that job is. He and my mom did not make much money. They would be doing better now until diesel prices went up. So I do not know how a family that, you know, is an independent contractor and trying to make ends meet is dealing with this.

What I do not get is, I mean, I do not see that you guys are doing anything to get prices down. You look at around this country. I mean, people are losing their jobs. Every month you are in office gas prices are up. Diesel prices are up. People are losing their jobs. I mean, I do not see anything happening.

Secretary GRANHOLM. We share your deep concern about this. For everyday citizens there is no doubt about it. That is why we have to increase supply right now. It is why we continually call for more investment in rigs to be able to do the extraction necessary to get supply up. It is happening all across the globe. This is why the inflation numbers, a huge number of that, 70 percent, is related to fuel. That is true in the United States. It is true all across the world.

We need to increase supply, even as we accelerate our move to clean energy, but we need to increase supply right now to address the very concern that you raised.

Senator SCOTT. Real quick. If you were in the business and your government was attacking—so if you were in the oil and gas business and your government is attacking, and the President says, “I want to get rid of fossil fuel,” would you want to go and invest a whole bunch of new money?

Secretary GRANHOLM. With oil at \$110 a barrel I do not know that hurt feelings have anything to do with that. I think it involves fiscal discipline, as they say, and the decision during COVID to ramp back and now to take advantage of these high prices.

However, some area increasing, and I will say this. The Dallas Fed did a survey of all of the oil and gas executives, and they found, last month, that 94 percent of them say that the high prices and the lack of production have to do with things other than this Administration’s policies. It has to do with the price of oil on a global market.

Senator SCOTT. It is a pretty good coincidence. It happened right after you guys took office. Thank you.

Chairman REED. Thank you, Senator Scott.

Senator Blumenthal, please.

Senator BLUMENTHAL. Thank you, Mr. Chairman. Welcome to both of you. Thank you for your service, Secretary Granholm, particularly, your service before the Administration as governor of Michigan and as attorney general of that state when we had the opportunity to work together. You have done great work and I appreciate you being here today.

I want to focus on the last part of your testimony dealing with cybersecurity. We are very excited that you are going to be coming to Connecticut tomorrow and visiting the Millstone Nuclear Power

Plant as well as the State Pier, where more wind power is going to be generated. You make the point, I think, very, very well in your testimony that—and I am quoting—“we have a strategic opportunity like never before while we are tackling the impacts of climate change. By deploying the next generation of wind, solar, hydrogen, and nuclear systems we can build in cybersecurity,” end quote.

I would suggest that we need cybersecurity in existing industrial control system—nuclear, wind, solar, not only new ones but those being built—and as Senator Shaheen highlighted, we are vulnerable. In fact, there has been speculation about why the Russians have not attacked us in the cyber space. There are a number of informed theories about why they have not, but clearly, without going into the classified information that we have, they potentially have the capacity to do so. I will be interested tomorrow to hear and see some of your suggestions about how we can safeguard our cybersecurity, particularly on nuclear. I wonder if you can discuss a little bit about more of the specifics now.

Secretary GRANHOLM. Yes. We agree that you have to address the existing enterprise as well as build by design, build cyber in by design. Both are happening. I know that Administrator Hruby has got a whole effort on cyber happening over at the NNSA. They have hired an evaluation to happen, and that evaluator has identified some points of excellence but also some points of challenge.

The points of challenge involve further investment in the workforce, as we have discussed here, as well as in infrastructure that will prevent hacking, prevent penetration. That includes monitoring. It includes detection. It includes addressing on the spot. It includes projection about where things are going.

So all of that must be a really robust part of our investments, and we appreciate so much your and the others who have raised this issue here because this is certainly not a new conversation and it certainly will not be the last conversation we have on this.

Senator BLUMENTHAL. Have you reviewed the security at the Millstone plant, cybersecurity at the Millstone plant, and how would you assess vulnerability?

Secretary GRANHOLM. The Millstone, where we are going tomorrow, you mean? Yes. I have not yet. I am looking forward to coming to learn more as well.

Senator BLUMENTHAL. Well, we hope that you will give us the benefit of your assessment when you finish with your review, because cybersecurity there and at every nuclear power plant has to be regarded with a tremendous urgency, given what the Russians have done in Ukraine in 2015, 2016, and now during the invasion at the site of the nuclear power plant there.

I want to just finish by giving you an opportunity to expand a little bit on the questions that Senator Scott was asking, and I agree totally that the reluctance to produce more is not the result of hurt feelings by the oil companies. Their focus is on the bottom line, and perhaps you could expand a little bit on why they have not produced more and what can be done to persuade them to produce more, even as we go into more of renewables. In the short term production might be helpful, and their reluctance to produce more now.

Secretary GRANHOLM. Yes. Just briefly, I know we are almost out of time, but I think it is a really important point to note, that during COVID there was pressure from the investment community investing in oil and gas companies to say you have got to pull up off of investing in capital and exercise what is known as fiscal discipline. As a result, a lot of rigs and capital investment came offline.

When we were coming out of COVID those rigs did not pick up to the extent that the demand was there, and they will say in large measure it is because Wall Street wanted to take advantage of profits, of the profits of the increasing cost of oil and gas, due to the increasing demand. Just simply supply and demand.

Then it is compounded, of course, by the pulling off of oil on the global market because of the Russian invasion. So a million and a half barrels are off the market, and now you have got a slow ramp-up due to COVID, and now you have got other countries, rightfully so, like the EU deciding perhaps to not take on any more Russian oil, and then you will also have the opening up of the Chinese market because they are coming out of COVID as well.

All of those compound to create a huge pressure on demand, and we want supply to increase. It is not this Administration. It is happening all over the world. As Senator King said, he saw that gas was \$8.00 a gallon when he was in Germany. It is skyrocketing across the world, and this is why we are asking these oil and gas companies to step up, and our allies to step up production right now, to ease that pressure, even as we accelerate the move to clean energy, because ultimately a move to clean energy is the home-grown, secure kind of energy that will make us independent.

Senator BLUMENTHAL. I agree. Thank you.

Chairman REED. Thank you very much, Senator Blumenthal.

Senator Sullivan, please.

Senator SULLIVAN. Thank you, Mr. Chairman. Madam Secretary, I was not going to go into these questions but I just have to disagree with you. I care a lot about energy, right. It is a national security issue. We talk about it here. There has been a comprehensive hostility to the energy sector by this Administration, not necessarily you, day one. I watch it every day. Every day.

So you are saying we need to increase supply. Let me give you just the last 3 weeks. The Department of Interior—again, not you—announced that they are taking half of the National Petroleum Reserve, set aside by Congress for oil and gas drilling in my state, off the table, the most prolific oil reservoir in the world right now. Everybody who explores there finds billion-barrel fields.

Secretary Haaland, your colleague, came to Alaska and announced half of it is off the table. That is not focused on increasing supply. It is the opposite.

Let me give you another one. Last week Cook Inlet Basin—okay, that is the other prolific oil and gas field in Alaska—at the last minute the Biden administration canceled the lease sale. That is exactly the opposite of getting supply on the market.

Three weeks ago, the Council on Environmental Quality issued new NEPA [National Environmental Policy Act of 1969] rules. Everybody and their mother knows what they are. They meant to delay energy projects. I read them in detail. This is the last 3

weeks—NPRA off the table, Cook Inlet lease sale cancelled, and NEPA rules to kill the production of American energy. That is what you guys just did.

Do you have a response to any of that, and I would like details. Maybe you do not know, and look, I am not coming after you. The Department of Interior is a disaster, from day one, and day one President Biden came and said, oh, we are going to stop anything in ANWR. He cannot do that. The Congress of the United States said there shall be two lease sales in ANWR. President, day one, we are not going to do ANWR. Sorry, Mr. President. Your job, under the U.S. Constitution, is to faithfully execute the law. The laws says two lease sales.

So you guys have been, from day one—not you, maybe not you, not as bad—crushing the energy sector, and it is a fact. Rick Scott is exactly right. But can you comment on the three examples I just gave. You say you want to increase supply. Everything I just said is about directly decreasing supply. What about those—NPRA, Cook Inlet, new NEPA rules?

Secretary GRANHOLM. I hear what you are saying.

Senator SULLIVAN. Do you agree with me that those are about limiting supply?

Secretary GRANHOLM. No. It is about limiting supply.

Senator SULLIVAN. Of course they are. When you take leases off the table—

Secretary GRANHOLM. But maybe there are other concerns why a lease might be taken off the table in a sensitive environmental area. Maybe it has nothing to do with—

Senator SULLIVAN. Half of the National Petroleum Reserve of Alaska?

Secretary GRANHOLM. You know, this is not my lane so—

Senator SULLIVAN. Cook Inlet?

Secretary GRANHOLM. I understand that there was no interest on the part of—

Senator SULLIVAN. That is not true. That is fundamentally a lie.

Secretary GRANHOLM. Okay. Well—

Senator SULLIVAN. Again, that is not your—

Secretary GRANHOLM.—again, these are not my areas of responsibility.

Senator SULLIVAN. How about the NEPA rules?

Secretary GRANHOLM. Again, that is EPA [Environmental Protection Agency]. That is not me.

Senator SULLIVAN. No, no. That is the White House, CEQ [Council on Environmental Quality].

Secretary GRANHOLM. Well, let me just say this. We want to see an increase in supply and we want it to be done in a responsible way.

Senator SULLIVAN. The actions I just—

Secretary GRANHOLM. I am just saying—

Senator SULLIVAN.—laid out in the last 3 weeks would indicate directly otherwise.

Secretary GRANHOLM. As I said earlier, and maybe you were not here for that, but there have been, under the Biden administration's first year in office, more permits issued for oil and gas drilling than the first 3 years of the Trump administration.

Senator SULLIVAN. You have 4,600 applications to drill stuck at the Department of Interior, 4,600. I recently checked on this.

Secretary GRANHOLM. There are 9,000 permits—

Senator SULLIVAN. No. Applications to drill. That is very different—

Secretary GRANHOLM.—there are 9,000 permits out there that are sitting unused.

Senator SULLIVAN. Okay. Look, I just happen to fundamentally disagree with you.

Chairman REED. Senator, please.

Senator SULLIVAN. Mr. Chairman, this is an incredibly important issue for the national security of our country. The Biden administration is openly hostile to the energy sector, and then they try to come in front of committees like this and say they are not. It is just not true.

Let me just ask another one. The President is in Japan right now. This is in your area. All of our allies in Asia and in Europe want more American LNG [Liquified Natural Gas]. I think the President is going to announce something along the lines of we should get more LNG. I think you agree with that, Madam Secretary. I would like your views. American LNG to our allies.

John Kerry, though, has come out I know to Japanese officials saying you should be very careful on buying American LNG. Do you agree with John Kerry's approach to going to Asia saying, "Well, you should have reluctance to buying American LNG"? I hope you can disavow that. I have heard that from Japanese officials, telling me that he is saying that. I mean, whose side is this guy on?

So where are you on the exports of clean-burning American LNG to our allies in Europe and in Asia, and do you think the President—my understanding is, I hope he does, he is going to announce some kind of initiative in Japan this week.

Secretary GRANHOLM. I cannot preview what he is going to be announcing but I will say that we believe that American LNG is an important way to help our allies. We, at the Department of Energy, have permitted an additional four LNG terminals for export to the EU. We also have permitted 30 billion cubic feet of LNG, both at FERC and at DOE that have not even begun construction yet. We believe that LNG is one way to help our allies, and we think it is important.

We are also encouraged by the fact that many of the producers of LNG are eager to use the infrastructure associated with LNG to make it hydrogen ready. So both pieces.

Senator SULLIVAN. Good. So just real quick. So assume John Kerry did tell some Japanese officials to be reluctant to buy American LNG. He is not Senate confirmed. He is kind of, in my view, a nobody, with a job in the White House that they will not even give us any information on how much he has spent and how many people he employs. But you are a Senate-confirmed Secretary of Energy. Assume he said that. Can you just openly reject that and say of course we would want our allies to buy American LNG?

Secretary GRANHOLM. I have the greatest respect for John Kerry. I cannot assume anything or believe words put in his mouth. I do believe he is doing an amazing job across the globe, getting commu-

nities and countries to step up to their commitments to reduce their greenhouse gas emissions.

Senator SULLIVAN. I am just asking to answer a simple question.

Secretary GRANHOLM. I understand you are asking me for a hypothetical—

Senator SULLIVAN. Our Japanese allies need to know this. They have come to me.

Secretary GRANHOLM. We have spoken with Japan repeatedly, and Japan is really interested in forming a relationship on LNG in a stronger way. We are supportive of that.

Senator SULLIVAN. So buying American LNG would be a good thing, not a bad thing.

Secretary GRANHOLM. Yes.

Senator SULLIVAN. Thank you.

Chairman REED. Thank you, Senator Sullivan. Thank you, Madam Secretary and Madam Administrator.

We are going to conclude the open—

Senator SULLIVAN. Mr. Chairman, can I ask one final question? It is not for the Secretary. It is a quick one.

Chairman REED. One.

Senator SULLIVAN. For Administrator Hruby. Can I ask you, the nuclear enterprise that you, Admiral Caldwell, and Secretary Granholm are in charge of is really remarkable, and the culture there, what we have been able to do in terms of nuclear-powered Navy vessels, including submarines is a really, really impressive record.

With regard to AUKUS, which I think is a Biden administration initiative that is really, really good and really important, and I have been publicly supporting the President and his team on that initiative, how do we balance the culture and safety of what the nuclear enterprise has been able to achieve for our nation, particularly the nuclear Navy, with the goals, which I fully support, of broader cooperation in that realm with the Australians and the Brits, and are there areas beyond nuclear that you think the AUKUS initiative should encompass? Madam Secretary, to the extent you want to answer that as well. It is an important question, and I want to be very supportive of this very important initiative.

Ms. HRUBY. Thank you. Thank you for your support of AUKUS. I think the naval reactors folks and everybody on the United States and U.K. teams are doing a terrific job during this 18-month study period, and have found paths through this that will preserve and even make better our capabilities and our nonproliferation regime. So I am very optimistic about what this agreement can do.

I do think there are other things that would be interesting to work on in the U.K., Australia, United States. I think there are energy things. I think there are climate things. I think there are science and technology, and I look forward to the possibility of doing that as this agreement matures.

Senator SULLIVAN. Well, if there are things that we can do on the committee to help support it we certainly want to do it. Madam Secretary, do you have any views on AUKUS or what we can be doing?

Secretary GRANHOLM. No, just to pick up on the energy side of things, I know they are going through an election right now, but

I hopeful that whoever survives that will continue to work with us on, for example, hydrogen production. They are doing great work in Australia on that, and I am very close with their minister, my counterpart, on sharing technology ideas and strategies regarding the production but the export of clean hydrogen too.

Senator SULLIVAN. Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Sullivan.

Madam Secretary, Madam Administrator, we are going to conclude the open session and we will reconvene at 11:30 in SVC-217 for the closed session.

Before we do that, though, throughout this discussion there has been references to the Dallas Federal Reserve Report. It is my understanding that the question was asked about what was the number one reason, or the primary reason rather, that there was not increases in production, and the response, 60 percent of those surveyed said it was, quote, "investor pressure to maintain capital discipline." Is that accurate, Madam Secretary?

Secretary GRANHOLM. That is accurate. Fifty-nine percent said that.

Chairman REED. So that is really sort of saying, you know, we are going to hold back our capital and give it to our shareholders. We will just hold it back.

Then I believe also too, and if you can confirm this, that domestic crude oil output today is less than it was in 2019.

Secretary GRANHOLM. You are talking about our crude oil?

Chairman REED. Our crude oil.

Secretary GRANHOLM. It is, but we will be at record production by the end of this year.

Chairman REED. Okay, and then there is 12 million acres, approximately, of leased Federal lands that have not yet been drilled?

Secretary GRANHOLM. Correct. Leases on actually over 20 million acres, on and offshore.

Chairman REED. Very good. Thank you very much for that clarification.

At this point we will recess and rejoin in SVC-217. Thank you.
[Whereupon, at 11:15 a.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEANNE SHAHEEN

SUBMARINE NUCLEAR PROPULSION WITH AUKUS

1. Senator SHAHEEN. Administrator Hruby, what is the status of the negotiations between the United Kingdom, Australia and the Department of Energy's Naval Reactors program regarding the transfer of nuclear propulsion technology to Australia as part of the AUKUS agreement, and how long do you expect it might take for the technology transfer to occur?

Administrator HRUBY. We are approximately 9.5 months into an 18-month consultation period that will determine the optimal path for Australia to acquire nuclear-powered submarines while upholding the highest standards of safety, security, nonproliferation, and stewardship. Although we cannot provide detailed answers due to ongoing trilateral dialogue, the United States is strongly committed to supporting Australia in developing the infrastructure to support a nuclear-powered submarine capability.

2. Senator SHAHEEN. Administrator Hruby, do you anticipate any significant obstacles in that technology transfer process that would complicate the United States' ability to help Australia procure their nuclear powered submarine fleet?

Administrator HRUBY. The 18-month consultation period is being conducted to identify key areas of cooperation required to successfully transfer nuclear powered submarine capabilities. To date, no significant obstacles have been identified, however, there are plenty of challenges that we believe can be sorted out over the next about 8.5 months of study. We understand that the details matter.

3. Senator SHAHEEN. Administrator Hruby, can you provide an update on our collaboration efforts with the U.K. to develop the PWR3, their third generation naval nuclear reactor?

Administrator HRUBY. Naval Reactors maintains close ties with the United Kingdom. As part of our nation's commitment to supporting the U.K.'s naval nuclear propulsion program, Naval Reactors is exchanging naval nuclear propulsion technology with the Royal Naval under the auspices of the 1958 Mutual Defense Agreement, an Atomic Energy Agreement for Defense Purposes.

Within the context of AUKUS, leveraging existing United States and U.K. technologies will be vitally important to meet that goal of bringing an Australian conventionally-armed, nuclear-powered submarine capability into service at the earliest achievable date.

4. Administrator Hruby, has the National Nuclear Security Administration determined whether a transition from weapons-grade highly enriched uranium to low enriched uranium for naval nuclear propulsion systems is feasible?

Administrator HRUBY. Within the context of AUKUS, one of the goals of the 18-month consultation period is how best to bring an Australian conventionally-armed, nuclear-powered submarine capability into service at the earliest achievable date. Leveraging existing technologies will be vitally important to meet that goal, and neither the United States nor the United Kingdom have naval nuclear reactors that use low enriched uranium.

The R&D roadmap for Navy LEU fuel system development is technically challenging and success is not assured in meeting the operational needs of the Navy. It will take significant time and considerable fiscal resources to identify a HALEU candidate fuel capable of long-life and load following operations in a compact reactor. Even if the major technical challenges were overcome, an advanced fuel system using an LEU core would still be less capable and require naval core refueling, standing in stark contrast with today's life-of-ship submarine HEU reactor design. This would in turn be followed by substantial additional deployment costs and significant operational implications for the Navy, bringing the total cost of the effort to tens of billions of dollars. Work accomplished to date has narrowed the scope of potential fuels and validated the scope and magnitude of the technical challenges.

QUESTIONS SUBMITTED BY SENATOR ELIZABETH A WARREN

PIT PRODUCTION

5. Senator WARREN. Administrator Hruby, has the National Nuclear Security Administration considered developing or already developed contingency plans or alternatives to a two-site production plan?

Administrator HRUBY. Prior to the final decision to pursue such a strategy in May 2018, DOE/NNSA performed an analysis of alternatives and selected the two-site solution as the best alternative to meet pit production requirements. This was endorsed by the Nuclear Weapons Council (NWC), which noted that the two-site approach bolsters the nuclear security enterprise's responsiveness and resiliency. An independent study conducted by the Institute for Defense Analyses, while noting the difficulty in completing the proposed Savannah River Plutonium Processing Facility by 2030, also concluded that creation of two geographically separated production facilities supports resilience from external threats and hazards and enables flexibility to mitigate against shutdowns, incidents, or other factors that may impact operations at a single site.

As requested in H. Rept. 116-449, accompanying the Consolidated Appropriations Act, 2021 (P.L. 116-260) DOE/NNSA's Pit Production Contingency Plans report to Congress, conveys DOE/NNSA's plan to meet the needs of the nuclear deterrent and identifies ways to mitigate warhead deliverable risk.

6. Senator WARREN. Administrator Hruby, when will Los Alamos National Lab be able to produce no less than 30 pits each year reliably?

Administrator HRUBY. NNSA remains focused on developing the capability to produce 30 pits per year (ppy) starting in 2026 at Los Alamos.

7. Senator WARREN. Administrator Hruby, is the National Nuclear Security Administration confident that Los Alamos National Lab will be able to meet its statutory pit production schedule for fiscal years 2024, 2025, and 2026, of 10, 20 and 30 pits per year respectively? What are the risks you see?

Administrator HRUBY. NNSA is confident that the path being followed at LANL will lead to a production capacity of at least 30 pits per year. As with any project of this complexity, there are many potential sources of delays, including equipment failures, supply chain interruptions, quality issues with vendor-supplied materials, test failures, etc.

The project requires exquisite choreography among three kinds of efforts—pit production, decontamination and removal of old equipment, and installation of new equipment—with all three often happening on the same day in the same room. The integrated team at LANL has become adept at quickly revising the choreography in response to inevitable disruptions, has become more efficient in its removal and installation efforts, and is creative in its effort to recover schedule margin to allow for future disruptions. Nevertheless, there remains the risk that future disruptions could cause the dates at which LANL demonstrates production rates of 10, 20, and 30 pits per year to slip beyond 2024, 2025, and 2026, respectively.

FACILITY AND INFRASTRUCTURE PLANS

8. Senator WARREN. Secretary Granholm, Administrator Hruby, what cost savings could accrue if the National Nuclear Security Administration concentrated its efforts on completing the Savannah River Pit Production Facility as soon as possible in the early 2030s instead of building two pit production facilities?

Secretary GRANHOLM and Administrator HRUBY. The benefit of achieving rate production at LANL in the 2026 timeframe outweighs any potential cost savings from shifting focus. Both facilities are required to meet national security needs. DOE/NNSA is well down the path of designing SRPPF for a capacity of at least 50 pits per year, which does not by itself meet the nation's pit-production requirement of at least 80 pits per year. DOE/NNSA has not performed a detailed estimate of the added cost of changing the SRPPF design and construction project to meet the full requirement of at least 80 pits per year, as this alternative was rejected in 2018 in favor of the two-site approach.

For SRPPF, DOE/NNSA is examining opportunities for cost savings through stimulating special-purpose supply chains and place contracts for long-lead procurements.

9. Senator WARREN. Administrator Hruby, will the Savannah River Pit Production Facility (SRPPF) project have contingent production capacity beyond at least 50 pits per year? What will be the maximum average capacity of SRPPF?

Administrator HRUBY. SRPPF will provide a reliable production capacity of no fewer than 50 ppy. It will also be possible to “surge” beyond the 50 ppy rate for limited periods. Limited surges may be accomplished with a ramp up of workforce personnel to support a second shift at the facility. Quantitative details about maximum average and surge capacities depend on the details of the pit design and specifications.

10. Senator WARREN. Administrator Hruby, why is completion of the Los Alamos National Lab Transuranic Liquid Waste Facility so delayed?

Administrator HRUBY. There are two main factors that contributed to the delays in the Transuranic Liquid Waste (TLW) facility. The first was a required redesign of the TLW facility and the second was that construction contract bids significantly exceeded the estimated cost of construction and a Congressional notification was required to increase project funding.

During final design reviews as NNSA approached the planned Critical Decision 2/3 (CD-2/3), *Performance Baseline and Start of Construction*, approval milestone in the first quarter of fiscal year 2021, it was determined that the TLW facility would not meet all key performance parameters as designed and necessary design modifications were initiated to ensure the facility would meet all specified requirements and capabilities. The design modification and associated reviews were completed and the request for proposals (RFP) was issued April 21, 2021.

In July 2021, two bids were received for the construction contract, one of which was determined to be non-responsive and was eliminated. The one responsive bid received significantly exceeded the estimated cost of construction. Negotiations were initiated with the one responsive bidder in September 2021, however, the final negotiated price exceeded approved funding. CD-2/3 was approved in January 2022 and

Congressional Notifications were made in February 2022, additional funds were made available, and the contract was awarded in March 2022.

11. Senator WARREN. Administrator Hruby, will the delay in Transuranic Liquid Waste Facility completion affect Los Alamos National Lab's pit production schedule?

Administrator HRUBY. No. The construction contract for the Transuranic Liquid Waste (TLW) Facility (07-D-220-04) was awarded by LANL in March 2022. Construction will continue in fiscal year 2023 and is scheduled for completion in fiscal year 2027. NNSA does not anticipate that TLW construction delays will impact pit production schedules.

12. Senator WARREN. Administrator Hruby, why has the cost of Los Alamos National Lab Transuranic Liquid Waste Facility increased by \$79 million?

Administrator HRUBY. There are two main factors that contributed to the increased cost in the Transuranic Liquid Waste (TLW) facility relative to the Critical Decision 1 (CD-1), Alternative Selection and Cost Range. The first was a required redesign of the TLW facility and the second was that market condition at the time of construction contract solicitation resulted in a single responsible bid that significantly exceeded the estimated cost of construction.

During final design reviews as NNSA approached the planned CD-2/3, Performance Baseline and Start of Construction, approval milestone in the first quarter of fiscal year 2021, it was determined that the TLW facility would not meet all key performance parameters as designed and a project redesign was initiated. The design modifications were necessary to add capabilities to ensure the facility would meet all specified requirements. The design changes, along with additional contract requirements associated with implementation of Executive Order (EO) Executive Order 14042, Ensuring Adequate COVID Safety Protocols for Federal Contractors resulted in an increase in the overall cost of the facility.

In July 2021, two bids were received for the construction contract, one of which was determined to be non-responsive and was eliminated. At the time of the solicitation, market conditions in the area were impacted by increased construction in the surrounding tri-state region limiting availability of construction contractors and workforces, supply chain limitations increasing the cost of construction materials, and the ongoing impacts of COVID-19. The one responsive bid received significantly exceeded the estimated cost of construction. Negotiations were initiated with the one responsive bidder in September 2021, however, the final negotiated price exceeded approved funding. Critical Decision-2/3 was approved in January 2022 and Congressional Notifications were made in February 2022, additional funds were made available, and the contract was awarded in March 2022.

QUESTIONS SUBMITTED BY SENATOR JACKY S. ROSEN

LONG TERM FUNDING STRATEGY FOR NNSS

13. Senator ROSEN. Secretary Granholm and Administrator Hruby, since its inception, the Nevada National Security Site, or NNSS, has relied on its large and remote area to conduct missions for the nation's nuclear weapons and nonproliferation programs, as well as other elements of the national security community. Larger than all other NNSA sites combined and equivalent in size to the state of Rhode Island, NNSS has a vast amount of infrastructure to build and maintain. I am delighted by your recent visits to the Site and welcome the excitement and attention your visits have brought to the important and unique work being conducted there. However, over the past few decades, NNSS has faced unstable and unpredictable program funding, leaving the Site with a degraded infrastructure, despite being a facility of national importance that is responsible for the certification of our nuclear stockpile. I'm pleased that the programmatic situation is now changing in a positive direction but remain concerned that we address this infrastructure funding issue so that NNSS can continue to be a center of excellence for the nuclear enterprise. How are you addressing NNSA's infrastructure modernization challenges and delays—particularly at NNSS—so they do not impact the agency's ability to fulfill its responsibilities, including certification of our nuclear stockpile?

Secretary GRANHOLM and Administrator HRUBY. NNSA fully understands the importance of modern infrastructure to ensure a safe, secure, and effective stockpile; reduce the risk to mission; and improve employee, public, and environmental safety. As you note, NNSA is making significant, strategic investments to support the NNSS workforce and mission by recapitalizing key facilities. During the last five years, NNSA has more than doubled its annual maintenance investment at NNSS,

going from \$28 million in fiscal year 2017 to \$64 million in fiscal year 2023. NNSA partners with NNSS on vital line-item, minor construction, and recapitalization projects to modernize its campus and improve resiliency.

Importantly, NNSA is also investing in new infrastructure for sophisticated scientific experiments that are needed to assess the performance of new and aged nuclear material. The Enhanced Capabilities for Subcritical Experiments program and its associated projects at the U1a Complex demonstrate the NNSA commitment to advancing as well as sustaining the capabilities at NNSS.

14. Senator ROSEN. Secretary Granholm, are you considering innovative approaches to assuring that the NNSS infrastructure is supported and recapitalized, including base funding, to guide future investment planning?

Secretary GRANHOLM. NNSA is committed to working with Congress and our Management & Operating (M&O) partners to generate meaningful progress on infrastructure modernization by maximizing the impact of sustained, predictable funding combined with our data-driven, risk-informed planning and management tools and innovative execution initiatives. NNSA is working to transition its successful innovative streamlining initiatives into standard construction practices that will save time and money, including on larger scale, commercial-like non-nuclear projects. NNSS is a strong partner in these endeavors, particularly the Standardized Acquisition & Recapitalization (STAR) initiative, as exemplified by the completion of Mercury Building 1 which is a net zero, high performance sustainable building, that is now part of NNSA's STAR design library. The Mercury facility STAR design and lessons learned from NNSS are being used at the Pantex Plant for its Flexible Support Facility. Moving forward, NNSA will continue to develop and execute innovative approaches to infrastructure management and evaluate the most effective funding models for infrastructure across the enterprise.

REMOTE SENSING LABORATORY

15. Senator ROSEN. Secretary Granholm and Administrator Hruby, the Nevada National Security Site hosts the Nonproliferation Test and Evaluation Complex, the largest facility for open-air testing of hazardous materials and biological simulants in the world, which trains first responders for nuclear catastrophes. Another equity we're proud to host in Nevada is the Remote Sensing Laboratory (RSL) on Nellis Air Force Base, which provides radiological emergency response teams along the west coast, who stand ready to provide emergency radiological response to anywhere in the world with deployable teams of experts. RSL has been undergoing a number of upgrades to their equipment, including helicopters, detectors, and communications gear, and I'm pleased that you visited them during your recent trips to Nevada. Can you speak to the importance of the NNSS and the Remote Sensing Laboratory and the specialized people and equipment they field? Can you also touch on the importance of continuing to upgrade their highly specialized nuclear detection equipment? To understand the critical role these men and women play, we don't have to look any further than the recent deployment of a team due to Russia's targeting of nuclear facilities in Ukraine.

Secretary GRANHOLM and Administrator HRUBY. The Nevada National Security Site (NNSS) and the Remote Sensing Laboratory (RSL) are key elements of the nuclear security enterprise, particularly in the areas of nuclear counterterrorism and nuclear incident response. The expertise in radiation detection and data analysis resident in Nevada are critical to our ability to provide timely, accurate, and actionable public health and safety advice to U.S. decision makers. As such, NNSS manages several important facilities and capabilities in support of the nuclear security mission.

NNSS includes an area where four nuclear devices were detonated between 1952 and 1957, providing a realistic and safe training area where over 200,000 American first responders have trained since 1998. Additionally, the Nuclear Emergency Support Team (NEST) maintains specialized equipment and facilities in Nevada for the nation's nuclear forensics mission. NEST is responsible for the disassembly, assessment, and disposition of nuclear threat devices in support of national investigations. In addition to supporting the Stockpile Stewardship Program, NNSS provides remote facilities where special nuclear material and nuclear components can be staged for testing national security detection capabilities and techniques.

NNSS also maintains a unique on-site capability for developing weapons of mass destruction device defeat procedures, tools, and data acquisition using large quantities of nuclear material. These facilities support international and interagency technical challenges and exercises, such as the Small Unit Exchanges with our mission partners in the Department of Defense and Department of Justice, as well as

exercises with the United Kingdom and France. NNSS is the sole disposition site for NNSA nuclear forensics and disposition response activities required under standing presidential policy.

Over the last five years, NNSA has committed to modernizing and replacing the entire suite of NEST's radiological and nuclear response tools, including communications equipment, radiation detectors, and the Aerial Measuring System rotary- and fixed-wing airframes. This recapitalization will ensure that NEST can maintain its equipment and expertise to provide the U.S. Government's most effective and advanced nuclear incident response capability.

RSL has a long history of adapting commercial technologies, building custom components, and assembling mission-driven systems to ensure the viability of the nuclear counterterrorism mission. The facility has developed custom-built, highly sensitive detectors and software systems to enable real-time nuclear science expertise and nuclear reconnaissance capabilities for U.S. incident response teams.

In addition to supporting the nuclear incident response mission, NNSS' Non-proliferation Test and Evaluation Complex has provided great value to NNSA's development of advanced technologies and capabilities that significantly improved the United States' ability to monitor foreign nuclear weapons development activities.

Recently, the staff at the RSL have been called into urgent service to prepare radiological detectors for use around Ukrainian nuclear power plants after the unprovoked Russian invasion. The disruptions in reporting of the IAEA radiological detectors as a result of the Russian takeover of the Chornobyl and Zaporizhzhia nuclear facilities highlighted the critical need to augment existing systems with an independent network of remotely monitored sensors.

ENERGY SECURITY AND SOLAR INVESTIGATION

16. Senator ROSEN. Secretary Granholm, the Department of Defense (DOD) is increasing its use of renewable energy because it understands the connection between energy security and national security. Renewable energy technologies, including solar panels, are uniquely capable of withstanding extreme weather events and can cut operational and military base energy costs. By using renewable energy, we are also eliminating our reliance on foreign energy sources and vulnerable supply chains for both fuel and electricity. Unfortunately, the solar circumvention petition filed by Auxin Solar and the Commerce Department's investigation is harming the entire U.S. solar industry and threatening our clean energy goals. I understand the Department of Commerce says that it is undergoing a quasi-judicial process, and the statutory deadline for the preliminary determination is on August 29. However, nothing in statute prohibits Commerce from making a decision before that date. Do you support a swift investigation and a timely resolution to this investigation?

Secretary GRANHOLM. Yes, all parties would benefit from an expedient resolution to the investigation that is supported by facts.

17. Senator ROSEN. Secretary Granholm, current U.S. solar panel manufacturing capacity can only fill 15 percent of domestic demand. What programs at DOE are tackling this problem? And what policy proposals do you recommend enacting in order to support domestic manufacturing to ensure that down the road we are not as reliant on solar imports?

Secretary GRANHOLM. First and foremost, Congress can enact funding in fiscal year 2023 for the proposed \$200 million Solar Manufacturing Accelerator, as proposed in the President's Budget. This funding would accelerate domestic manufacturing to fill key gaps in the domestic solar supply chain through domestic sourcing and innovation. In addition, DOE's Office of Policy is coordinating a series of workshops with domestic solar manufacturers to identify a strategy for utilizing the President's recent authorization for DOE to apply the Defense Production Act (DPA) to tackle this problem. Solar manufacturers may also be eligible to receive capital support through new Bipartisan Infrastructure Law programs, such as the Advanced Energy Manufacturing and Recycling Grant Program. However, ongoing support to offset the higher cost of domestic manufacturing is needed. For that, DOE recommends Congressional passage of refundable manufacturing production tax credits such as those introduced last year in the Solar Energy Manufacturing for America Act (SEMA).

QUESTIONS SUBMITTED BY SENATOR DAN S. SULLIVAN

AUKUS

18. Senator SULLIVAN. Secretary Hruby, I understand that NNSA and Naval Reactors are currently involved in an 18-month study period regarding the optimal pathway to deliver nuclear propulsion technology to Australia as a part of the AUKUS agreement. The United States has only shared nuclear propulsion technology once before, with the United Kingdom. Our Naval Nuclear Propulsion Program is a model of excellence. The same can be said for the UK. How you are balancing the need to ensure the Australians have the same level of stewardship for their program with the need to move out quickly on the terms of this agreement?

Administrator HRUBY. NNSA is part of a broad interagency and trilateral 18-month study period. Nuclear stewardship is a central element of the consultation period. The effort will intensively examine the full suite of requirements that underpin nuclear stewardship with a specific focus on the following areas: safety, design, construction, operation, maintenance, disposal, regulation, training, environmental protection, installations and infrastructure, industrial base capacity, workforce, force structure and—in the case of Australia—IAEA Safeguards.

We continue to analyze multiple options to identify the optimal pathway for Australia to achieve a nuclear-powered submarine capability. However, since nuclear stewardship is such an important part of the culture and safety of operating this unforgiving technology, a focus on stewardship will be foundational to every decision we make as we work to fulfill the tasking set forth in the AUKUS agreement.

19. Senator SULLIVAN. Secretary Hruby, the “nuclear Navy” has a very unique culture within the US Navy. It is the result of a very rigorous training and education pipeline. What training and education recommendations are you considering to ensure a similar culture exists within the Australian Navy?

Administrator HRUBY. The governments of the United States, Australia, and the United Kingdom are currently engaging in an 18-month consultation period to seek an optimal pathway for delivering a conventionally-armed, nuclear-powered submarine capability to Australia at the earliest achievable date. Leveraging existing technologies and training methods and practices will be vitally important to meet that goal. Existing United States and U.K. training and education pipelines provide a foundation of understanding for this consultation period; however, it is premature to commit to any specific recommendations before we review the detailed products of the AUKUS Working Groups. Among the considerations being evaluated within the working groups are governance and regulatory structures and growing operational proficiency to safely operate and support nuclear-powered submarines.

20. Senator SULLIVAN. Secretary Hruby, we have been building and maintaining nuclear submarines since 1952 but we are currently struggling to both build and maintain our nuclear submarines. Establishing the industrial base to build and maintain nuclear-powered submarines is a significant undertaking. How are industrial base considerations factoring into the 18-month assessment currently underway?

Administrator HRUBY. One of the goals of the 18-month consultation period is how best to bring an Australian conventionally-armed, nuclear-powered submarine capability into service at the earliest achievable date. AUKUS partners are working together to ensure that key elements of safety, security, and regulatory safeguards are incorporated in the planning, design, and execution of all aspects of AUKUS cooperation. Leveraging existing United States and U.K. technologies and industrial bases will be vitally important to meet that goal and provide a foundation of understanding, however, it is premature to commit to any specific recommendations before we review the detailed products of the AUKUS Working Groups. Among key considerations for the working groups are factors related to developing the engineering and technical depth and experience to safely operate and support nuclear-powered submarines.

FISCAL YEAR 2023 BUDGET

21. Senator SULLIVAN. Secretary Hruby, as I’m sure you are aware, I’ve been very critical of the anemic budget put forth by the President this spring. In his fiscal year 2023 budget submission, the National Nuclear Security Administration received a 3.7 percent increase over the fiscal year 2022 enacted. However, if inflation persists at its current pace, that 3.7 percent “budget increase” would in fact be a 4.6 percent inflation adjusted budget cut. With our nuclear deterrent as the cornerstone of the National Defense Strategy’s “integrated deterrence” efforts, I find this unacceptable.

Do you believe an inflation adjusted budget cut would inhibit the maintenance and modernization of our credible nuclear deterrent?

Administrator HRUBY. The President's fiscal year 2023 Budget for NNSA reflects the Administration's robust support for nuclear modernization. However, issues facing the broader economy have affected NNSA. NNSA has managed the unplanned price increases in the near term by drawing down prior year carryover balances, and NNSA will continue to do this in fiscal year 2023.

QUESTIONS SUBMITTED BY SENATOR RICK L. SCOTT

OIL AND GAS SHORTAGE

22. Senator SCOTT. Secretary Granholm, you stated during the May 19, 2022 hearing in the Senate Armed Services Committee that the administration will NOT import oil from Iran and Venezuela. Can I get your commitment that the Administration will continue to honor this statement and never negotiate with the Islamic Republic of Iran or the Maduro regime in Venezuela to import oil?

Secretary GRANHOLM. United States sanctions prohibit the importation of Iranian and Venezuelan oil and I would direct your question to the Office of Foreign Assets Control at Treasury and the State Department.

23. Senator SCOTT. Secretary Granholm, in that same hearing you mentioned that the, "administration is calling for an increased production in the United States and has issued record number of permits for oil and gas drilling. Since this president took office, more permits issued in the first year than issued in the first three years of the Trump administration." This assertion that American oil and gas producers are sitting on unused federal leases is simply not true. This administration makes it harder for oil and gas producers to use their leases by not acting on pending drilling permits. Further, this administration continues to attack the oil and gas industry and create uncertainty for companies, which hinders them from making additional investments in energy production. What messaging and policy changes does the administration plan to implement to encourage domestic energy production?

Secretary GRANHOLM. I and others across DOE and the Administration have been consistent on calling for more domestic production. And while the majority of oil and gas production happens on private lands that the States regulate, the unused permits on federal leases have naturally raised questions on whether producers are using all of the available mechanisms they may have to increase production. The calls I and others have made to increase production have led to many recent positive, yet frank discussions with industry. These discussions are helping to inform what actions the government and industry may be able to take to help alleviate the current tightness in the market. Additionally, we continue to call on domestic oil and gas companies to ensure they are planning appropriately with storage inventories and other appropriate measures that leave them positioned to respond to market disruptions due to natural disasters and the shifting energy landscape due to Russia's unprecedented invasion of Ukraine.

24. Senator SCOTT. Secretary Granholm, you also mentioned that the Russian incursion of Ukraine is the cause of increased oil prices for consumers and that the President is releasing one million barrels per day from United States strategic reserves. What long-term strategic problems do you foresee from the depletion of our reserves and what policies is the administration implementing to encourage domestic mining so that the United States is not reliant on global fuel prices and shortages?

Secretary GRANHOLM. Senator, the Administration agrees that it is vital to our national energy security to have a robust Strategic Petroleum Reserve (SPR) and we want to maintain the integrity of this tool for use in future supply disruptions. Therefore, DOE has already taken steps to outline a long-term buyback strategy to methodically plan to replace barrels being released through emergency sales. We have already announced plans to begin this process in the fall to begin repurchase of up to 60 million barrels to be delivered to the SPR after fiscal year 2023 when demand and prices are anticipated to ease. Delaying repurchase until then will provide industry certainty that there will be a buyer for increases in U.S. crude oil production between now and then. That is also why we have initiated a Notice of Proposed Rulemaking that would allow for a competitive, fixed price bid approach for repurchase—allowing both industry and taxpayers certainty on price and volumes for future delivery. We look forward to working with Congress to determine the

most effective ways to replenish the necessary volume needed to maintain a robust SPR.

25. Senator SCOTT. Secretary Granholm, lastly you mentioned you would provide the appropriate documentation of all oil and gas permits filed in the last 10 years. Can you include this in your response?

Secretary GRANHOLM. The Department of the Interior's Bureau of Land Management regularly publishes statistics on oil and gas leasing and permitting on federal lands.

Statistics on leasing and permitting can be found in a file on this page: <https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics>

Monthly statistics on the status of applications for permits to drill can be found on this page: <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/permitting/applications-permits-drill>

QUESTIONS SUBMITTED BY SENATOR MARSHA BLACKBURN

CONTRACTS

26. Senator BLACKBURN. Administrator Hruby, to what degree does contract instability impact infrastructure investment and drawdown of deferred maintenance backlogs?

Administrator HRUBY. To date, M&O contract transitions have not impacted infrastructure modernization. Infrastructure stewardship is an enduring responsibility that requires long-term planning, stable funding, and timely execution to mitigate risk and support mission needs. Like businesses across the country, NNSA and our M&O partners have experienced supply chain and labor shortage challenges. NNSA is working with its M&O partners to find creative solutions to these challenges, including by consolidating and streamlining enterprise-wide procurement to maximize our buying power and accelerate delivery.

27. Senator BLACKBURN. Administrator Hruby, how does contract instability represent a risk to the cost-effective and timely execution of current life extension programs?

Administrator HRUBY. Our M&O contracts have been structured to last for up to ten years to provide some significant stability to the workforce and to provide continuity to mission work. During an M&O contract transition, the vast majority of the workforce, generally over 99 percent, continues with the new contractor while only a small number of senior leaders change. That stability in the workforce helps minimize disruptions to the current life extension programs. In addition, we build in several months of transition between the incumbent and the new M&O contractor to help with continuity. As we examine contract competition going forward, we will use continuity and ability to deliver program as guiding principles.

28. Senator BLACKBURN. What are the Department of Energy and NNSA doing to improve the stability and reliability of their schedule for releasing draft requests for proposals, requests for proposals, and awarding contracts?

Secretary GRANHOLM and Administrator HRUBY. NNSA is committed to continuously reviewing its acquisition processes and assessing previous M&O contract competitions to look for areas of improvement in schedule and streamlining of processes and requirements for each upcoming M&O contract competition. NNSA utilizes lessons learned throughout each contract action to continually provide improvements to schedule, processes, and when necessary, to policy and guidance. The streamlining of processes has led to NNSA's unique and complex multi-billion-dollar M&O contracts generally being awarded in 24 months or less.

29. Senator BLACKBURN. Administrator Hruby, what performance mechanisms can be installed to mitigate the unpredictability and uncertainty in the contracting process?

Administrator HRUBY. NNSA's unique nuclear security missions require long-term planning, stable funding, and timely execution to mitigate risk and support mission accomplishment. Our M&O contracts are structured to last for up to ten years, rather than the maximum of up to five years in typical federal contracts. During an M&O contract transition, the vast majority of the workforce, generally over 99 percent, continues with the new contractor while only a small number of senior leaders change. This helps us retain the critical skills required to perform our specialized mission functions and provides stability for the workforce. The unique M&O con-

tract structure is designed to mitigate the greater level of uncertainty and disruption during transition that is experienced on other types of federal contracts. Additionally, we have applied lessons learned from many M&O contract competitions to tailor contract clauses, streamline proposal and evaluation processes, and develop contract transition structures that help mitigate risk and provide stability and continuity during contract competitions and transitions. As we move forward with the new Pantex and Y-12 contract competitions, minimizing disruptions will be a very high priority.

INFRASTRUCTURE

30. Senator BLACKBURN. Administrator Hruby, what is a specific example of the potential consequences to the stability of the U.S. nuclear enterprise if it must continue to rely on aging infrastructure?

Administrator HRUBY. NNSA is heavily dependent on aged infrastructure for critical mission work. One example is the lithium capability which supports nuclear weapon, nonproliferation, and counterterrorism programs. NNSA's lithium operations rely almost exclusively on Y-12's Beta-02, a 79-year-old Manhattan Project-era facility that is in poor condition. The \$2.8 billion facility is experiencing structural failure, including a 200-pound chunk of concrete falling from the ceiling in 2016. However, to rebuild this capability is complicated and expensive. The NNSA has a replacement planned, the Lithium Processing Facility, but it will not be available until the early 2030s. Meanwhile, we are investing to stabilize and improve the existing facility so it can be used until then because any halt of operations at Beta-02 risks negative impacts to stockpile management work, radiation detection, and isotope production.

31. Senator BLACKBURN. Administrator Hruby, how are budgetary and national security issues linked to the billions of dollars reported in deferred NNSA maintenance?

Administrator HRUBY. Much of NNSA's infrastructure is in poor condition, but we are making progress using line-item and minor construction projects in conjunction with strategic maintenance and repair investments to reduce risk to our national security missions and sustain our enduring infrastructure. Meaningful progress towards improving the condition of NNSA's infrastructure will require significant and sustained investments during the coming decades. NNSA is using data-driven and risk-informed infrastructure tools to enable a transition from a financially driven to a risk-driven plan for improving infrastructure. New construction will play a large role in addressing NNSA infrastructure challenges as so many of our existing facilities are well beyond their 40-year design life. In many cases, sustainment of such old facilities is not as cost-effective as replacement. In fiscal year 2023, we will have a new integrated infrastructure plan including the planned major capital projects and other infrastructure needs throughout the complex.

32. Senator BLACKBURN. Administrator Hruby, what are the recruiting and retention issues associated with key NNSA facilities not meeting modern safety standards?

Administrator HRUBY. Work across the nuclear security enterprise is increasing and with this increase we are looking at two challenges in successfully meeting our mission. One is recognizing the infrastructure across our sites is old and some of the structures should be modernized to better support our workforce and execute our mission. To accomplish this, we need to be more effective in recruiting and retaining qualified staff that will support the mission as well as our infrastructure modernization efforts.

All our facilities meet the safety standards per the approved safety basis for operations. However, NNSA is experiencing the demographic challenges of a retiring, experienced workforce as we ramp up our mission scope to meet expanding national security needs.

The second challenge is the recruitment, staffing, and long-term retention of the workforce to meet and sustain mission needs. The nuclear security enterprise is leveraging all the tools available to attract and retain employees in today's competitive market and we continue to look at new and innovative ways to remain competitive in this challenging and dynamic labor market.

Key priorities identified to meet this need include competitive pay and benefits packages, as well as modern office and laboratory spaces that make NNSA an appealing place to work, conduct research, and develop critical skills while supporting our national security mission. We are paying close attention to pay and benefits, the environment our staff works-in including facilities, and stressing the importance of

the mission we do every day. We are also employing strategies that offer more remote work options where appropriate.

DEPLETED URANIUM

33. Senator BLACKBURN. Administrator Hruby, what assurances can you offer that depleted uranium modernization efforts are on schedule and will not delay nuclear stockpile modernization programs?

Administrator HRUBY. The Depleted Uranium (DU) Modernization Program enables the restart of lapsed capabilities to ensure NNSA can meet imminent weapons delivery mission requirements. NNSA is prioritizing restart of the DU-niobium (binary) alloy production capability, re-establishment of a reliable supply of high purity depleted uranium (HPDU) metal feedstock, and modernization of binary radiation case production to meet near-term demands. To meet long-term demands, NNSA has asked Y-12 to begin executing a bridging strategy to increase capacity in the existing facilities to meet mission deliverables through the late 2030s. NNSA is also developing plans for a new Depleted Uranium Manufacturing Complex (DUMC) that will be needed to meet capacity requirements starting in the late 2030s. The DU Modernization Program employs an integrated master schedule, strategic materials model, and risk register with multiple risk mitigation actions to manage program execution and align investments with mission delivery requirements.

34. Senator BLACKBURN. Administrator Hruby, what is the status of the legacy DU-niobium alloying process, and will NNSA be able to produce qualified ingots by October 2023?

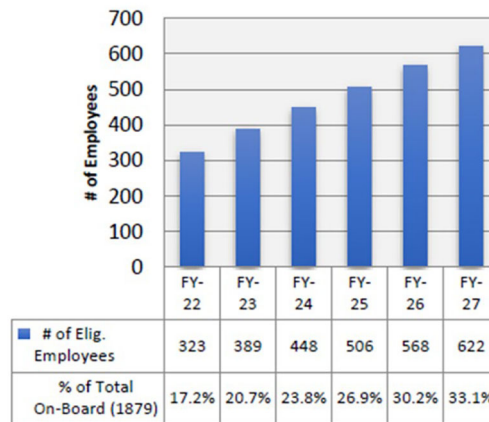
Administrator HRUBY. Qualified DU-niobium (binary) alloy is needed by December 2023 to meet mission requirements. NNSA's DU Modernization Program is restarting the Vacuum Induction Melt (VIM)-Vacuum Arc Remelt (VAR)-VAR process to produce new qualified binary alloy to meet current and future weapon component requirements. The restart activities are on track to meet the December 2023 need date. Y-12 successfully restarted the VIM furnace in 2021 and has already begun casting DU-niobium "pencils," a precursor to the VAR step. NNSA is in the process of restarting the VAR, which is planned to be operational in December 2022. The wrought process to produce radiation case components from qualified ingots is already operational.

PERSONNEL

35. Senator BLACKBURN. Administrator Hruby, half the workforce is close to retirement-eligible status; what impact does this have on NNSA's ability to accomplish its mission?

Administrator HRUBY. The population of retirement eligible NNSA Federal employees is provided in the chart below for fiscal year 2022 through fiscal year 2027. Of NNSA's 1,870 Full Time Equivalents (FTE) in the Federal Salaries and Expense (FSE) account, 17.2 percent are eligible to retire as of June 30, 2022.

**Cumulative Retirement Eligibility
Through FY 2027**



NNSA Biweekly Staffing Report—September 8, 2022

The impact of retirement eligible employees is considered in our recruitment and outreach strategy and execution efforts along with all other attrition factors. NNSA's recruitment strategy focuses on ensuring we have the right people in the right jobs at the right time and specific attention is given to mission critical occupations. Indicators such as, attrition rates (especially in mission critical occupations), years until eligible for retirement, geographic location, mission scope changes based on political and legislative decisions, and special interest initiatives—such as DEIA, are all influencers to our recruiting strategies. By employing this focused approach, we can address any potential impacts to the NNSA workforce caused by employee retirements.

Currently, approximately one third of the nuclear security enterprise M&O contractor workforce population is retirement eligible. In addition, the average tenure across the complex of the M&O contractor workforce is 11 years of service. This is tracked closely and included in workforce planning projections. NNSA is working closely with its M&O partners to monitor attrition of all types, including retirement, and to make appropriate adjustments in compensation and benefit programs to ensure our M&Os are best postured to successfully attract and retain the highly skilled workforce necessary to accomplish our vital nuclear security missions now and in the future.

To be able to continue to execute our mission, we need to be successful in attracting new employees and having them be full contributors as quickly as possible. Therefore, throughout the enterprise, we have increased the number of intern and grant programs and the knowledge transition efforts.

QUESTIONS SUBMITTED BY SENATOR JOSH D. HAWLEY

36. Senator HAWLEY. Secretary Granholm, you said in your verbal testimony that “it is not administration policies that have affected supply and demand.” Asked to clarify that these policies had no effect, you testified “no, they did not.” Do you maintain that the Biden administration’s policy decisions related to energy production had no effect on rising fuel prices nationwide? Please explain your response.

Secretary GRANHOLM. The Administration has been clear in our calls for more energy production and the critical importance of affordable, reliable energy supplies. And not only does the government not control prices, but we have not taken any actions to prevent companies from producing more oil and gas on private and state lands, the source of the vast majority of oil and natural gas production. About three-quarters of U.S. oil and about 86 percent of the nation’s natural gas is produced on private and state lands and waters.

The prior moratorium for new federal leases, where a smaller share of oil and gas are produced, did not have a noticeable impact on the utilization or percent of federal leases where production is occurring. In April, the Administration resumed oil and gas leasing on federal lands.

In their most recent Short-Term Energy Outlook for July 2022, the U.S. Energy Information Administration projects that U.S. crude oil production will average 11.9 million barrels per day in 2022, a significant rebound from the pandemic, and reach 12.8 million barrels per day in 2023, a record high.

37. Senator HAWLEY. Administrator Hruby, Secretary Granholm told the Committee that NNSA cannot produce 80 pits per year by 2030, on current trajectory, as is statutorily required. Are you concerned that China and Russia might be more incentivized to engage in an arms race against us—more than they're already doing—if they know we won't be able to keep up?

Secretary GRANHOLM. The Department of Defense and NNSA work together as members of the NWC to ensure the U.S. nuclear weapons stockpile is safe, secure, reliable, and effective. Together, we are developing strategies that take into account the production limitations of NNSA while maintaining the needed deterrence. This will be continuously evaluated against Chinese and Russian actions, but I'm confident the United States stockpile is a strong deterrent.

38. Senator HAWLEY. Secretary Granholm, in 2016 President Obama rejected a No First Use policy on the advice of your predecessor, Secretary of the Energy Ernst Moniz, and other cabinet officials. Do you believe a No First Use or Sole Purpose policy would be prudent today, given significant deterioration in the security environment since 2016?

Secretary GRANHOLM. No. As determined through the 2022 Nuclear Posture Review, the President has articulated his vision for U.S. nuclear deterrence strategy: As long as nuclear weapons exist, the fundamental role of U.S. nuclear weapons is to deter nuclear attack on the United States, our allies, and partners. The United States would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners.

39. Senator HAWLEY. Administrator Hruby, the United States is far from where it should be in terms of pit production. Would more resources help get us back on track faster, or is there truly no way to go faster than we're going right now?

Secretary GRANHOLM. We assess that no amount of increased funding will enable us to reach capacity for 80 ppy in 2030. We are investigating the use of existing resources to help accelerate the Savannah River Pit Production Facility (SRPPF) to complete it as close to 2030 as possible.

40. Senator HAWLEY. Administrator Hruby, the Chairman of the Joint Chiefs of Staff, the Vice Chairman of the Joint Chiefs of Staff, and the Commander of STRATCOM, among others, have stated their support for the SLCM-N. How long will suspending development delay IOC of the SLCM-N if the United States chooses to reconstitute that program in the future?

Administrator HRUBY. Consistent with the Nuclear Posture Review direction, the President's fiscal year 2023 Budget did not include funding for the SLCM-N program. Other senior military leaders assess that the SLCM-N would not provide enough additional capacity or capability to be worth the added expense and risk to the program of record. A SLCM-N program would have resulted in additional scope to the W80-4 Life Extension Program, which is one likely SLCM-N warhead. Adding this scope back to the Program of Record would increase schedule risk for the existing Program of Record. Costs are dependent on the requirements and duration of the program. The timeline for the program would be dependent on Federal and laboratory staffing, the overall capacity of the nuclear enterprise to handle yet another project on top of the major efforts already underway and planned, and the Navy program for developing and integrating the design onto a Navy delivery platform. SLCM-N IOC would also depend upon the Navy's ability to train staff to resume this mission.

41. Senator HAWLEY. Administrator Hruby, given the delay in plutonium pit production rate, do China and Russia have an advantage in producing and uploading nuclear warheads?

Administrator HRUBY. Establishing required pit production capacity as close as possible to 2030 remains a high priority and is required for sustaining the effectiveness of the Nation's nuclear deterrent. DOE/NNSA is working with subject matter experts from across the nuclear security enterprise to identify and mitigate risks to

completing pit production projects on time. At this point we do not assess that the delay to achieving our required pit production rate will have an impact on the stockpile or our deterrent posture. Classified briefings on assessments of Russian and Chinese capabilities can be provided upon request.

42. Senator HAWLEY. Administrator Hruby, how does China or Russia's edge in expanding their nuclear forces affect strategic stability?

Administrator HRUBY. Though this question would be best directed to our colleagues in the Department of Defense and the Department of State, NNSA believes that adversaries' efforts to modernize, diversify, and expand their strategic weapons capabilities erodes strategic stability by creating increasingly complex escalation dynamics across multiple domains. To address these risks to strategic stability, NNSA actively works with the Department of Defense to sustain and strengthen United States deterrence against the dual threats of weapons proliferation and competition coming from Russia and China. NNSA contributes to these efforts by recapitalizing the nuclear security enterprise, including the workforce, infrastructure, production capacity and capabilities, and scientific base. Additionally, the NNSA works with colleagues at the Departments of State and Defense to develop specific risk reduction measures designed to increase communication, transparency, and predictability in these strategically competitive relationships with our adversaries, in an effort to avoid deliberate, inadvertent, or accidental escalation. Collectively, these efforts underpin a safe, secure, and effective stockpile, address emerging threats, and provide options for future capacity building and risk reduction measures. Specific and direct contributions include developing technologies for future nuclear weapons monitoring and verification regimes and exploring how emerging technologies impact strategic stability so that future policymakers are prepared to address a range of complex deterrence and national security challenges.

